Literature Report

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Abstract

Employer-based travel demand management program: Employer’s choice and effectiveness

- Transport Policy---2017---Joonho Ko,Daejin Kim

The impact and effectiveness of employers’ travel demand management (TDM) programs have often been investigated, but there is little research on employers’ preference of TDM programs and the factors which influence their choices. This study aims to examine employers’ choices of TDM program and the effectiveness based on a Seoul TDM database. Factors affecting employers’ decisions on whether to participate in TDM programs and the degree of participation are identified based on regression models: binary logistic, ordinary least squares and Tobit regressions. In addition, an employers’ TDM program choice model is developed using the approach of the multiple discrete continuous extreme value (MDCEV) model, as an employer can participate in multiple TDM programs, and their individual effectiveness is represented by continuous values of traffic impact fee discount rates. The developed models consistently indicate that facilities’ characteristics such as owner type and facility size, along with locational characteristics (e.g., land use and accessibility to transit) are important in choosing a TDM program. In particular, the MDCEV model shows that employers’ preferences for TDM programs vary significantly by employer and characteristics of the program.

Burden or opportunity for modal shift? – Embracing the urban dimension of intermodal road-rail transport

- Transport Policy---2017---Sönke Behrends

Intermodal road-rail transport (IRRT) has a significant urban dimension, which affects the modal shift potential and the environmental benefits of rail freight. This paper explores the relevance of local policies for sustainable modal shift strategies by conceptualising the links between urban planning and rail freight. The presented framework identifies measures that local authorities can apply in order to increase the market and environmental improvement potential of IRRT. The results indicate that local urban transport planning has a significant role to play in the promotion of rail freight. Integrating rail freight into long-term urban development plans offers new possibilities for rail freight that are necessary in order to achieve a sustainable freight transport system in the face of ever-increasing road transport volumes.

European national government approaches to older people's transport system needs

- Transport Policy---2017---Rebecca Johnson,Jon Shaw,Jörn Berding,Matthias Gather,Markus Rebstock

In the context of an ageing population in Europe, our aim in this paper is to establish the extent to which national governments accommodate mobility among older people by promoting specific, age-friendly qualities of transport systems. We identify 11 qualities that help to promote mobility, and hence independence and social/economic inclusion, for older people. We analyse national-level government documents across the EU, Norway and Switzerland to determine how far they address each quality and conclude that disproportionate emphasis is currently being placed on the tangible and easily understood aspects of safety, barrier freedom and affordability. For various reasons, mobility among older people might better be promoted with a more rounded approach.

Licence to build, licence to charge? Market power, pricing and the financing of airport infrastructure development in Australia

- Transport Policy---2017---Gui Lohmann,Jakob Trischler

In 2017, airport privatisation in Australia reached a 20-year milestone, with its regulatory framework been shifted to a light-handed regulation in 2002. The light-handed regulation (LHR), as in place at Australia's top four airports, has been suggested as the 'frontier of international policy', leading to increasing interest among transport policymakers and researchers. This article offers an in-depth examination of the LHR with focus on a) the market-power of the regulated airports, b) the commercial price negotiations between airports and airlines, and c) the airports' behaviour towards infrastructure investment. The article reports on data from 21 semi-structured interviews conducted with key stakeholder groups affected by, or with expertise in, the LHR. Findings suggest that despite airports possessing significant market power, particularly in the domestic market, the light-handed approach seems to balance the forces in a market where an airline duopoly prevails (Qantas and Virgin Australia groups). In addition, both airports and airlines perceive that commercial price negotiations are improving and refrain from a return to a stronger regulation environment. For airlines, value-for-money is the primary concern in new infrastructure investments. Interviewees also outlined specific recommendations for improving the LHR framework, including a more accessible arbitrator and improved methodologies to monitor prices and quality of service. The findings point towards the significance of vertical relationships, long-term arrangements, and transparency as key aspects of the LHR and the development of airport infrastructure.

Corporate social responsibility and customer loyalty in intercity bus services

- Transport Policy---2017---Yu-Hern Chang,Chung-Hsing Yeh

Corporate social responsibility (CSR) and customer loyalty play an essential part in ensuring sustainable operations and long-term development of intercity bus companies. This paper proposes a new research model to examine how CSR affects customer loyalty in intercity bus services and how it interacts with service quality, corporate image and customer satisfaction in affecting customer loyalty. An empirical study on a leading intercity bus company in Taiwan is conducted to test the research model, using structural equation modeling. The study finds that CSR has an indirect effect on customer satisfaction and customer loyalty through corporate image and customer satisfaction respectively as a mediator. In particular, a new finding of the study highlights the importance of the mediating role played by corporate image in enhancing the effect of CSR on customer loyalty. The research findings provide useful insights into how intercity bus companies should develop a CSR policy that would enhance corporate image and customer satisfaction, consequently leading to customer loyalty.

Scale, quality and efficiency in road maintenance: Evidence for English local authorities

- Transport Policy---2017---Phill Wheat

This paper outlines the first econometric stochastic frontier efficiency analysis of road maintenance costs for local authorities in England in the academic literature. It is motivated by current public sector austerity requiring local authorities to provide efficient highway functions both in terms of learning from best practice (economic efficiency) and potential reorganisation to exploit economies of scale (scale efficiency). The analysis utilises a road condition measure and an end user (public) satisfaction indicator as well as road length and traffic factors. The availability of public satisfaction data is particularly important as incorporation of such a measure into benchmarking is currently in its infancy in economic regulation but is increasing in prominence, such as in regulation of health care. Evidence is found for an optimal road length which has implications for the current trend to merge the delivery of highways services across local authorities. Bigger is not necessarily better. A positive relationship is found between public satisfaction and cost which is strongest for very low or high public satisfaction. Finally, the median cost efficiency is 83% which implies many authorities have the opportunity to save substantial sums by adopting best practice without reducing service quality.

Is there more traffic congestion in larger cities? -Scaling analysis of the 101 largest U.S. urban centers-

- Transport Policy---2017---Yu Sang Chang,Yong Joo Lee,Sung Sup Brian Choi

Over the past three decades, urban congestion has become more costly in terms of time, money, and fuel. For the top 101 largest US urban centers, congestion generated 4.8 billion hours of travel delays in 2011, up from 1.1 billion hours in 1982. Congestion also required 8.419 million cubic meters of excess fuel consumption in 2011, up from 1.73 million cubic meters in 1982. Finally, the excess CO2 emitted from congestion amounted to 19.524 billion kilograms in 2011, up from 3.94 billion kilograms in 1982. We examined the scaling relationships between the population sizes of urban centers and traffic congestion for four subgroups of urban centers with varying population sizes. We found that scaling relationships were superlinear for most subgroups. However, for the subgroup comprising mega cities with populations of over 3 million people, the relationship was linear.

Is energy consumption in the transport sector hampering both economic growth and the reduction of CO2 emissions? A disaggregated energy consumption analysis

- Transport Policy---2017---Sónia Almeida Neves,António Cardoso Marques,José Fuinhas

• The paper analysis the interactions between transport sector energy consumption, by source, growth and CO2 emissions. • A panel for 15 OECD countries with annual data from 1995 to 2014 was used. • The short- and long-run effects were analysed by using a ARDL approach with DK-FE estimator. • Economic growth is boosted by the transports fossil fuels consumption, on contrary to renewables. • Investment in rail infrastructure has hampered the fossil fuels use.

Road transport and CO2 emissions: What are the challenges?

- Transport Policy---2017---Georgina Santos

In order for the world to stay within the safety threshold of a 2°C increase in average temperature agreed by virtually all governments, the transport sector needs to be decarbonized. The two main obstacles that have prevented this from happening have been the absence of a global legally binding deal and the high relative cost of clean vehicle/energy technologies. The Paris Agreement, which commits countries to reductions of GHG emissions, has virtually solved the first problem and paved the way for countries to implement environmental taxes and subsidies in order to change the relative costs of clean alternatives, which would solve the second problem. These policy actions combined

with investment in clean infrastructure and regulation can decarbonize the transport sector.

Modeling the dynamic response of automobile sales in troubled times: A real-time Vector Autoregressive analysis with causality testing for Greece

- Transport Policy---2017---Konstantinos Konstantakis,Christina Milioti,Panayotis Michaelides

In this paper, we investigate the factors that affect multi-segments automobile sales in Greece. Various relevant quantitative techniques have been employed, such as stationarity, causality and cointegration. A Vector Autoregressive (VAR) model was also developed and long-term impacts of the different variables of interest on car sales have been estimated through generalized impulse response functions (GIRF). The impact of the current financial crisis on the Greek automobile market was also taken into account. The results show that fuel prices Granger cause total car sales. The results also indicate the absence of long run cointegrating relationships among the variables. The full blown model shows that demand for new automobiles depends on the existing social, financial and political conditions of the local economy and that the various shocks observed have a temporary medium-run character on car sales, whereas the system is found to be stable.

Measuring trends in household expenditures for daily mobility. The case in Lyon, France, between 1995 and 2015

- Transport Policy---2017---Jean-Pierre Nicolas,Nicolas Pelé

There are very few suitable databases for an in-depth analysis of changes in the expenditures of households for their daily mobility, despite the fact that the increase in fuel costs in the years following 2000 raised questions concerning the vulnerability of certain households in light of their dependence on cars. This article uses three consecutive surveys on household transportation carried out in the Lyon urban area in France in 1995, 2006 and 2015. We propose a technique to extract consistent data on household expenses from the three surveys. Changes are then analysed, taking care to distinguish between changes in prices, population structure and mobility behaviour. The results reveal trends that diverge widely during the two periods between the surveys. In addition, significant differences appear in the changes in expenditure levels and structure depending on the location of households. Finally, a transition to reduced car use has become very clear, however significant generational effects produce contrasting results in young and retired households.

Transport poverty and fuel poverty in the UK: From analogy to comparison

- Transport Policy---2017---Giulio Mattioli,Karen Lucas,Greg Marsden

The notion of ‘fuel poverty’, referring to affordable warmth, underpins established research and policy agendas in the UK and has been extremely influential worldwide. In this context, British researchers, official policymaking bodies and NGOs have put forward the notion of ‘transport poverty’, building on an implicit analogy between (recognised) fuel poverty and (neglected) transport affordability issues. However, the conceptual similarities and differences between 'fuel' and 'transport' poverty remain largely unaddressed in the UK. This paper systematically compares and contrasts the two concepts, examining critically the assumption of a simple equivalence between them. We illustrate similarities and differences under four headings: (i) negative consequences of lack of warmth and lack of access; (ii) drivers of fuel and transport poverty; (iii) definition and measurement; (iv) policy interventions. Our review suggests that there are important conceptual and practical differences between transport and domestic energy consumption, with crucial consequences for how affordability problems amongst households are to be conceptualised and addressed. In a context where transport and energy exhibit two parallel policy worlds, the analysis in the paper and these conclusions reinforce how and why these differences matter. As we embark on an ever closer union between

our domestic energy and transport energy systems the importance of these contradictions will become increasingly evident and problematic. This work contributes to the long-term debate about how best to manage these issues in a radical energy transition that properly pays attention to issues of equity and affordability.

Different ways to get to the same workplace: How does workplace location relate to commuting by different income groups?

- Transport Policy---2017---Lingqian Hu,Robert J. Schneider

We examine whether commonly-observed differences in commute behavior among different income groups are associated with the location of their workplaces. Using the Chicago metropolitan area as a case study, we classify six types of workplace locations to reflect the degree of employment centralization versus decentralization and the degree of employment clustering versus dispersion. Based on the 2008 Chicago Regional Household Travel Inventory, we found that low-income workers are more likely to work in centralized but dispersed workplaces, while high-income workers are more likely to work in employment clusters. The unequal distribution of workers in different workplaces, combined with distinctive commuting patterns to certain workplaces, partly explains commonly-observed commute differences, such as shorter-distance commutes and more public transit use by lower-income workers. Regression analysis shows that the association between income and commute mode varies by workplace, and, more importantly, commute mode has a greater association with workplace locations than with income. The results suggest considering workplace locations in empirical research on commuting inequalities and when establishing transportation and housing policies.

Evaluating the roles and powers of rail regulatory bodies in Europe: A survey-based approach

- Transport Policy---2017---Valerio Benedetto,Andrew S.J. Smith,Chris A. Nash

European railways have been shaped by multiple reforms since the mid-1990s, covering industry structure, market opening and economic regulation. However, the literature has given little attention to the latter; namely the evolution and impacts of regulatory reforms amongst Europe's railways. This paper fills this gap by providing an up-to-date, bottom-up assessment of current rail regulatory practice in Europe. We develop a survey of economic regulators across Europe, thus complementing top-down studies of the impact of economic regulation by enabling a richer insight into regulatory activity and its impacts. The questionnaire is based on a review of the literature on ideal regulatory characteristics across multiple industries. Our results show that European rail regulators, in general, exhibit many of the features of ideal regulation; in particular around key features such as independence, resourcing, longevity and expertise, transparency and in turn stability and predictability. However, we find that rail regulatory bodies could take a more proactive role in shaping track access charges, given their importance in respect of efficient use of the network and maintaining non-discriminatory access. Importantly, there is also scope for regulators to play a greater role in regulating the efficiency and quality of infrastructure managers, and potentially becoming more involved in the designing stages of passenger market opening as it emerges; and these changes could deliver substantial beneficial impacts for rail users and funders across Europe.

Wider economic impacts of transport infrastructure investments: Relevant or negligible?

- Transport Policy---2017---Werner Rothengatter

Wider economic impacts (WEI) comprise all effects that are not assessed appropriately in conventional cost-benefit analysis (CBA). These effects are generated by market imperfections, in the view of neo-classical equilibrium theory. In real economies such imperfections are not exemptions but frequent phenomena, e.g. stemming from increasing returns to scale or scope, or structural changes of products and industrial processes. Although the existence of WEI is not in question, they

are usually not considered in practical assessments of transport infrastructure investments because they can only be estimated with high uncertainty and – in industrialised countries in particular – they are assumed to be of negligible magnitude. This paper presents approaches to WEI measurement based on GDP and on welfare, analyses the feasibility for combining WEI with conventional CBA, and discusses issues related to decision-making in situations where consideration of WEI appears to be relevant.

Is fare increment desirable for ensuring operational viability of private buses?

- Transport Policy---2017---Saurabh Dandapat,Munavar Fairooz Cheranchery,Bhargab Maitra

The paper reports an investigation on the requirement of fare increment for achieving the operational viability of private buses in the context of an emerging country. Taking an existing route in Kolkata city which is served by private buses, several scenarios were investigated to achieve the viability of service through interventions in fare, design of service, and supply of buses. A simulation framework was used for the evaluation of various scenarios. The study brings out new evidences to question the conventional approach of increasing the bus fare to satisfy the operational viability. It is shown that the fare and the revenue requirements are distorted due to the oversupply of buses and non-optimal service. The analysis shows that even with the present fare, it is possible to resolve the viability issue by optimizing the service and supply. The results presented in the paper are case specific but are likely to encourage policy makers to carry out similar investigations in other cities in India as well as in other developing countries to improve urban bus service without putting an additional burden on the users.

Exploring the impact of residential relocation on modal shift in commute trips: Evidence from a quasi-longitudinal analysis

- Transport Policy---2017---Min Yang,Jingxian Wu,Soora Rasouli,Cinzia Cirillo,Dawei Li

A growing number of studies have been devoted to the effects of residential relocation on travel behavior. However, most of these studies only focus on the direct effects of personal and system characteristics; while, residential relocation may trigger several interrelated changes in activity-travel behavior and mobility resources. This paper studies the mode choice of commuters who used active transport before relocating. Results from a Bayesian network (BN) analysis, trained on retrospective data collected in Nanjing, China, are presented. The constructed BN identifies significant statistical associations between modal shift and selected explanatory variables, which include movers' socio-demographic characteristics, relocation-related attributes, and changes in built environment. Specifically, car ownership, income, additional car purchase, specific housing type and size, relocation type, change in commute distance, convenience of subway/bus for commuting, and distance to subway station are found to be important factors when deciding to switch from private car to public transit.

Evaluating the impact of a workplace parking levy on local traffic congestion: The case of Nottingham UK

- Transport Policy---2017---Simon Dale,Matthew Frost,Stephen Ison,Mohammed Quddus,Mr Peter Warren

A Workplace Parking Levy (WPL) scheme raises a levy on private non-domestic off street parking provided by employers. In April 2012 Nottingham became the first UK City to implement such a scheme with the revenue generated hypothecated for funding transport improvements.

Imagined people, behaviour and future mobility: Insights from visions of electric vehicles and car clubs in the United Kingdom

- Transport Policy---2017---Noam Bergman,Tim Schwanen,Benjamin K. Sovacool

This study focuses on imagined futures of personal mobility in the United Kingdom in the context of the

need to reduce greenhouse gas emissions from transport. Focusing on two innovations, electric vehicles and car clubs, the study investigates how people, behaviour and mobility are imagined in a range of visioning documents about the future up to 2050, a timeline that is critically important for emission reduction targets. We find that people are imagined primarily as consumers in line with the rational actor paradigm, with many visions focusing on low-carbon vehicles as a sustainability solution. This simple technological substitution vision does not play to the strengths of electric vehicles, and diminishes their transformative potential. There are fewer car club visions; these show less car ownership, but retain high mobility and an economic growth perspective. Our findings support the idea that much future mobility visioning is used to support the status quo, rather than to explore a variety of futures with diverse portrayal of people, behaviour and mobility.

An ecological study on means of transportation to work and obesity: Evidence from U.S. states

- Transport Policy---2017---Can Chen,Charles E. Menifield

Obesity has become a public health problem in the United States. Policymakers are concerned with effective ways of encouraging better nutrition and more physical exercise to combat increasing levels of obesity and overweight residents. Commuting to work can be an important means for regular physical activity. Based on an ecological approach, this paper examines the effects of means of transportation to work on the prevalence of overweight and obesity at the U.S. state level. This analysis extends the previous literature by including a series of transportation variables in a regression model examining state prevalence of overweight and obesity using the most recent panel data from 2004 to 2013. We find that increased automobile usage contributes to the rising trend in the prevalence of obesity and overweight among states. In contrast, active transportation to work (public transportation and walking) has a negative impact on state prevalence of obesity and overweight. The paper concludes with policy suggestions for combating obesity and overweight by integrating public health objectives into the transportation planning and investment process.

Unbundling political and economic rationality: A non-parametric approach tested on transport infrastructure in Spain

- Transport Policy---2017---Salvador Bertomeu-Sánchez,Antonio Estache

This paper suggests a simple quantitative method to assess the extent to which public investment decisions are dominated by political or economic motivations. The true motivation can be identified by modeling each policy goal as the focus of the optimization anchoring a data envelopment analysis of the efficiency of the observed implementation. In other words, we rank performance based on how far observed behavior is from the optimal behavior under each possible goal, and the goal for which the distance is smaller reveals the specific motivation of investment or any policy decision for that matter. The approach is tested on Spain's land transport infrastructure policy since it is argued by many observers to be driven more by political than economic concerns, resulting in a mismatch between capacity investment and traffic demand. The method clearly shows that investments have generally been more consistent with a political objective (the centralization of economic power) than with an economic objective (maximizing mobility).

Patterns of entry and exit in the deregulated German interurban bus industry

- Transport Policy---2017---Niklas S. Dürr,Kai Hüschelrath,Kai Hueschelrath

We study patterns of entry and exit in the German interurban bus industry in the first three years after its deregulation in January 2013. Using a comprehensive data set of all firm and route entries and exits, we find that the industry grew much quicker than originally expected – with particularly a few new entrants being most successful in quickly extending their route networks from regional to national coverage. Although the clear majority of routes is operated on a monopoly

basis, competition does play a key role on routes with a sufficiently large base of (potential) customers. From a spatial perspective, three years after deregulation, the entire interurban bus network connects 60 percent of all 644 larger German cities – with the intensity of entry being dependent on the number of inhabitants, average income, the share of under 24 years old and the presence of intermodal competition by intercity railway services.

Are statutory passenger watchdogs effective in representing passenger interests in public transport?

- Transport Policy---2017---Vu Thi Thao,Philipp Wegelin,Widar von Arx

In recent years, concerns over effective consumer representation of public transport users have increased considerably, as public transport has undergone substantial regulatory reforms. The ultimate goal of deregulation is to protect and benefit the public at large. Hence, this paper explores how this goal is being pursued by examining the roles of statutory, independent passenger watchdogs and their relationships with authorities and operators in regulated and deregulated bus regimes. Drawing on a case study of London TravelWatch and Transport Focus in Great Britain, our findings show that statutory passenger watchdogs are effective in representing passenger interests due to four factors in particular: the organizational setting, research-based evidence, accommodating relationships, and public outreach. The paper also documents the differences in how these passenger watchdogs build their relationships with key stakeholders and work with them within the strategic-tactical-operational framework.

Experiences with transportation models: An international survey of planning practices

- Transport Policy---2017---Marco te Brömmelstroet,Morten Skou Nicolaisen,Benjamin Büttner,Antonio Ferreira

Transport planning practice is experiencing rapid transitions. This shifting professional environment is prompting lively and sometimes bitter debates about how transportation models should be used. While these models and their outputs play an increasingly more important function in transport-related decision-making processes, growing concerns emerge about their limitations, assumptions, biases, and usability. This paper addresses the question of how different professionals involved in transportation planning perceive and experience these tensions. For that purpose, we developed an online survey which was completed by 229 European transport planning practitioners, primarily working in the Netherlands, Denmark and Germany. Our findings support the following key conclusions. First, and contrary to popular notions on the matter, practitioners are relatively satisfied with the models they use. Second, most respondents are confident that they understand the assumptions and uncertainties associated with transport models, but that other important stakeholders do not. However, third, the larger the distance that respondents have to hands-on working experience with transportation models, the lower is their trust on model outputs. Respondents who are not directly involved in the operation of the models a) report more negative experiences associated with model use in decision-making processes and b) identify more usability barriers. The overall picture revealed a lack of trust amongst transport planning professionals, which is a problem needing to be addressed. We propose bringing models closer to those who use their outputs as a constructive solution to this trust deficit.

Dynamic participation processes for policy packaging in transport backcasting studies

- Transport Policy---2017---Julio A. Soria-Lara,David Banister

Scenario analysis is particularly useful when major changes are required to reach climate change goals over a longer time period. Backcasting provides one approach to develop policy packages that together will help achieve these objectives, but one missing element has been the role that stakeholder engagement can play in the identification of suitable policy measures, in the packaging process, and in determining the

suitability, the feasibility and the timescale involved. This paper develops a novel dynamic participatory process to address the policy-implementation gap through the engagement of practitioners, policy makers and researchers in a series of workshops that allow these issues to be discussed in an open deliberative process. The spatial context taken is the Andalusia region (Spain), where there is a clear policy desire to implement a sustainable transport strategy for 2050. The paper outlines the methodological process, the development of the policy pathways, the dialogue process, the refinement of the policy pathways, the final strategy, and it then reflects on the usefulness of stakeholder engagement in the policy formulation process.

Rationality of fare increment for improvement of transfer facilities at metro stations: An experience in Kolkata

- Transport Policy---2017---Shubhajit Sadhukhan,Uttam K. Banerjee,Bhargab Maitra

There are several lacunas associated with the public transport quality and allied facilities in emerging countries such as India. The improvement of these facilities is a major challenge as most of the Governments are not only finding it difficult to provide an additional subsidy for the improvement but are also hesitant to increase the fare because of socio-political reasons. In this context, the present paper demonstrates an approach for investigating the rationality of fare increment with reference to a case study of transfer facilities at metro stations in Kolkata city, India. Rationality of the fare increment is judged by comparing the fare increment with (i) benefits likely to be transferred to commuters due to improvement, (ii) present fare, and (iii) average daily income of metro commuters. The work also highlights the need for quantifying the benefits likely to be transferred to commuters from the proposed improvements for relating the fare increment to derived benefits. It is shown that if the fare increment is found rational then facilities should be developed by recovering the associated cost from commuters without putting the additional financial burden on the Government. The Government subsidy should be introduced only when it is required to bring down the fare increment to a level which is considered rational. The findings will hopefully encourage policy makers to apply the approach to other contexts for improvement of transport facility or quality of service with a rational increment of fare and use of Government subsidy, as and when required.

The four knowledges of transport planning: Enacting a more communicative, trans-disciplinary policy and decision-making

- Transport Policy---2017---Geoff Vigar

There is widespread criticism of much transport planning practice for relying on particular, 'technical', knowledge forms characterized by instrumental, means-end rationality. At the same time politicians are criticized for taking 'political' decisions with not enough regard for the outcomes of such technical work. Increasingly attempts to capture the embodied knowledge and values of citizens are also brought into this contested terrain. But which knowledge forms should be significant in making policy and taking decisions; and how might they be brought together in political decision-making which is itself subject to its own rationality? This paper argues that the variety of knowledge forms in everyday transport planning processes should be more transparently articulated. Subsequent reflexion can help enhance the quality of transport planning processes, while such transparency bolsters the democratic legitimacy of the outputs of such processes. Such a more explicitly communicative, trans-disciplinary mode of governance would help to challenge the power of political rationality. This conclusion has implications for how transport planning as a discipline is enacted.

Development of safety performance index for intercity buses: An exploratory factor analysis approach

- Transport Policy---2017---Teik Hua Law,Mohd Shazwan Daud,Hussain Hamid,Nuzul Azam Haron

In recent years in Malaysia, severe road crashes involving intercity buses have been increasing. With

increased public concerns about intercity bus safety, effectively managing travel risk has become critical for both intercity bus operators and road safety policy makers. Intercity bus drivers are generally at a higher risk for crashes due to long hours of driving and exposure to different road conditions. Therefore, understanding and quantifying their risks and taking steps to manage them could improve intercity bus safety. The aim of this study is to establish a safety performance index for each risk domain to measure and compare intercity bus safety in terms of risk factors. The risk domains considered in this study were road environment conditions, bus driver driving behaviors and bus safety conditions. The weighted indicators were aggregated into the safety performance index for each risk domain was done using the Exploratory Factor Analysis method. The paired sample t-test was then applied to determine which safety performance indices were significantly different from each other. The results indicate that road environment conditions have contributed more to intercity bus safety risks on the east coast than on the west coast of peninsular Malaysia. The evidence presented in this study shows that different intercity bus companies showed mixed safety performance in different risk domains. Therefore, we suggest the development of targeted road safety programs for each intercity bus company to address intercity bus safety problems.

Imperfect competition in a network industry: The case of the European rail freight market

- Transport Policy---2017---Florent Laroche,Christa Sys,Thierry Vanelslander,Eddy Van de Voorde

This paper opts for a time varying approach to measure the competition on the European rail freight sector according to two questions: what is the current level of competition and how is this expected to evolve in the long run?

Car ownership policies in China: Preferences of residents and influence on the choice of electric cars

- Transport Policy---2017---Xiaofang Yang,Wen Jin,Hai Jiang,Qianyan Xie,Wei Shen,Weijian Han

To alleviate congestion, many Chinese cities have adopted either one of the two car ownership policies, namely, license plate auction or license plate lottery, to limit the number of cars on the road. In an effort to address the criticism associated with administering a single car ownership policy, cities are considering the possibility of carrying out both policies simultaneously, so that residents can choose whether to pay for the license plate through an auction or get it for free from a lottery but with a longer wait time. We study residents' preferences toward the two car ownership policies when both are administered at the same time, a problem that has not been investigated in the literature. We then examine the influence of car ownership policies on the choice of electric cars, which is also new to the literature. Using data collected from a stated preference survey, we estimate mixed logit models using the hierarchical Bayes approach based on the Markov Chain Monte Carlo method. Results show that strong preference heterogeneity exists in respondents' policy choice. We proceed to conduct regression analysis to explain the variations in the preferences toward license plate auction and electric cars. Our main results include: (1) We find that prospective car buyers in Beijing and Shanghai are willing to bid 27,000 yuan and 49,000 yuan to shorten their wait time to get car license plates by one year, respectively; (2) The subsidy to electric cars can be reduced by 102,000 yuan in Beijing and 85,000 yuan in Shanghai if the wait time for an electric car license plate is shortened by one year; (3) Car buyers in favor of license plate auction are those who are from high-income households, who are not buying their first cars, and who are below 30 or above 40 years old; and (4) When promoting the adoption of electric cars, policy incentives, such as making it easier to obtain an electric car license plate and providing attractive subsidies, are as important as the technological advancement electric car manufacturers strive to make, such as improving the driving range of electric cars.

What led to the establishment of a rail-oriented city? Determinants of urban rail supply in Tokyo, Japan, 1950–2010

- Transport Policy---2017---Ryosuke Abe,Hironori Kato

This study analyzed the determinants of urban rail supply in Tokyo using time series data for the postwar period. It modeled urban rail supply, measured by vehicle-kilometers of the urban rail service, incorporating demand for urban rail travel, urban rail travel speed, conditions of alternative transportation modes, land use patterns, and socioeconomic conditions as explanatory variables. The model adopted a lag structure for urban rail supply in line with the planning horizon. It was then estimated using the Bayesian model averaging approach, which provided robust estimation results based on our multivariate time series data. The results showed that investments in the urban rail network in Tokyo were primarily driven by the increase in demand for urban rail travel. In effect, demand growth in the Tokyo rail network has clearly translated to supply growth through the planning process; this induced supply has worked as one of the critical components in the establishment of a rail-oriented transportation system in Tokyo. Additionally, the negative effects of bus/tram travel speed on urban rail supply were estimated.

Socioeconomic impacts of transportation public-private partnerships: A dynamic CGE assessment

- Transport Policy---2017---Zhenhua Chen,Nobuhiko Daito,Jonathan L. Gifford

While value-for-money and benefit-cost analyses represent traditional approaches for public-private partnership (P3) evaluation, these methods primarily focus on direct, project-level impacts. Indirect regional economic and/or social welfare impacts are generally ignored. This study fills the gap by investigating transportation infrastructure P3's socioeconomic impacts using a dynamic computable general equilibrium (CGE) model. Using the U.S. Commonwealth of Virginia's I-495 Express Lanes project as an example, the model measures infrastructure capital expenditure and tax shock effects and compares them with two public sector comparators (PSCs) representing lower- and upper-bound scenarios. The model also captures the impacts of capital accumulation and temporal variations during the 2008–2012 construction period. The simulation results show that by alleviating the regional economy's collected tax burden, P3s generate greater positive gross economic output and welfare impacts than traditional public financing models.

The cost to carshare: A review of the changing prices and taxation levels for carsharing in the United States 2011–2016

- Transport Policy---2017---Joseph P. Schwieterman,Alice Bieszczat

This study explores the changing prices and level of taxation for carsharing in the United States through a review of hourly rates in 80 cities with Zipcar pods, as well as at U.S. locations served by car2go and Maven. The base rate for a one-hour Zipcar carshare between 2011 and 2016 is shown to have fallen from $9.39 to $8.92, a 5.0% drop. In inflation-adjusted terms, this constitutes an 11.2% real reduction. Retail taxes over the period, however, rose from 15.5% to 17.0%, offsetting almost one third of the price reduction. In some cities, taxes on one-hour reservations exceed 30% due to transaction-based fees that apply regardless of the duration of the trip. Interpreted broadly, these results indicate that carsharing is becoming more affordable to urban consumers, while being subject to extensive competition and facing the burden of extensive retail taxes that may hamper efforts to achieve local sustainability goals.

Valuing the risk and social costs of road traffic accidents – Seasonal variation and the significance of delay costs

- Transport Policy---2017---Kjersti Granås Bardal,Finn Jørgensen

By using a conventional risk model, and a time loss

model for delay, the risk, severity, and social costs of road traffic accidents have been estimated on a rural transport corridor in an area with large seasonal variations. The novelty of the study lies in the comparison of the estimates between seasons, and the inclusion of delay costs when assessing the total social costs of accidents for private motor vehicles and heavy vehicles. Increasing congestion in urban areas has motivated researchers' interest in studying the cost of delays due to accidents. However, still many countries, such as Norway, do not include delay costs when estimating the social costs of road accidents. In this study, we show that these costs can constitute a significant proportion of the social costs of accidents in rural areas, particularly during winter in regions with strong seasonal variations. The delay costs on the studied road section constituted on average 10% of total annual social costs of accidents, and were nearly 70% higher than the accidents' material costs. By including these inconvenience costs, we would achieve better estimates of the social costs of accidents, which would in turn give rise to more accurate assessments of the costs and benefits of accident reduction measures, as well as measures reducing the response time when accidents happen. Many road safety measures have been aimed at reducing accidents involving death and serious injury. This analysis shows that it can also be beneficial to take measures to reduce the number of less severe accidents, particularly in rural areas where delay costs can be high when the roads are closed because of accidents. It is thus, particularly important that such costs are included in project assessment tools to ensure that rural areas do not lose the fight for road investments.

Evaluating the robustness effects of infrastructure projects based on their topological and geometrical roadway designs

- Transport Policy---2017---M. Snelder,B. Wesseling,B. van Arem,M.J.C.M. Hertogh

When infrastructures projects are evaluated, it is not only important to evaluate them with models that represent the average daily situation, but also to evaluate them in case of irregular situations like incidents. This becomes especially relevant when various project alternatives are expected to show significantly different scores in case of incidents. Project alternatives and their road sections have different topological and geometrical characteristics. The focus of this paper is on the following characteristics: hard shoulders, the number of lanes, parallel road structures and weaving sections. The main question that this paper addresses is how these network characteristics affect both the risk of different types of incidents occurring and the effects of those incidents on the network performance (robustness). In order to answer this question, analytical examples are presented for small theoretical networks that give insight into how the selected characteristics affect the total delay caused by incidents and its dependence on the traffic volume, capacity, severity and duration of incidents. A marginal simulation based method is presented that can be used to compute the robustness effects of project alternatives, given their geometrical and topological characteristics, on a network level. A case study for an infrastructure project in the Netherlands is presented that illustrates how the robustness effects of infrastructure projects can be computed given their topological and geometrical characteristics.

Effect of integration of bicyclists and pedestrians with transit in New Delhi

- Transport Policy---2017---Sudatta Mohanty,Sugam Bansal,Khushi Bairwa

Traditionally, transportation mode shares in cities have been calculated separately for walking, bicycling and transit. However, it is well known that all transit trips have an access and egress component which is mostly executed through walking or bicycling. Hence, the choice of whether to choose transit for a particular trip depends as much on the walking or bicycling component of the trip as the transit component itself. A major source of inaccuracy in traditional mode share estimation models is the failure to identify this inherent dependence of transit trips on bicycling and walking. In New Delhi, where almost all access and egress trips for buses are made by bicycle/walking, the inaccuracies in

mode share estimation could be more significant. This research aims to study behavioral effects of integrating bicycling and walking infrastructure with transit and provide predictions for outcomes of policy implementations modifying bicycle-to-transit or walk-to-transit environment in New Delhi. Four policy variables each are selected that affect pedestrian access to transit (sidewalk width, lighting, crossings and surrounding hygiene) and bicycle access to transit (bicycle lane, bicycle parking, bicycle sharing and on-board vehicle capacity) respectively. To gauge user behavior for hypothetical situations, stated preference survey data is collected through intercept surveys. 90 respondents were interviewed with upto 10 choice scenarios per individual with a total of 897 scenario responses (461 Pedestrian Infrastructure Scenarios +436 Bicycle Infrastructure Scenarios). Choice modelling is performed through a simple Multinomial Logit (MNL) model (in case there is no significant heterogeneity among individual preferences) and Random-Taste Mixed Logit model (to incorporate significant heterogeneity among various types of individual preferences). Modelling results showed that among pedestrian infrastructure, only presence of crossings could affect transit use and there is possibly significant heterogeneity in the population regarding use of sidewalks. Among bicycle infrastructure variables, presence of bicycle lanes and bicycle sharing is expected to positively impact transit use with no significant heterogeneity among the population. Finally, based on modelling results, three policy implementation scenarios are tested – presence of pedestrian crossings near all transit stops, introduction of bicycle lanes throughout the city and introduction of bicycle sharing system throughout the city. The scenario analysis shows possibility of considerable rise in transit mode share and GHG emission savings. This motivates further research to corroborate these findings with a larger sample, evaluation of viability of the ideas and possibly investigating implementation details.

Transportation behaviours of the growing Canadian single-person households

- Transport Policy---2017---Mischa Young,Ugo Lachapelle

Single-person households have been on the rise in Canada and especially in large Canadian cities. This demographic trend has many impacts on society, as in many regards solos behave differently than other strata's of the population. The objective of this paper is to explore the transport-related implications of the growth in single-person households in Canadian cities.

Freight transport impacts from the economic crisis in Greece

- Transport Policy---2017---Tatiana P. Moschovou

During the last eight years, Europe, and the world as general, has been experiencing a situation of sudden economic recession resulted in economic and financial crisis. According to the IMF (2009), this is the worst recession of the last decades since economies, countries and global GDP have been seriously affected. A sector of the economy that has significantly been impaired is road freight transport. The scope of this paper is to investigate the effect of this crisis on road freight transport in Greece. The analysis starts by examining global and European data and trends while presenting comparable Greek economic and freight transport data for a series of years starting in 2003. This analysis and mapping of data shows some plausible correlations between economic and freight transport indicators and identified visible patterns. The paper examines the possibility of constructing mathematical relations between tonnes or t-km of road freight and GDP for Greece, which were the only relations showing a statistically significant correlation. The overall conclusion is that the impacts on freight transport are visible but quite pronounced as freight transport volumes and output have been substantially unstable or reduced over these years and this trend is visible when mapping the relevant data as well as in more detailed statistical analysis.

A financing mode of Urban Rail transit based on land value capture: A case study in Wuhan City

- Transport Policy---2017---Jun Sun,Tian Chen,Zuchen Cheng,Cynthia C. Wang,Xin Ning

While urban rail transit has gained increasing popularity, there are still many problems related to obtaining financial resources for constructing it in China. It is proved that the Land Value Capture (LVC) theory can provide theoretical support for exploring new financing mode of urban rail transit to solve these problems. This paper reviews the concept of LVC and the existing LVC finance mechanisms, in particular, Joint Development (JD). It is revealed that JD can't be directly copied and reproduced in mainland China. The characteristics of land acquisition policy as well as the practice of rail transit construction in mainland China are summarized, and based on the findings, the Predetermined Land Reserve Mode (PLR) is proposed. The essence of this proposed mode is to link the reserve of specific land parcels with the relevant rail transit project and ensure it benefits from the predetermined land reserve. Rail transit companies, with the authorizations from the government, can reserve suitable land parcels prior to the planning and construction of the rail transit system so that they can capture the increased land value after the land transfer. PLR is a new finance mechanism based on LVC and it is different from JD under comparative analysis. Analytical results show that PLR has unique advantages. To demonstrate the performance of PLR, a case study of constructing the urban rail transit system in Wuhan City, China, is presented in this paper, and it shows that the PLR is well suited for financing the urban railway systems in cities of mainland China.

Unexpected versus expected network disruption: Effects on travel behavior

- Transport Policy---2017---Adam Danczyk,Xuan Di,Henry X. Liu,David Levinson

This paper discusses the observed evolution of traffic in the Minneapolis-St Paul (Twin Cities) region road network following the unexpected collapse of the I-35W Bridge over the Mississippi River. The observations presented within this paper reveal that traffic dynamics are potentially different when a prolonged and unexpected network disruption occurs rather than a preplanned closure. Following the disruption from the I-35W Bridge's unexpected collapse, we witnessed a unique trend: an avoidance phenomenon after the disruption. More specifically, drivers are observed to drastically avoid areas near the disruption site, but gradually return after a period of time following the collapse. This trend is not observed in preplanned closures studied to date. To model avoidance, it is proposed that the tragedy generated a perceived travel cost that discouraged commuters from using these sections. These perceived costs are estimated for the Twin Cities network and found to be best described as an exponential decay cost curve with respect to time. After reinstituting this calibrated cost curve into a mesoscopic simulator, the simulated traffic into the discouraged areas are found to be within acceptable limits of the observed traffic on a week-by-week basis. The proposed model is applicable to both practitioners and researchers in many traffic-related fields by providing an understanding of how traffic dynamics will evolve after a long-term, unexpected network disruption.

Considering health in US metropolitan long-range transportation plans: A review of guidance statements and performance measures

- Transport Policy---2017---Patrick A. Singleton,Kelly J. Clifton

Transportation influences health primarily and most directly through traffic safety, air quality, physical activity, and accessibility. Despite the importance of all four components, only safety and air quality are typically considered during institutionalized transportation planning processes. This paper assesses how health impacts are considered in transportation planning by focusing on the long-range transportation plans that US metropolitan planning organizations develop. We analyzed the content of current plans from 25 large regions, reviewing how policy guidance statements and

supporting performance measures addressed health. Goals and objectives exhibited an incomplete perspective of transportation's effects on health, focusing on safety, accessibility, and air quality, neglecting physical activity. Regional policies reflected national goals and planning requirements, which are rarely framed from a health perspective. Performance measures generally followed policy guidance, although measures of health and physical activity were lacking. Increased attention to the development of health-related performance measures and the data and analysis tools to support them is needed. By assessing the state of the practice and discussing potential approaches, this review informs a stronger and more comprehensive consideration of health within the institutionalized structure of US metropolitan transportation planning.

Transport investment and economic performance: A framework for project appraisal

- Transport Policy---2017---James J. Laird,Anthony Venables

The case for major transport investment is frequently made in terms of impact on economic performance. A recurring difficulty however faced by policy makers is a disjoint between this motivation and the cost benefit analysis, which may be too narrow. Broadening the set of economic mechanisms studied creates the risk that bad arguments are legitimised and effects can be exaggerated. There is a need for an appraisal framework that ensures all relevant impacts are captured, ensures the opportunity cost of drawing more resources into an activity is identified and meets the needs of the different audiences of the appraisal. There is a need for context specific appraisal. Central to the impact on economic performance is how private sector investment responds to changes in accessibility. Investment in one location can improve productivity, create growth, but may also displace output and employment. Thus we group impacts within the framework into four types: user benefits, proximity and productivity effects, investment and land use impacts and employment effects. Within each of these groups there are a series of transport-economy mechanisms which become relevant in different contexts. Some of these mechanisms are well established and are applied in practice. Others still are more challenging and need to be the subject of further research. Throughout improvements in the evidence base are needed.

Identifying reasons for historic car ownership and use and policy implications: An explorative latent class analysis

- Transport Policy---2017---Yashar Araghi,Maarten Kroesen,Bert van Wee

The number of historic vehicles is steadily increasing. Although, these vehicles are part of our cultural heritage with respect to road transport and mobility, they present (future) environmental concerns, which is a relevant development from policy perspective. Yet, as far as the authors are aware, there is hardly any academic literature addressing this issue. This study aims to provide a first exploration of historic cars and reasons for ownership and use and policy implications. To this end, a large explorative survey is conducted among HV owners of 15 European countries. Focusing on passenger car owners only, a latent class analysis is performed to identify possible segments among historic car owners. Seven latent classes are identified: recreational owners, reserved owners, repair men, die-hard fans, next generation fans, frequent drivers and collectors. Overall, the results indicate that there is large diversity in the ownership and use of historic cars and the reasons behind ownership. However, in general, historic cars are used much less than modern cars. Only the group of 'frequent drivers' (8% of the sample) represent a potential concern regarding emissions from a policy perspective. Finally, policy recommendations are provided for decision makers regarding historic cars.

Is EU financial support enhancing the economic performance of PPP projects? An empirical analysis on the case of spanish road infrastructure

- Transport Policy---2017---Laura Garrido,Juan Gomez,María de los Ángeles Baeza,José Manuel

Vassallo

During the last few decades, the European Union has been promoting the use of PPPs in order to accelerate the development of the TEN-T for ensuring economic, social and territorial cohesion and increasing accessibility within the EU. To that end, several mechanisms have been put at the disposal of the Member States to enhance transport infrastructure of interest for the EU. This paper conducts a review of the main funding programs implemented by the EU authorities in order to evaluate to what extent the European support has been rightly channelled to PPP projects. To that end, a multiple regression model has been applied to road PPP projects in Spain to analyse whether those PPP projects with EU financial backing ultimately have a higher economic performance compared to those projects not receiving such a support. The research concludes that there is a positive correlation between receiving European financial support and the good economic performance of those projects.

What are the barriers to widespread adoption of battery electric vehicles? A survey of public perception in Tianjin, China

- Transport Policy---2017---Zhen-Yu She,Qing Sun,,Jia-Jun Ma,Bai-Chen Xie

Battery electric vehicles (BEVs) are an effective way to reduce fossil fuel consumptions and greenhouse gas emissions. This study employs the structural equation model and chi-square test to explore public perception barriers to widespread adoption of BEVs in Tianjin. Based on a sample of 476 urban respondents collected by questionnaire, it finds that consumer interest in BEVs is relatively low and a large proportion of the respondents have a “wait and see” attitude. Consumers are unsure about BEVs performance, with safety, reliability, and range per charge being the top three concerns. Respondents who focus on vehicle performance express significantly lower BEV acceptance. High battery cost is the main technological barrier to widespread BEV adoption. In terms of public service support, poor public charging infrastructure ranks as the largest impeditive. In terms of respondent personal characteristics, older respondents have a more optimistic attitude to BEVs than younger generations, more respondents express interest to adopt BEVs as the second family car, experienced drivers are more concerned with the cost of battery and maintenance, and consumers who are more concerned about the environment are more likely to adopt BEVs.

Analysis of traffic revenue risk factors in BOT road projects in developing countries

- Transport Policy---2017---Solomon Olusola Babatunde,Srinath Perera

The use of Build-Operate-Transfer (BOT) model for transport infrastructure projects delivery, most especially road projects has increased over the past decades. However, the growing concern is how the concessionaires will recoup their money at operation phase in BOT road projects, due to the traffic revenue risk that is highly unpredictable, particularly in developing countries. Yet effort at investigating traffic revenue risk factors in BOT road projects through an empirical method in developing countries received scant attention. It is against this backdrop that this study identified and critically assessed the traffic revenue risk factors in BOT road projects in Nigeria. This study further identified and assessed the mitigation strategies to traffic revenue risk in BOT road projects. In achieving this, the study adopted three different data gathering phases to include literature review, a preliminary survey, and questionnaire survey. The questionnaires were administered to three different primary stakeholder groups comprised public sector authorities (i.e. ministries, department, agencies), concessionaires, and lenders/banks involved from conception to operation phase of BOT transport projects in Nigeria. Data collected were analysed using mean score, Kruskal-Wallis test, and factor analysis. The study, through factor analysis, grouped the 25 identified traffic revenue risk factors into 3 principal factors. Similarly, the factor analysis classified the 19 identified mitigation strategies into 4 key factors. It is believed that this study will benefit the policymakers and other stakeholders

to draw policy recommendations that will positively influence the development of BOT road projects in Nigeria and developing countries at large.

Should I go by bus? The liberalization of the long-distance bus industry in France

- Transport Policy---2017---Thierry Blayac,Patrice Bougette

The opening up of the French long-distance bus industry is one of the outcomes of the Loi Macron. In this study, we build a unique data set of several representative bus routes and show that the effects of the liberalization have been encouraging in terms of fares, new entry, higher frequency, and higher quality. First, with regard to international routes that used to be under cabotage, we find that relaxing quantitative restrictions has led to the expected results on the Lyon–Torino and Paris–London routes. Second, with regard to domestic routes newly created from the Loi Macron, mostly all procompetitive expected variations in the variables have been observed, except for fares. Indeed, we show that bus operators used an initial aggressive pricing strategy to induce demand for the new services and then increased fares once customers became accustomed with the service.

Comparing public bus transport service attributes in Delhi and Mumbai: Policy implications for improving bus services in Delhi

- Transport Policy---2017---Hemant K. Suman,Nomesh B. Bolia,Geetam Tiwari

Delhi and Mumbai are large cities with a population of more than 15 million each. Both cities have large bus systems. However, the share of bus users is much higher in Mumbai as compared to Delhi. There is a need to enhance the share of bus users in Delhi to reduce the growing traffic externalities in the city. The objective of this work is to compare the existing bus services of Delhi and Mumbai, and identify feasible strategies to improve the bus system in Delhi. A total of 1347 and 1045 bus passengers were surveyed in Delhi and Mumbai respectively to compare the existing bus systems of both cities. Further, 14 transportation experts in Delhi were surveyed to identify feasible improvement strategies in Delhi. Multinomial Logit (MNL) model and Sign test were used to analyze the perception of bus users. The analyses reveal that overcrowding is a major concern in both the cities. But, unlike Mumbai, Delhi buses are perceived as less punctual and more time consuming by non-captive11Non-captive bus users are the bus commuters that have formal employment (in-service) and income more than INR 50,000 per month. users. As a result, share of non-captive users that travel by buses in Mumbai is higher as compared to Delhi. In terms of interventions, improved comfort, punctuality, and safety are considered relatively easier to achieve in Delhi as compared to reduction in travel time by experts. It is concluded that strategies to improve comfort, punctuality, travel time, and safety should be prioritized for bus services in Delhi.

Urban freight policymaking: The role of qualitative and quantitative research

- Transport Policy---2017---José Holguín-Veras,Johanna Amaya Leal,Barbara B. Seruya

The paper's fundamental tenet is that sound policymaking requires a solid understanding of how the target(s) of a policy would react to it. Transportation systems, particularly urban freight, are complex, heterogeneous, and often poorly understood by policymakers. Enacting policies that impact such a complex system can lead to ineffective efforts, and often, negative unintended effects. The best way to avoid these outcomes is to ensure that urban freight policy is supported by behavior research. To understand what kind of research most effectively supports sound policymaking, the authors conduct an ex-post assessment of qualitative and quantitative research techniques to determine which one more effectively predicts the behavioral changes that were seen by transportation users in response to transportation policies. The authors identify the key findings of five large research projects that, using qualitative and quantitative research, investigated the stated and revealed behavioral reactions of transportation users to pricing and incentive policies in the New

York City metropolitan area. The findings are catalogued and used to compare insights gained from the qualitative research, and from the quantitative research conducted afterwards. The analyses shed light on the potential and the limitations of both approaches, the synergies that exist between them, and their potential in assisting the development of effective urban freight policies.

Productivity growth in urban freight transport: An index number approach

- Transport Policy---2017---Kenneth Løvold Rødseth

Improvement of operational efficiency is a common goal of most governmental freight transport policies. Productivity and efficiency analysis consequently provides a sound knowledge base. This paper illustrates how axiomatic production theory can be applied to model road freight transport, and proposes a logistics efficiency measure as the function representation. Based thereon, a logistics productivity index that decomposes into technical, cargo mix, vehicle capacity, and efficiency changes is established to determine the rate and drivers of growth. Emphasizing urban logistics, the paper discusses the limited access to reliable data at the micro level and illustrates how local or regional freight transport can be evaluated applying pseudo panel techniques to national freight surveys. Correspondingly, the theoretical productivity index is implemented on a pseudo panel covering the 24 largest cities in Norway between 2008 and 2012, when 12 of them entered a collaboration agreement to promote efficient transport. The results indicate a modest 0.6% average productivity growth. Efficiency change is the key driver of growth, countered by technical stagnation and regress. Negative productivity growth is expected if this trend continues. Moreover, the results do not reveal productivity gains from urban agglomeration or membership of the collaboration agreement, suggesting that prevailing transport and land use policies have so far been unable to foster productivity growth in urban freight transport.

Measuring TOD around transit nodes - Towards TOD policy

- Transport Policy---2017---Yamini Jain Singh,Azhari Lukman,Johannes Flacke,Mark Zuidgeest,M.F.A.M. Van Maarseveen

Transit Oriented Development (TOD) can stimulate sustainable development by improving the interaction between transit and the surrounding development. Planning for TOD around existing transit nodes can only be effective if the assessment of the base situation is done properly. To do so, we propose a methodology to quantitatively measure existing levels of TOD in terms of a TOD Index, within walkable distance of a transit node, by measuring various criteria that define TOD. The value of a TOD index indicates the level to which TOD supporting characteristics are inplace around a transit node and what may be required to be improved so as to attain better transit orientation of thedevelopment. With these results in hand, TOD planning proposals can become more accurate by targeting investments on the most relevant or critical factors. The methodology was applied to the city region of Arnhem and Nijmegen, The Netherlands. A TOD index was calculated for areas around the 21 train stations in the region. The results help in drawing TOD policy for the region by identifying which station areas need more attention than others and at the same time, for each station, identifying specific TOD characteristic(s) that need improvement.

Does congestion negatively affect income growth and employment growth? Empirical evidence from US metropolitan regions

- Transport Policy---2017---Jangik Jin,Peter Rafferty

Traffic congestion has long been among the biggest economic problems in US metropolitan areas. Scholars have argued the importance of research focusing on transportation planning that aims to mitigate traffic congestion and reduce economic costs. However, most existing work has overlooked the interrelationship between congestion and economic components. With this

perspective, this study seeks to explore the interrelationship between congestion, income, and employment. To this end, we focus on 86 US metropolitan areas by utilizing a simultaneous equation model. The results show that there is an interrelationship between income growth, employment growth, and congestion growth, but their effects are somewhat different between periods of the economic boom in the 1990s and the economic recession in the 2000s. In addition, our findings clearly show that traffic congestion growth negatively affects income growth and employment growth. It is suggested that transportation policy that aims to reduce traffic congestion could provide economic benefits in terms of increasing employment growth as well as income growth.

Facing equity in transportation Network Design Problem: A flexible constraints based model

- Transport Policy---2017---Leonardo Caggiani,Rosalia Camporeale,Michele Ottomanelli

In transportation planning, solutions designed to meet objectives of equity and social inclusion have to be achieved. From this standpoint, most of Network Design Problem (NDP) models aim at identifying the optimal layout of transportation networks by deterministic bi-level problems formulation to reflect the different goals of at least two decision makers (the network users and the planner).

Implementing bikesharing systems in small cities: Evidence from the Swiss experience

- Transport Policy---2017---Ander Audikana,Emmanuel Ravalet,Virginie Baranger,Vincent Kaufmann

Research on bikesharing has largely focused on systems operating in large cities. Based on the Swiss experience, this paper explores the challenges that small cities (<100,000 inhabitants) face in implementing such systems. It presents four types of evidence: (1) historical evolution of bikesharing in Switzerland; (2) current configuration of the systems; (3) usage rate; and (4) strategies and policy choices. Results show that the challenges in terms of usage rate and economic sustainability of bikesharing systems in small cities are considerable. The density of bikesharing networks, the existing modal share for each city, and possible target groups are elements that must be taken into account to improve the performance of bikesharing systems. The Swiss experience also suggests that the ability to develop partnerships as well as communication and accountability play a critical role.

A strategic planning model for the passenger rail implementation process: The case of Mexico

- Transport Policy---2017---Monica Marina Mondragón-Ixtlahuac,Juan Carlos Cortés-Martínez,David Joaquín Delgado-Hernández

The development and growth of modern regions is based on the construction of infrastructure, where strategic planning plays a key role. Basically, a plan should be aligned with neighborhood regions in order to enhance their inhabitants' quality of life. Transportation is in the core of infrastructure efforts, because it represents a complex system with relationships between different actors, both internally and externally. In this piece of research, a comprehensive model for the implementation of an intercity train in the Mexican context is proposed. Covering a wide variety of phases, from the design activities through to the operation stages, non-prescriptive guidance is provided to lead the construction of passenger railway infrastructure projects. Unlike similar models developed in the European or North American settings, the one presented here considers the conditions and characteristics of the Latin-American countries, making it relevant for nations in the region. After analyzing its potential benefits, the optimization of resources can be expected as a result of its practical implementation.

How to get there? A critical assessment of accessibility objectives and indicators in metropolitan transportation plans

- Transport Policy---2017---Geneviève Boisjoly,Ahmed M. El-Geneidy

Accessibility, the ease of reaching destinations, is increasingly seen as a complimentary and in some cases alternative to the mobility oriented planning paradigm, as it allows capturing the complex interactions between land use and transportation systems while providing a social perspective on transportation planning. However, although accessibility has been extensively researched in the last decades, it is still largely marginalized in transportation planning practice. Accordingly, the aim of this study is to critically assess how accessibility is incorporated into metropolitan transportation plans and translated into performance indicators around the world, to ultimately derive policy recommendations. This research assesses 32 recent metropolitan transport plans from North America, Europe, Australia and Asia with respect to their goals, objectives and performance indicators. The results suggest that there is a trend toward a greater integration of accessibility objectives in transport plans, yet few plans have accessibility-based indicators that can guide their decision-making processes. Our findings show that in order to foster accessibility-based approaches to transportation planning, plans need to have clearly defined accessibility goals with a distinction between accessibility and mobility. Furthermore, multi-criteria analysis approaches including accessibility indicators need to guide the decision-making process. This study contributes to a greater understanding of the challenges and successes associated with implementing accessibility in transport planning.

Bang for the buck: Toward a rapid assessment of urban public transit from multiple perspectives in North America

- Transport Policy---2017---David Verbich,Madhav G. Badami,Ahmed M. El-Geneidy

We present a rapid assessment – using simple metrics based on publicly available data– of how effectively public transit agencies achieve key outcomes, and reconcile trade-offs among these outcomes, from the perspective of transit users, society and the agencies, in the largest 14 cities in North America with a population greater than three million. We assess the trade-offs among service quality, incorporating accessibility, service frequency, and comfort (which are important for transit users); transit ridership per capita (reflecting the society perspective); financial viability from the agency perspective; and affordability of fares for minimum-wage earners. We also assess the overall performance of transit in these cities, considering these perspectives in an integrated manner. Agencies vary widely in achieving and reconciling the above outcomes and trade-offs. Generally speaking, however, agencies that perform well (or badly) on one of these objectives and trade-offs also perform well (or badly) on the others, and in terms of overall transit performance. Finally, we discuss how our assessment may be improved upon, including in terms of better and more nuanced measures, in future work. We suggest that metrics be assessed uniformly and reported regularly across transit agencies, to track and reliably compare their performance over time; and that it would be desirable to understand how transit users and decision makers weigh the relative importance of key objectives, and to incorporate this understanding in assessments of transit performance.

Adapting spatial conditions to reduce car dependency in mid-sized 'post growth' European city regions: The case of South Limburg, Netherlands

- Transport Policy---2017---J. Wiersma,L. Bertolini,T. Straatemeier

Defining Car Dependency (CD) as a lack of travel choices to daily destinations, this paper explores how possible changes in the spatial context of a post-growth, mid-sized urban region can affect the conditions for CD. In the most rural parts of the region distances to schools and shops will exceed walking and biking distances. Distances to work will increase on average. With the bicycle and e-bicycle fewer jobs will be accessible, although the e-bicycle shows greater reach than public transport. Despite the population and job decline, more jobs will be accessible by car, as a result of current investments in road infrastructure. This is enhanced by the ongoing development of economic centers along the highways, resulting in a growing mis-

match between the rail system and the spatial economic structure of the region.

Do all transport modes impact on industrial employment? Empirical evidence from the Spanish regions

- Transport Policy---2017---Xavier Fageda,Marta Gonzalez-Aregall

This paper examines the direct, indirect and total impacts of all transport modes on industrial employment in Spain from 1995 to 2008. Through spatial econometric methods, this study finds that only ports are able to generate positive total effects, and that the increase in industrial employment that a region obtains from having more kilometers of motorways results in less industrial employment in other nearby regions. In contrast, airports and railways do not have a relevant impact on industrial employment. Overall, the level of employment in a country's manufacturing activities is related with those transport infrastructures that improve its international connectivity.

Does the demand response to transit fare increases vary by income?

- Transport Policy---2017---Caroline Miller,Ian Savage

Changes in ridership at individual stations on Chicago's mass-transit rail system following fare increases in 2004, 2006, 2009 and 2013 are analyzed to determine whether the ridership response varies with the per capita income in the neighborhood surrounding each station. We find mixed results. For one of the four fare changes the decline in ridership is greater in lower-income neighborhoods than it is in higher-income neighborhoods. However, the reverse is found for another fare increase. For two of the increases there is no relationship between income and ridership response. These mixed findings are in line with the prior literature that also found an inconsistent relationship. We hypothesize that there are two competing forces at work. On one hand lower-income groups are more constrained in their budget, but on the other hand they have fewer options for switching to other modes.

A fuzzy-based multi-dimensional and multi-period service quality evaluation outline for rail transit systems

- Transport Policy---2017---Nezir Aydin

As a public transportation mode, rail transit systems are one of the most preferred modes to avoid traffic congestion, especially during the rush hours. This paper proposes a service quality evaluation outline to measure rail transit lines' performances via passenger satisfaction surveys. The proposed method combines statistical analysis, fuzzy trapezoidal numbers and TOPSIS to evaluate service quality levels for multi periods. In total 17,769 surveys that are conducted in Istanbul in 2012, 2013, and 2014 are considered to determine the factors need to be improved. We provide recommendations to enhance the operation for specific lines and guidelines for future investments.

Horizontal bundling of infrastructure managers: The case of Portugal Infrastructure Company (roads and railways)

- Transport Policy---2017---Carlos Cruz,Joaquim Miranda Sarmento

This paper presents a rare event in transport infrastructures: the case of the Portuguese merger of its road and railway infrastructures companies. There is little evidence internationally of mergers in transport companies, and most of it is focusses on mergers in the same sector. This merger was based on the need for Portugal to optimize the use of its road and railway network, and also to increase the efficiency of the large investments made. The new company no longer positions itself as an investor and constructor of infrastructures, but is rather as a provider of multimodal mobility. This merger created scope for a better service, increased revenues, the reduction of costs, all through synergies which allow for a more financially-sustainable operator. This paper describes the merger, its strategic and operational objectives, and also the changes in the

management. This paper presents some policy implications, as mergers in transport sector infrastructures are not very common, particularly between different sectors.

Dutch politicians' attitudes towards Cost-Benefit Analysis

- Transport Policy---2017---Niek Mouter

In this study Dutch politicians were interviewed to derive their attitudes towards the use of Cost-Benefit Analysis (CBA) in the appraisal of transport projects. Dutch politicians' attitudes towards CBA are positive on the condition that CBAs are carried out in an impartial way. According to politicians CBA improves the planning process, serves as a countervailing power and produces a structured list of all the positive and negative effects of a project, amongst other things. Politicians criticize the use of CBA for killing political debates. Politicians were also asked to mention any solutions that they feel would improve their attitude towards CBA. Solutions suggested by politicians predominantly focus on: 1) ensuring that all effects that are covered in the CBA are scrutinized in an impartial way; 2) increasing the awareness and recognition of the elements of the political trade-off that are not covered by a CBA to diminish the probability that politicians will use CBA to kill a political debate.

Modeling heterogeneous vehicle ownership in China: A case study based on the Chinese national survey

- Transport Policy---2017---Zhao Zhang,Wen Jin,Hai Jiang,Qianyan Xie,Wei Shen,Weijian Han

Understanding the heterogeneity of vehicle ownership decisions in China is vital to accurately estimating the rate of vehicle ownership in its various provinces. In this study, we employ a latent class model to investigate the heterogeneity of vehicle ownership behavior, based on the China Household Finance Survey (CHFS) data. The results show that the households within the CHFS data can be categorized into two classes, and that households within each class rank the importance of socioeconomic variables in significantly different ways. For instance, with regards to deciding to own a vehicle, the households in Class 1 (the income-based class) rank household income as the most important factor, while the households in Class 2 (the comprehensive considerations class) rank household income, household status, and household size as being almost equally important. Further, the model coefficients also reveal the evolution of vehicle ownership in the near future, and how changes in macroeconomic variables may influence household vehicle ownership decisions. In application, the results can be used to assist policy makers in designing policies that control excessively high levels of vehicle ownership; they can also be used to help auto manufacturers pinpoint specific vehicle models to be sold in different regions of China, so as to drive the highest possible profits.

An empirical model for the psychology of deliberate and unintentional fare evasion

- Transport Policy---2017---Graham Currie,Alexa Delbosc

Fare evasion is a major source of revenue loss for public transport systems worldwide. In difficult economic times, it is more important than ever for public transport systems to reduce revenue loss through fare evasion to better target income and service supply to available budgets. This paper reports the results of a major project seeking to reduce fare evasion by better understanding the psychological factors causing evasion. The focus of the research is Melbourne Australia where some $Aust55M/€35Mp.a. (average 2005–2011) is lost through fare evasion representing 11.6% of ridership (in May 2012). The major aim of the research is to identify, using empirical, research the factors influencing passengers to either deliberately or unintentionally fare evade.

A comprehensive model of regional electric vehicle adoption and penetration

- Transport Policy---2017---Roxana J. Javid,Ali Nejat

This study focused on the adoption of Plug-in Electric Vehicles (PEVs) as a policy towards having a more sustainable transportation with lower Greenhouse Gas (GHG) emissions. The current paper aimed to explore potential factors that can be attributed to purchasing PEVs in order to estimate their penetration in 58 California counties. A Multiple Logistic Regression Analysis was applied to the 2012 California Household Travel Survey dataset, which includes both PEV and conventional car buyers' information, as well as some other secondary data sources. The model developed a broad set of factors including demographic and travel-related characteristics, socioeconomic variables, and infrastructural and regional specifications. The results identified that a household's income, maximum level of education in the household, the buyer's car sharing status, charging stations density, and gas price in the region can significantly impact PEV adoption. The model was validated using data from the 2012 Household Travel Survey conducted in the Delaware Valley region. With sufficient data availability, the methodology can be applied to evaluate changes in vehicle fleet composition and the levels of emissions in response to transportation policies. The model is believed to have a wide range of applications in electricity utilizing, gasoline/diesel retailing, and battery and automotive manufacturing. Additionally, the model can assist policy makers and transportation planners to optimize their infrastructural investments by identifying counties where the response of drivers to added charging station would be maximized, implying that larger benefits can be achieved.

Multimodal transportation infrastructure investment and regional economic development: A structural equation modeling empirical analysis in China from 1986 to 2011

- Transport Policy---2017---Xiushan Jiang,Xiang He,Lei Zhang,Huanhuan Qin,Fengru Shao

It is often hypothesized that transportation infrastructure investment have a positive impact on economic growth and that economic growth also imposes needs for further infrastructure development. This paper proposes a structural equation model (SEM) to comprehensively consider the bi-directional relationship between multimodal transportation investment and economic development. To account for the complicated interactions between transportation investment and economic growth, travel demand is added as an endogenous variable in the model system. In addition, the SEM model system is formulated with variables that reflect transportation supply in geographically adjacent areas to investigate spatial spillover effects. Empirical analysis based on a panel dataset at the reginal level in China from 1986 to 2011 is conducted. Results show transportation investment in the current region or other regions have impacts on economic growth, but are obviously different at national level and provincial level. These differences can be associated with phases of economic development, transportation investment policy, transportation infrastructure service level, spillovers from other regions, as well as reform policies carried out by the central government.

Parking for residential delivery in New York City: Regulations and behavior

- Transport Policy---2017---Quanquan Chen,Alison Conway,Jialei Cheng

Increasing demand for direct-to-home deliveries requires frequent delivery of small volumes; these deliveries generate growth in commercial vehicle curb side parking activities in dense urban areas. In New York City, which has extremely densely developed, mixed land uses, this new demand is only exacerbating already challenging conditions for urban delivery. This study utilizes a number of existing "open" datasets from New York City to compare commercial vehicle parking regulations and violations in commercial, mixed-use, and residential land use areas in New York City. Results suggest that parking availability – and resulting violation rates – vary considerably by area and roadway type, and that current curb parking regulations are not adequate to accommodate growing residential demand.

Looking beyond the mean for equity analysis: Examining distributional impacts of transportation improvements

- Transport Policy---2017---Tierra S. Bills,Joan L. Walker

Activity-based travel demand models can be useful tools for understanding the individual level equity impacts of transportation plans, because of their ability to generate disaggregate transportation measures. However, these capabilities have yet to be fully explored in public practice. In this paper we first discuss a general framework for performing transportation equity analysis using activity-based travel demand models, distributional comparisons, and incorporating equity standards. In addition, we demonstrate the advantages of distributional comparisons, relative to average measures. This demonstration uses the 2000 Bay Area Travel Survey and (activity-based) mode choice model. The findings show that distributional comparisons are capable of clearly revealing the winners and losers that result from transportation improvements, in comparison with average measures. The use of these results will likely result in different conclusions on transportation investments.

Comparing data quality and cost from three modes of on-board transit surveys

- Transport Policy---2017---Asha Weinsten Agrawal,Stephen Granger-Bevan,Gregory L. Newmark,Hilary Nixon

Many transit agencies invest substantial resources in surveying their passengers to generate data used for planning, marketing, and equity analyses. Within the industry, there is considerable interest in replacing traditional paper-based self-complete surveys with new approaches that might lower costs or generate better quality data. However, very limited research has been done to identify the relative performance of different transit passenger survey modes. This paper begins to fill that gap.

How can public transit get people out of their cars? An analysis of transit mode choice for commute trips in Los Angeles

- Transport Policy---2017---Sandip Chakrabarti

U.S. public transit agencies struggle to attract and retain riders. Unprecedented public investments have been made over the past several decades for expanding and improving transit service across cities. Unfortunately, however, there is no evidence of increase in ridership once growth in population and aggregate travel demand are accounted for. Consequently, the quest for boosting patronage continues. The challenge, experts argue, is to attract people out of cars.

Platform intermediation to sponsor alternative fuel vehicles

- Transport Policy---2017---Antje-Mareike Dietrich

Many governments promote green technological innovation within the automobile sector as a means of combating climate change. Most of these innovations are driven by alternative fuels. Subsidies for buyers and governmental investment in service infrastructure are widely used. This paper investigates the question of efficient market intervention by considering the two-sided market character of the automobile market. This study shows that network effects, competitive effects triggered by an increase in automobile users, decreasing marginal utilities of additional service stations and, in the case of governmental support, environmental externalities determine the welfare-efficient extent of platform intermediation. Regarding green technologies, the results of the analysis indicate that governmental promotion of service infrastructure is reasonable, although governments should be cautious about subsidizing buyers. Intervention in favor of dirty technologies is rarely justifiable.

Changing travel behaviour in urban China: Evidence from Nanjing 2008–2011

- Transport Policy---2017---Jianxi Feng,Martin Dijst,Bart Wissink,Jan Prillwitz

The unprecedented pace and scale of economic, social and spatial transformations in urban China have by now been well documented. But while it is highly likely that these changes relate to far-reaching alterations in travel behaviour as well, so far this topic has received much less attention. With this paper, we aim to help fill this gap through the following research questions: What are the main changes in travel behaviour in Nanjing, China; and how can we explain these changes? We answer these questions on the basis of a study of repeated cross-sectional data from the Nanjing Residents Travel Survey (NRTS) of 2008 and 2011. This leads to three main conclusions: first, changes in the urban form and transport systems of Chinese cities lead to larger daily travel distances and a considerable increase of transport by private cars and public transport at the expense of non-motorised transport modes; second, the impacts of the built environment and socio-demographics as determinants for travel behaviour change in different ways over time; and third, changes are not the same for all groups as there is a widening gap in travel behaviour of low-income groups and middle and high-income groups. We discuss the consequences for social exclusion and environmental sustainability.

Transport policy in Belgium: Translating sustainability discourses into unsustainable outcomes

- Transport Policy---2017---Kobe Boussauw,Thomas Vanoutrive

In this paper, we challenge the so-called orthodox sustainable transport vision, by confronting it with two possibly troublesome issues; (1) the urge for growth, and (2) the question of social justice. On the basis of seven cases from Belgium, a country with a strong commuting culture and a traditional tendency towards multimodality, we show that the conversion of a sustainability discourse into policy actions often leads to realisations which are essentially to be labelled as non-sustainable. On the one hand we discuss a number of cases where additional travel is unintentionally stimulated, with an unforeseen contribution to global warming as a result. On the other hand, we refer to cases where subsidies for sustainable transport modes seem to be geared towards wealthier groups, while poorer groups are exposed to additional expenses. The cases cover different steps of the policy process: (1) problem definition and selection of indicators, (2) the choice of a particular solution, and (3) the design of the chosen plan or programme, and illustrate the mechanisms underlying goal-displacements.

Millennials and car ownership: Less money, fewer cars

- Transport Policy---2017---Nicholas J. Klein,Michael J. Smart

Americans are driving less. The changes are most pronounced among Millennials, those born in the 1980s and 1990s. Much ink has been spilled debating whether these changes in travel behavior are due to changing preferences or economic circumstances. In this paper, we use eight waves of data from the Panel Study of Income Dynamics (PSID) to examine recent changes in auto ownership among US families with a particular focus on Millennials. We find that today's young adults do own fewer cars than previous generations did when they were young. However, when we control for whether young adults have become economically independent from their parents, i.e. left the nest, we find that economically independent young adults own slightly more cars than we would expect, given their low incomes and wealth. We caution planners to temper their enthusiasm about "peak car," as this may largely be a manifestation of economic factors that could reverse in coming years.

Integrating electric vehicles and residential solar PV

- Transport Policy---2017---Makena Coffman,Paul Bernstein,Sherilyn Wee

This study compares the lifecycle costs and greenhouse gas (GHG) emissions of electric vehicle (EV) ownership to that of other popular and similar cars in Hawaii. It focuses on the interaction of EV costs with

Hawaii's rapid solar PV uptake, using a scenario planning approach for future fuel and electricity prices. EVs include battery electric vehicles (BEVs) and plug-in hybrid electric vehicles (PHEVs). We find that the total cost of ownership (TCO) of EVs tends to be higher than their internal combustion engine vehicle (ICEV) or hybrid electric vehicle (HEV) counterparts. Once accounting for the federal tax credit, however, some EVs become relatively cost-effective. Moreover, access to residential solar PV makes EVs quite attractive. Layering the federal EV subsidy with solar PV charging makes the full lifecycle cost of the Nissan Leaf about $1200 less expensive than the next lowest cost vehicle, the Toyota Corolla (over a 150,000-mile lifetime). Nonetheless, it may be too early to tout EVs in Hawaii as a GHG abatement strategy. Based on today's mix of electricity generation, the best performing PHEV and BEV emit 2 and 5 MTCO2, respectively, more over their lifetime than the best performing HEV. However, many EVs become on par with the high performing HEVs when considering Hawaii's adoption of aggressive renewable energy goals for the electric sector. If the electric sector meets its 2030 Renewable Portfolio Standard (RPS) target of 40% renewables through low carbon sources like wind and solar, the Toyota Plug-in Prius, Nissan Leaf and Toyota Prius become comparable in terms of their GHG impacts. Integrating residential solar PV, even for just weekend charging, makes all EVs outperform the Toyota Prius in regards to lifetime GHG emissions. In addition, at this level of charging from renewable sources of electricity, all BEVs now outperform PHEVs. The environmental benefits of EVs depend critically on the electricity system from which they derive their power. Given the wide variation in the mix of electricity generation throughout the U.S., and even throughout the day with the adoption of intermittent sources of renewable energy, additional policy tools are needed to match places and times with high levels of renewables with EV charging. In particular, we suggest that 1) a regional approach to EV subsidies that can account for the emissions intensity of electricity systems may be more appropriate than the current blunt federal tax credit; and 2) adoption of time-of-use pricing that accounts for GHG impacts may be critical to supporting EVs as a GHG abatement tool. Currently, however, EVs are a relatively costly GHG abatement strategy.

State and federal fuel taxes: The road ahead for U.S. infrastructure funding

- Transport Policy---2017---Jerome Dumortier,Fengxiu Zhang,John Marron

Taxes on gasoline and diesel are the primary sources of transportation funding at the state and federal level. Due to inflation and improved fuel efficiency, these taxes are increasingly inadequate to maintain the transportation system. In most states and at the federal level, the real fuel tax rates decrease because they are fixed at a cents-per-gallon amount rather than indexed to inflation. In this paper, we provide a forecast on state and federal tax revenue based on different fuel taxation policies such as indexing to inflation, imposing a sales tax on gasoline and diesel, or using a mileage fee on vehicles. We compare how those taxation policies perform compared to the policies states use currently under different macroeconomic conditions relating to the price of oil, economic growth, and vehicle miles traveled. The baselines projections indicate that between 2015 and 2040, fuel tax revenue will decrease 42.9–50.5% in states that do neither index taxes to inflation nor impose a sales tax. Revenue will decrease 10.3–33.4% that currently impose a sales tax but do not index to inflation. The decrease for states that index to inflation is 3.4–16%. For all states, the median increase in revenue in 2040 compared to 2015 is 62% from switching to a mileage fee. Indexing fuel taxes to inflation in addition to imposing a states' sales tax increases revenue significantly but suffers from a continuous decline in the long-run due to increased fuel efficiency. Our results indicate that although a mileage fee is politically and technologically difficult to achieve, it avoids a declining tax revenue in the long-run.

Layering and parallel policy making – Complementary concepts for understanding implementation challenges related to sustainable mobility

- Transport Policy---2017---Karolina Isaksson,Hans Antonson,Linnea Eriksson

This paper is focused on implementation challenges related to the integration of sustainable mobility in strategic local/regional land use and transport planning. The work was based on a case study of Stockholm, Sweden, focusing on four current plans and strategies of key importance for sustainable mobility. We identify and discuss implementation challenges related to sustainable mobility using a theoretical framework from the policy integration literature, with a focus on the dimensions of "layering", "drift" and "exhaustion" (Rayner & Howlett 2009). The empirical analysis led us to identify a complementary dimension which we call 'Parallel policy making'. The parallel policy making reflects a fundamental lack of integration of sustainable mobility in policies and plans of strategic importance, which hinders effective policy integration. Altogether, we conclude that a better insight into the practice of parallel policy making is crucial for development of more effective implementation strategies for sustainable mobility in Stockholm and elsewhere.

A stakeholder analysis of the automotive industry's use of compressed natural gas in Nigeria

- Transport Policy---2017---Olufemi O. Ogunlowo,Abigail L. Bristow,M. Sohail

Nigeria experiences a perennial shortage of transportation energy despite being the world's eighth largest producer of crude oil and the seventh largest proven reservoir of natural gas. Partly as a result, the Nigerian government proposed the use of compressed natural gas (CNG) as an automotive fuel in 1997 as part of the efforts to harness the country's natural gas resources and address transportation energy challenges. However, the rate of adoption has been very low with natural gas vehicles constituting 0.04% of the national vehicle fleet. This paper presents a stakeholder analysis derived from interviews with senior executives of the leading organisations involved in the energy and transportation sectors in Nigeria. Analysis revealed thirty-one barriers and twenty-six policy proposals that were categorised into eight and four themes respectively. While there is a rarity of agreement across all stakeholder groups, we observed consensus on the suggestion for the removal of the subsidy on petrol and the need for the establishment of a coordinating agency to drive the use of CNG. The paper offers specific recommendations for the reform of the energy and transportation sectors, the introduction of fiscal and operational incentives and the creation of public awareness.

The road mileage user-fee: Level, intensity, and predictors of public support

- Transport Policy---2017---Denvil Duncan,Venkata Nadella,Stacey Giroux,Ashley Bowers,John D. Graham

The road mileage user-fee is viewed as a promising alternative to the fuel tax, which in recent years has proven to be an inadequate means of financing road infrastructure. Public opposition is often thought to be a barrier to the political feasibility of the road mileage user-fee. We use a nationally representative public opinion survey to investigate the level and intensity of support for replacing the fuel tax with a general mileage user-fee and with three specific modes of administration of the fee. Our results confirm that public opposition to the adoption of mileage user-fees to address the growing revenue inadequacy of fuel taxes is high, with the number of opponents exceeding the number of supporters by a ratio of 4-1. Furthermore, public support is somewhat sensitive to respondents' belief in the user-pays principle and perceptions of the characteristics of the mode of administration. Additionally, relative to supporters, those who oppose the mileage user-fee are more likely to state that they are willing to take political action against the adoption of mileage user-fees.

Improving paratransit service: Lessons from inter-city matatu cooperatives in Kenya

- Transport Policy---2017---Roger Behrens,Dorothy McCormick,Risper Orero,Marilyn Ommeh

While providing essential access for large portions of city populations, the quality of paratransit services in Sub-Saharan African cities is poor. Poor quality of service can be attributed to two features of the paratransit business operating model: driver remuneration on the basis of a daily 'target system'; and cash-based business management in which vehicle depreciation is ignored as an operating expense. In Kenya, the voluntary organisation of fragmented inter-city matatu businesses into Savings and Credit Cooperatives (SACCOs) has resulted in improved service, regulatory compliance and technology adoption, but little is known of how they operate. The aim of this paper is to gain insight into how the Kenyan inter-city matatu SACCOs are organised and have improved services, and to explore the transferability of this experience and the lessons it offers. The exploratory nature of the study, and constrained resources, necessitated that the research adopt a qualitative case study method. It was found that most of the case study SACCOs have addressed the root causes of poor service quality by shifting the remuneration of drivers from daily cash targets to salaries, and by requiring vehicle depreciation costing through compulsory contributions to the cooperative's capital savings from which vehicle acquisition and repair loans can be derived. Due to the particular shuttle-like nature of inter-city services and the considerable institutional support that exists in Kenya for cooperatives, the direct transfer of successes to other contexts is likely to prove difficult. Identifying the features of the inter-city SACCO model that have led to paratransit service improvements, and attempting to replicate these, may therefore be more effective than attempting to replicate the model in its entirety. These features are argued to be operator consolidation, accompanied by salaried drivers, systematic vehicle monitoring and compulsory vehicle depreciation costing. They can be adopted in other forms of paratransit organisation and regulation, but will require considerable adaptation to context.

Understanding the effects of economic crisis on public transport users' satisfaction and demand

- Transport Policy---2017---Dimitrios Efthymiou,Constantinos Antoniou

This paper extends the research that begun in 2008 by the authors, on users' perception of public transport quality. The objective of the current paper is to investigate the impact of crisis on public transport users' satisfaction, and demand. Data from two user satisfaction surveys that took place in Athens in 2008 and 2013 are used for the analysis. A hybrid choice and latent variable model is developed, to model the increase of public transport demand within the last five years. As exploratory variables are used demographic characteristics and travel attributes. The satisfaction of the users about the quality of public transport service is included as latent variable into the model.

Explaining voting behavior in the Gothenburg congestion tax referendum

- Transport Policy---2017---André Hansla,Erik Hysing,Andreas Nilsson,Johan Martinsson

The Gothenburg congestion tax was introduced in 2013 and later subjected to a consultative referendum where the citizens, despite getting first-hand experience with the scheme, rejected it. This article explains voting behavior in the referendum using both self-expressed motives and five nested models to test various explanations suggested in previous research. Drawing on an extensive longitudinal study, we conclude first that although a majority voted against the tax in the referendum, attitudinal preferences have become more positive since its introduction – supporting previous findings and hypothesis of familiarity effects. Second, we present a model for voting behavior that explains significant portions of the variance, concluding that it is not the outcomes of the charges that are important, but rather if the charges are in line with basic values, if the uses of the revenues (in this case, infrastructure

investments) are supported, and if the institutions and processes introducing the charges are perceived as legitimate, trustworthy, and responsive. The article ends with general policy recommendations on the basis of these findings.

Project-level accessibility analysis for land-use planning

- Transport Policy---2017---Jonathan Levine,Louis Merlin,Joe Grengs

The concept of accessibility has made inroads into planning practice, largely at the system level. That is, accessibility is measured or modeled for current or future regional transportation and land-use scenarios for evaluation or broad policy guidance. Yet system-level scenarios cannot readily be applied to the project-by-project decision-making that characterizes the majority of transportation and land-use planning decisions. Accessibility evaluation of individual transportation or land-development projects differs from system-level analysis in essential ways and thus requires specialized tools.

Road fuel taxes in Europe: Do they internalize road transport externalities?

- Transport Policy---2017---Georgina Santos

All countries in Europe have road fuel taxes and these account for roughly half of the net fuel price. We compare current road fuel taxes and corrective taxes, estimated on the basis of negative externalities from road transport for 22 European countries, taking into account the effect of fuel taxation on fuel efficiency. We focus on cars running on diesel or petrol and commercial vehicles running on diesel. If fuel taxes were intended to internalize all road transport externalities, then a number of countries could be considered to be on the right path already in what respects petrol taxation. Diesel, on the other hand, seems to be under-taxed in all 22 countries. Petrol tax increases would be in order in some countries and diesel tax increases would be in order in all 22 countries, at least as a bridge until fine-tuned policies, such as widespread peak congestion pricing or pay-as-you-drive insurance can be put in place.

Accessibility instruments in planning practice: Bridging the implementation gap

- Transport Policy---2017---Cecília Silva,Luca Bertolini,Marco te Brömmelstroet,Dimitris Milakis,Enrica Papa

Accessibility concepts are increasingly acknowledged as fundamental to understand cities and urban regions. Accordingly, accessibility instruments have been recognised as valuable support tools for land-use and transport planning. However, despite the relatively large number of instruments available in the literature, they are not widely used in planning practice.

What is the evidence concerning the gap between on-road and Environmental Protection Agency fuel economy ratings?

- Transport Policy---2017---David L. Greene,Asad J. Khattak,Jun Liu,Xin Wang,Janet L. Hopson,Richard Goeltz

U.S. government fuel economy tests are used for two primary purposes: 1) to monitor automobile manufacturers' compliance with fuel economy and greenhouse gas emissions standards and 2) to inform consumers about the fuel economy of passenger cars and light trucks. This study analyzes a unique database of 75,000 fuel economy estimates self-reported by customers of the U.S. government website www.fueleconomy.gov to evaluate the effectiveness of the government's estimates for these two purposes. The analysis shows great variability in individuals' own fuel economy estimates relative to the official government estimates with a small bias relative to the sample average. For consumers, the primary limitation of government fuel economy estimates is imprecision for a given individual rather than bias relative to the average individual. The analysis also examines correlations between individuals' fuel economy estimates and specific technologies, vehicle class, driving style, method used to calculate fuel economy, manufacturer, and state. Gasoline, hybrid and

diesel vehicles were separately evaluated. There is some evidence that the shortfall between test cycle fuel economy estimates (used to measure compliance with regulations) and in-use fuel economy estimates (such as those provided by customers of www.fueleconomy.gov) has been increasing since 2005. If this trend continues, it could affect the benefits realized by fuel economy and greenhouse gas emissions standards. A scientifically designed survey of in-use fuel economy is needed to insure that an unbiased sample is collected and that fuel economy is rigorously and consistently measured for all vehicles. The potential for information technology to enable more precise prediction of individual fuel economy should be explored.

An exploratory study of hours of service and its safety impact on motorists

- Transport Policy---2017---Jason R. Anderson,Jeffrey D. Ogden,William A. Cunningham,Christine Schubert-Kabban

There were an estimated 438,000 truck crashes in 2014 that led to approximately 110,000 injuries and 3903 deaths (HTSA and DoT, 2014). Truck driver fatigue has been cited as a major reason for these accidents Federal Motor Carrier Safety & Administration, 2015 (). In July 2013, the Federal Motor Carrier Safety Association (FMCSA) revised its hours of service (HOS) regulatory policy, which restricts the number of duty and driving hours a truck driver can operate in order to reduce the fatigue related accidents involving trucks. The revision changed the unlimited restart (allows truck drivers to reset their duty time log back to zero) provision by restricting it to 1 restart per 168h (1 week) and added that the restart must span two consecutive 1a.m. to 5a.m. periods. Lawmakers suspended these two aspects of the restart provision in the Consolidated and Further Continuing Appropriations act on December 16, 2014 until more analysis was completed on the efficacy of these regulations due to unintended consequences that allegedly negatively affected motorist's safety. Countering truck driver fatigue is an important issue and an extremely difficult task because of the many confounding aspects that can cause fatigue. The new regulation set forth in July 2013, was supposed to lessen fatigue and thus reduce accidents caused by truck drivers. The current HOS regulation was in place for approximately 16 months, producing enough data for a statistical analysis of its effects on truck driver safety. This research found that by comparing truck driving safety data prior to the change in July of 2013 (the unlimited restart provision) to truck driving safety data during the enactment of the 1 restart per 168-h restriction and 1a.m. to 5a.m. provision that the percent of accidents caused by truck drivers did not decrease. Furthermore, this research found that the HOS changes implemented on July 1, 2013 have not led to a significant change in accidents involved and caused by truck drivers. These results suggest that other factors appear to be linked to motorists' safety, rather than the updated HOS regulation.

Railway transit services in Algiers: priority improvement actions based on users perceptions

- Transport Policy---2017---José Luis Machado-León,Rocío de Oña,Tahar Baouni,Juan de Oña

The Algerian Government has recently promoted transportation projects such as the Algiers metro and tramway services that represent a key part of its political and financial effort to improve mobility in the country. However, public transport systems' profitability requires a thorough diagnosis of the services provided based on users' perceptions and expectations. That is, to invest money according to users' requirements. A methodological approach, which combines an Importance-Performance Analysis and a decision tree model, is proposed as means of analyzing rail services performance in Algiers and identifying the aspects that should be prioritized for improvement actions. Three railway transit services were analyzed in Algiers: the tramway, the metro and the commuter rail. More than 450 surveys were collected per mode. After applying the proposed methodology, results show that there are lines of action common to the three services, and specific strategies that may improve customer satisfaction

and customer loyalty with the three railway transit services in Algiers. This is the first full experience analysis about service quality in Algiers' railways transit modes. The proposed two-step methodology is, for the first time, applied for analyzing service quality in public transport.

A CO2-fund for the transport industry: The case of Norway

- Transport Policy---2017---Daniel Ruben Pinchasik,Inger Beate Hovi

Emissions from heavy trucks constitute a large and increasing share of Norwegian CO2-emissions. The Norwegian Green Tax Commission recently presented recommendations for emission reductions, largely confined to 'sticks', in the form of taxes and levies. Another way to reduce emissions and to force the phase-in of alternative propulsion systems on heavy trucks, is the use of more positive measures for the industry. In Norway, establishment of a CO2-fund for the industry, modeled after the existing Norwegian NOx-fund, has been proposed. Rather than paying a levy on every litre fuel consumed, participants to the fund will pay a (lower) participation fee in exchange for committing to emission reducing measures. The fund's proceeds will then be used on (partial) subsidies towards the additional investment costs for renewable-based rolling stock and infrastructure. The analysis in this study shows that it is most cost-effective to direct the fund's subsidies towards biodiesel alternatives, but that the availability of sustainable fuel might become a challenge. A fund should therefore also consider subsidizing more expensive renewable technologies based on biogas, electricity, or hydrogen. Although some of these alternative technologies still face several techno-economic barriers, a CO2-fund can contribute to increasing market demand and to achieving critical masses.

Is congestion pricing fair? Consumer and citizen perspectives on equity effects

- Transport Policy---2016---Jonas Eliasson

This paper discusses and analyses whether congestion charges can be considered to be "fair" in different senses of the word. Two different perspectives are distinguished: the consumer perspective and the citizen perspective. The consumer perspective is the traditional one in equity analyses, and includes changes in travel costs, travel times and so on. Using data from four European cities, I show that high-income groups pay more than low-income groups, but low-income groups pay a larger share of their income. I argue that which of these distributional measures is most appropriate depends on the purpose(s) of the charging system. The citizen perspective is about individuals' views of social issues such as equity, procedural fairness and environmental issues. I argue that an individual can be viewed as a "winner" from a citizen perspective if a reform (such as congestion pricing) is aligned with her views of what is socially desirable. Using the same data set, I analyse to what extent different income groups "win" or "lose" from a citizen perspective – i.e., to what extent congestion pricing is aligned with the societal preferences of high- and low-income groups. It turns out that these differences are small, but overall, middle-income groups "win" the most in this sense.

Curbside parking pricing in a city centre using a threshold

- Transport Policy---2016---Rong Zhang,Lichao Zhu

How to set reasonable pricing for curbside parking, while balancing the demand for and the supply of parking spaces, is a troublesome problem for metropolitan areas such as Shanghai. This paper addresses this problem from the perspective of choice behaviour. Our research focuses on the parking charge cut-off point, which is the minimum or maximum acceptable value that a driver sets for an attribute. A multiple linear regression model reveals that older and inexperienced drivers are more likely to ignore the charge cut-off points they themselves have set. Discrete choice models incorporating charge cut-offs are further used to analyse charge implications for parking choice behaviour. Our results show that the precision of the conventional model is improved by including a cut-off. At the same time, parking charges, the time spent searching for a

parking space, and walking time after finding the parking space, all have a significantly negative influence on parking choices. Finally, a pricing scheme is put forward to reduce the occupancy rates of curbside parking to 85%. This contention is based on parking pricing models with cut-offs. We find indications that not accounting for charge cut-off points, when they are in fact present, may lead to inaccurate willingness-to-pay and upwardly biased pricing schemes.

Uncertainty-based prioritization of road safety projects: An application of data envelopment analysis

- Transport Policy---2016---Aliasghar Sadeghi,Abolfazl Mohammadzadeh Moghaddam

The use of ranking methods in safety retrofit projects, in order to reduce uncertainty to an acceptable level, is a crucial problem. This paper presents a multidimensional method for prioritizing safety retrofit projects, in which uncertainty is taken into account in benefits estimation (accident reduction) and costs. Data Envelopment Analysis (DEA) with uncertainty assessment is described to help decision makers select the most cost effective projects. It is different from other ranking methods in that this approach adds standard errors of crash modification factor and crash costs in selecting process as well as the average values. Furthermore, this model is applied to a sample of intersections that are required to improve safety. Results have revealed that the proposed model is a suitable tool in selecting efficient projects when tolerances in accident reductions and project cost are incorporated. Comparative study between the proposed model and incremental benefit cost analysis and integer programming methods has also indicated that some changes in the list of selected projects considering the uncertainty impacts of data were observed. This analysis allows such safety projects to be identified. This also provides more complete information for safety analysts to allocate a limit budget to more efficient safety projects.

City of Motorcycles. On how objective and subjective factors are behind the rise of two-wheeled mobility in Barcelona

- Transport Policy---2016---Oriol Marquet,Carme Miralles-Guasch

In the past ten years, the number of motorbikes in Barcelona, Spain has grown to represent nearly one out of four vehicles in the city, making it now the highest two-wheeled motorisation rate of all European cities. In this study we explore the motorcycle phenomenon from a threefold perspective, following the temporal trend of this growth, seeking the sociodemographic profiles of its users, and assessing their subjective motivations that explain the use of this specific mode of transport. We first measure the impact of motorcycles along a 2004–2012 timeline that covers both pre- and post-crisis data. Secondly, logistic and multinomial regression models are implemented to analyse the drivers and significant predictors of motorbike ownership and modal choice. Finally, we compare how motorcyclists and car drivers rated their main use of transport and how they evaluated the inherent risk of riding and driving, respectively. The results highlight the importance of motorized two-wheeled modes of transport in everyday mobility and also emphasize the role of the affordability factor to help understand the rise of this kind of transport, even in times of economic crisis. Overall. motorcycle use is explained by a set of objective and subjective factors that are seeking to resolve specific and unique transportation needs, and that are not equal to those of car drivers.

Planning for transportation equity in small regions: Towards meaningful performance assessment

- Transport Policy---2016---Alex Karner

Regional transportation planning agencies seek to achieve multiple objectives simultaneously including consensus on key issues, compliance with relevant laws and regulations, and improvements in the congestion, air quality, and safety performance of the transportation system. Some performance areas lend themselves

well to operationalization while others do not. One area that has received comparatively little study is the assessment of a plan's impacts on environmental justice and social equity. Although research on regional planning usually emphasizes larger metropolitan areas and agencies, these issues are especially relevant in smaller regions where planners lack the capacity for innovation and careful analysis. Further, the transit services on which disadvantaged populations depend are often lacking or non-existent in less-populated regions. Understanding how planners in these locations undertake social equity-related analyses and providing suggestions for improvement is thus an important endeavor. While prior work has assessed whether, and to what extent, equity objectives are included in plans, there are few detailed investigations of the key analytical choices that shape equity outcomes. This paper fills this important research gap, providing such an analysis of existing practice in a largely rural region in California, the San Joaquin Valley, as well as recommendations for future analyses aimed at improving the consistency between equity analyses and the real-world impacts of transportation plans.

A network governance approach to transit-oriented development: Integrating urban transport and land use policies in Urumqi, China

- Transport Policy---2016---Rui Mu,Martin de Jong

Transit-Oriented Development (TOD) is not only an urban planning tool but also a complex policy process that involves a network of actors with diverse perceptions, goals, resources and strategies. In such a multi-actor setting, effective implementation of TOD requires governance instruments and strategies aiming for the promotion of actor mutual recognition, goal alignment, information communication and the management of actor interaction. Most of the empirical research on TOD in China has focused on economically developed cities in the prosperous East of the country. To what extent and how cities in China's far West, which feature a different developmental trajectory in their land use, housing provision and transport patterns, adopt TOD still remains unknown territory. This article makes a beginning with the exploration of this topic by studying the Urumqi city in Xinjiang Uygur Autonomous Region. Based on network governance theory, this article investigates the governance strategies used in Urumqi to integrate urban transport and land use policies. It presents a network governance model consisting of three rungs and concludes that a coordinative umbrella organization plays a significant role in eradicating problems of early substantive selection and perceptional fixation; successful policy integration requires careful goal alignment strategies that force actors to shift from go-alone strategies to interaction and concerted actions; institutional design and trust-building are also imperative for joint action.

Decomposing the influencing factors of energy consumption in Tunisian transportation sector using the LMDI method

- Transport Policy---2016---Houda Achour,Mounir Belloumi

Due to rapid economic development and accelerated urbanization, Tunisia's transport sector has experienced a dramatic growth that leads to excessive demand for fossil fuel energy. This study identifies the driving factors and measures their corresponding contributions in transportation energy consumption for the case of Tunisia by using the logarithmic-mean Divisia index method (LMDI) over the period 1985–2014. The transport related energy consumption is decomposed into energy intensity, transportation structure effect, transportation intensity effect, economic output, and population scale effects according to the driving mechanism. Results indicate that the overall effect of economic output, transportation intensity, population scale, and transportation structure on energy consumption is positive, whereas the overall effect of energy intensity is negative. It was shown that energy intensity played the dominant role in decreasing energy consumption during the study period. Improving the transport intensity exerts significant effect on saving energy. Our empirical findings provide scientific supports for the policy measures based on low greenhouse gas emissions integrated transport.

Social and environmental sustainability of travelling within family networks

- Transport Policy---2016---Ori Rubin,Luca Bertolini

Travelling for the purpose of face-to-face meetings with family members achieves an array of societal and individual benefits. However, much like other types of travelling, it may have a negative impact on the environment, especially when it is performed by car. But how to decrease these negative effects while facilitating this important type of interaction has not been addressed before. The programme suggested by the Sustainable Mobility paradigm seems inadequate in the context of family meetings. In this paper we take a first step. We introduce two simple indicators for assessing the performance of travel mobility within family networks in terms of social and environmental sustainability: frequency of contact and total CO2 output of the related travel. Using data from the Netherlands, a Structural Equation Modelling analysis is applied to identify the effect of individual characteristics, car ownership and residential location on the two indicators. The main findings are that car ownership is associated with low environmental sustainability but with high social sustainability, and that living in core cities and distance between parents and adult children are associated with low sustainability in both dimensions. These results serve as input for a discussion of the opportunities and constraints for increasing sustainability in travelling for meetings in family networks.

Bet big on doubles, bet smaller on triples. Exploring scope economies in multi-service passenger transport companies

- Transport Policy---2016---Graziano Abrate,Fabrizio Erbetta,Giovanni Fraquelli,Davide Vannoni

In this paper, using a sample of Italian bus and coach operators, we investigate the presence and the magnitude of scale and scope economies in the provision of passenger transport services. The estimates of a Composite Cost Function econometric model highlight the presence of global scope and scale economies only for multi-service operators (providing urban, intercity and for-hire bus and coach transport services) with output levels lower than the ones characterising the 'average' firm. This indicates that relatively small, specialized companies would benefit from cost reductions by evolving into multi-service firms providing urban, intercity and coach renting services. For operators of a bigger size, scope economies can be still exploited by linking urban and intercity services or by linking intercity services and coach renting, whereas the couple urban service-coach renting is associated with strong diseconomies of scope. Our results can help policymakers (that must define the boundaries of the service area to be tendered) and firms (that, as a result of the ongoing liberalization process, have increased opportunities to invest in regulated and non-regulated passenger transport activities) to make informed decisions.

Airport rail links and economic productivity: Evidence from 82 cities with the world's 100 busiest airports

- Transport Policy---2016---Jin Murakami,Yurika Matsui,Hironori Kato

This article examines the relationship between airport rail links and economic productivity in 82 cities with the world's 100 busiest airports across 10 regions. Our multilevel models for gross metropolitan product per capita reveal that cities with airport rail links or shorter access time enhanced by rail have higher productivity than those without airport rail links or with longer access time by other modes. This macro-geographic snapshot could justify greater investment in airport rail link infrastructure and dedicated express services for the wider economic benefits derived from airport-connected accessibility premiums and agglomeration economies in central business districts.

Identifying and characterizing potential electric vehicle adopters in Canada: A two-stage modelling approach

- Transport Policy---2016---Moataz Mohamed,Chris Higgins,Mark Ferguson,Pavlos Kanaroglou

This article presents a two-stage structural equation modelling and segmentation process to identify likely electric vehicle adopters in Canada. Using a sample of 3505 households who have expressed an interest in the future purchase of an economy car, the paper operationalizes an extended version of the Theory of Planned Behaviour in a structural equation model to quantify the impacts of personal beliefs on individual adoption intention towards electric vehicles. Model results show that attitude, perceived behavioural control, and norms (moral and subjective) have significant direct impacts on behavioural intention, while a household's concern for the environment has an indirect impact. Age, level of employment, and employment status are identified, among other variables, to significantly influence the adoption intention. Collectively, findings indicate that beliefs vary across socioeconomic and demographic characteristics. To best characterize the most likely group of early adopters, we then conduct a Two-Step cluster analysis on households with a high demonstrated intention to adopt EVs. This results in three distinct socio-economic and demographic segments: Typical Early Adopters, Emerging Early Adopters, and Interested Retirees. Each have their own unique socioeconomic and demographic profile. Insights derived from this work can help tailor marketing strategies that are important for accelerating the adoption of electric vehicles in the future.

How may incentives for electric cars affect purchase decisions?

- Transport Policy---2016---Christian Rudolph

In this paper, the impact of five different incentives for buyers of zero emission vehicles (ZEV) is investigated with a stated choice experiment. The tested incentives are direct subsidies, free parking, a separate CO2 tax, an increase of fuel costs by tax elevation, and an increase of available charging infrastructure. By implementing the mobility patterns of the respondents, it was possible to simulate estimations of ecological impact and modal shift with a random utility model (mixed logit). Based on 875 complete questionnaires, the simulation results show that giving incentives to these buyers ecological rebound effects are expected: Mostly people with a low CO2-emission rate regarding their daily transportation routines (cyclists and public transport users) will exploit these incentives. They show a significantly higher likelihood of choosing alternatively propelled cars than conventional car users. Consumers that usually use a passenger car for their daily mobility routines are mostly unwilling to change to ZEV even when incentives are given.

Building sustainable transport futures for the Mexico City Metropolitan Area

- Transport Policy---2016---Nora Steurer,David Bonilla

The Mexico City Metropolitan Area (MCMA) urgently needs a more sustainable, low-carbon transport system. The objective of this paper is to elicit ways of building sustainable, low-carbon transport futures for such a system. Using stakeholder narratives as basis, this paper identifies the main driving forces shaping sustainable transport futures, develops four plausible transport scenarios for the MCMA; and assesses whether stakeholders frame driving forces in a certain way.

Road pricing in a polycentric urban region: Analysing a pilot project in Belgium

- Transport Policy---2016---Jonas De Vos

In order to cope with growing car use and congestion, academics often suggest road pricing as a way to reduce car use and internalise external costs (such as congestion and air pollution). However, implementations of road pricing schemes are rather limited and mainly focus on large cities (i.e., cordon charges). Recently, the three regional governments of Belgium a highly urbanised and polycentric country – have commissioned a pilot project of an area-wide, time- and

location-differentiated road pricing scheme, hence differentiating charges according to the time of the day and the type of road used. Results of this project indicate that kilometres travelled by car mainly reduce in urban areas, while car use on motorways only reduces to a limited degree. Furthermore, results indicate that urban residents adapt their travel behaviour more than suburban and rural residents, probably because urban dwellers have more alternatives to travel than driving personal cars only, especially on the short run. In this paper, we will analyse the preliminary outcomes of the conducted pilot project, look into the limitations of this project and suggest an alternative road pricing scheme.

Auto-rickshaws in Indian cities: Public perceptions and operational realities

- Transport Policy---2016---Simon E. Harding,Madhav G. Badami,Conor C.O. Reynolds,Milind Kandlikar

Auto-rickshaws play an important role in urban transport in India. Despite this role, auto-rickshaws and their drivers face considerable criticism from the public, the media and policy makers. There is a contentious public debate about the perceived faults of auto-rickshaws and their drivers, and the policies to address these issues in Indian cities. Our objective is to provide balance and nuance to this debate, and to enable the perspective of drivers to be more effectively considered, along with that of auto-rickshaw users and the wider travelling public, in policy-making. To this end, we critically discuss the criticism and underlying perceptions; highlight the niche role of auto-rickshaws in urban transport; and present an investigation of the realities and economics of auto-rickshaw ownership and operation.

Measuring the motivation to ride bicycles for tourism through a comparison of tourist attractions

- Transport Policy---2016---Duangdao Watthanaklang,Vatanavongs Ratanavaraha,Vuttichai Chatpattananan,Sajjakaj Jomnonkwao

In Thailand, supporting bicycle riding is regarded as an essential strategy. Many organizations are developing campaigns and activities to promote bicycle riding. However, most Thai people do not enjoy riding bicycles. Thus, this study aims to understand the motivational components and compare the different motivations for bicycle riding in various areas using confirmatory factor analysis (CFA). Six factors were considered: self-development, contemplation, exploration, physical challenge, stimulus seeking, and social interaction. The samples used in this study were 798 Thai tourists. The results of the second-order CFA indicate that six factors indicated motivation to ride bicycles at these tourist attractions at a statistical significance of 0.01. Moreover, the invariance analysis of the model parameters for the two areas through chi-square difference testing shows that factor loadings, intercepts, and the structural path have different values for tourist attractions in the mountains and those by the sea at a statistical significance of 0.01. Thus, models for tourist attractions in the mountain and those by the sea should be developed separately to determine suitable policies for these areas. Consequently, the government sectors and other involved organizations should use these indicators to develop more precise and suitable policies to promote bicycle riding for targeted groups. The CFA loadings obtained from this study can be used for ranking the priority of improving motivation for riding bicycles. Regarding mountain tourist attractions, contemplation was the factor having maximum CFA loading (β =0.935), followed by exploration (β =0.900). For sea tourist attractions, contemplation was the factor having the highest CFA loadings equal 0.992 followed by stimulus seeking (β =0.937).

Assessing standard costs in local public bus transport: Evidence from Italy

- Transport Policy---2016---Alessandro Avenali,Andrea Boitani,Giuseppe Catalano,D' Alfonso, Tiziana,Giorgio Matteucci

We present a regression model for estimating unit standard costs for the Italian local public bus transport services. We account for quantitative and qualitative characteristics, which contribute to explain the variability of the cost structure. Economic and transport data have been collected from companies producing more than 500 million of bus-kilometers. We find that commercial speed is the most important cost driver, while economies of scale are low and only present in small size services. Results prove a positive correlation between investments in bus fleet and the cost incurred in service provision. Finally, we show how the regression model can be augmented with policy targets in order to fairly allocate among Italian Regions the public funds yearly earmarked to the local public transport sector.

Watching the Swiss: A network approach to rural and exurban public transport

- Transport Policy---2016---Tim Petersen

Public transport in rural and exurban areas faces major challenges, with low population densities making it difficult to provide high-quality, high-occupancy services. While demand-responsive transport is sometimes prescribed as an innovative strategy for service provision, the network planning approach to public transport suggests that integrated timed-transfer or pulse timetable networks should be explored first. This paper examines the rural network approach using examples from Switzerland, which has among the highest rates of public transport use in Western Europe, as well as nationally-coordinated Taktfahrplan scheduling that extends deep into rural areas. The basic Swiss pulse timetabling technique is reviewed, along with the application of the approach to a remote rural case study in Graubünden' s Lower Engadine and Val Müstair. Characteristics of pulse timetable networks and the wider rural network approach are considered, drawing broad lessons for their potential application elsewhere.

Urban bus network of priority lanes: A combined multi-objective, multi-criteria and group decision-making approach

- Transport Policy---2016---Yuval Hadas,Oren E. Nahum

This study presents a multi-objective approach for selecting an optimal network of public transport (PT) priority lanes. Bus priority schemes and techniques on urban roads and highways have proven effective for increasing reliability, efficiency, and faster travel times. This study develops a multi-objective model for selecting an optimal PT priority lanes network that 1) maximizes total travel time savings; 2) maintains balanced origin and destination terminals; and 3) minimizes the construction budget. In contrast to commonly used single objective models, which must be executed numerous times in order to provide the decision-maker with feasible solutions, multi-objective models exhibit a complete set of feasible and optimal solutions with a single execution. Since the major disadvantage of a multi-objective model is the need to select a preferred solution from a set, a multi-criteria approach was developed for: 1) ranking each decision-maker's solutions; and 2) selecting a compromise solution acceptable to a group of decision-makers. This methodology is demonstrated with a case study of Petah Tikva, a medium-sized city in Israel.

An expert-based bayesian assessment of 2030 German new vehicle CO2 emissions and related costs

- Transport Policy---2016---Jette Krause,Mitchell J. Small,Armin Haas,Carlo C. Jaeger

We formulate and elicit Bayesian Belief Networks (BBNs) for assessing possible characteristics of the 2030 German new passenger car fleet, including market shares of different vehicle types, CO2 emissions, user costs, and CO2 abatement costs for internal combustion engine vehicles including hybrid electric vehicles (ICE); plug-in hybrid electric vehicles (PHEV); and battery electric vehicles (BEV). Seven technology and environmental experts from the German Original Equipment

Manufacturers (OEM) sector were elicited for key relationships and conditional probability values in the model, yielding seven distinct BBNs able to predict how different future technology, economic and policy scenarios will influence model projections. The 2030 scenarios include differing amounts of technological advancement in battery development, regulation, and fuel and electricity greenhouse gas intensities. Across the expert models, 2030 baseline fleet greenhouse gas emissions are predicted to be at 50–65% of 2008 new fleet emissions. They can be further reduced to 40–50% of the emissions of the 2008 new fleet through a combination of a higher share of renewables in the electricity mix, a larger share of biofuels in the fuel mix, and a stricter regulation of car CO2 emissions in the European Union. The experts' BBNs predict that the 2030 ICE will have lower user costs per kilometer than PHEV or BEV for most scenarios, and that ICE will remain the dominant vehicle type in the 2030 German new fleet. According to all of the experts' BBNs, CO2 abatement costs are negative for the 2030 ICE in all scenarios, but can be positive or negative for PHEV and BEV, depending on the expert model and scenario assumed. Critical areas where expert models agree and differ serve to highlight where reductions in uncertainty regarding future technology, economic, environmental and regulatory relationships are most needed to improve our ability to predict and anticipate future vehicle fleet composition and vehicle performance.

Gender differences in mobility of Hispanic immigrants

- Transport Policy---2016---Miwa Matsuo

This paper examines the mobility of an increasingly important demographic group in the U.S., Hispanic immigrants. Using National Household Travel Survey data for 2009, this paper finds that, compared to the mobility of other populations, the mobility of Hispanic female immigrants is much lower, particularly when household income is low. Hispanic female immigrants are substantially less likely to be drivers than their male counterparts, and their probability of being a driver stagnates for decades after immigration, unlike female immigrants of other race/ethnicity groups. Hispanic female immigrants seem to remain non-drivers rather reluctantly. At the household level, Hispanic immigrants do not actively choose less auto-dependent lifestyles, and females clearly depend on others' mobility. Yet once Hispanic female immigrants become drivers, they drive more than females of other race/ethnicity groups. Their high, hidden demand for driving is likely not related to domestic needs because their driving mileage is unassociated with child-caring duties, and is associated with household income level. The association between low-income status and driver status of Hispanic female immigrants has policy implications, especially if the barriers to becoming a driver limit Hispanic female immigrants' access to training or employment and contribute to their low-income status. More detailed analysis is anticipated to detail the mobility challenges Hispanic female immigrants face.

Operational and financial performance of Italian airport companies: A dynamic graphical model

- Transport Policy---2016---Antonino Abbruzzo,Vincenzo Fasone,Raffaele Scuderi

This paper provides evidence on the relationship within a set of financial and operational indicators for Italian airports over 2008–2014. The limited sample size of national and regional airports suggests to apply the penalised RCON(V,E) model, which falls within the class of Gaussian graphical models. It provides both estimate and easy way to visualise conditional independence structures of the variables. Moreover, it is particularly suitable for handling longitudinal data where small number of units and huge number of variables have been collected. Findings highlight that a qualified concept of size matters in determining good financial performance. Specifically, increasing jointly the number of movements with flights that would attract a high number of passengers may improve both sales profitability and revenues generated by the company's assets. Results suggests that the effect of low cost carrier has been heterogeneous throughout the sample, which may suggest new opportunities to expand the

business in order to intercept the consumer surplus of this category of travellers.

Land development impacts of BRT in a sample of stops in Quito and Bogotá

- Transport Policy---2016---Daniel A. Rodriguez,Erik Vergel-Tovar,William F. Camargo

Despite the growing popularity of bus rapid transit (BRT), little is known about its impacts on land development. In this paper we examine the land development impacts of BRT in Bogotá and Quito, two cities that have made a variety of BRT investments over the last two decades and with Curitiba, they have been world pioneers of BRT. Relying on 10 years of data, we use a quasi-experimental research design to quantitatively examine changes in land development in both cities. Outcomes include land market characteristics such as built area added per year (both cities), units added (Quito), building permits issued (Bogotá), changes in land use (Bogotá), and property price changes (Quito). We compare how outcomes vary over time for treatment corridors – those that received BRT service at various points throughout the decade, relative to control corridors in both cities, and in Bogotá also relative to a road-expansion corridor. In Bogotá, control corridors were corridors slated to get BRT but that had not received any BRT service yet, whereas in Quito they are adjoining areas. Results reveal heterogeneous impacts in both cities. Although increased building activity tends to concentrate in treatment areas, comparisons with controls suggest that the impacts are context dependent. Some stations showed very high development activity and others less so. Development induced along the road extension in Bogotá was considerable. In both cities, the strongest effects appear to concentrate in end-of-line terminals and stops built in the early 2000s. Whether BRT stimulates land development depends on institutional factors such as developer appetite, market conditions, land availability, and land regulations.

When and how much does new transport infrastructure add to property values? Evidence from the bus rapid transit system in Sydney, Australia

- Transport Policy---2016---Corinne Mulley,Tsai, Chi-Hong (Patrick)

This paper examines the timing of the impact of a Bus Rapid Transit (BRT) system on residential housing prices in Sydney, Australia. A multilevel model is employed to identify the housing price uplift after the opening of the BRT system. Catchment and control areas are selected from the property sales data to control for the potential external shocks to house prices. The modelling takes account of the property, neighbourhood and accessibility attributes which are expected to affect the property transaction price to quantify the land value uplift from the BRT system and the point in time when it occurs. This research found that the sales price of residential properties within 400m of BRT stops are marginally higher than those outside of the BRT service area after the opening of the BRT system in 2003 and 2004. The research outcomes provide evidence to government sectors for planning future BRT systems and for quantifying the potential to raise financial funding for public transport improvement through the gain of land value uplift.

Real estate development in anticipation of the Green Line light rail transit in St. Paul

- Transport Policy---2016---Cao, Xinyu (Jason),Dean Porter-Nelson

Although previous studies have extensively explored the impacts of rail transit on economic development after its opening, few have examined its impact on real estate development before its opening. Using the building permit data of the city of St. Paul, this study investigates the effects of key announcements of the Green Line light rail transit (LRT) by employing location quotient analysis and difference-in-difference models to compare building activity in the LRT corridor and control corridors. We found that the announcement of preliminary engineering had no positive impacts on the

count and value of building permits whereas the announcement of Full Funding Grant Agreement tended to increase the number of building permit by about 24% and the value by 80%. We concluded that LRT investment, in conjunction with proactive land use planning policies, public subsidies and public funded projects, increases building activity.

Rail transit investment and property values: An old tale retold

- Transport Policy---2016---Haotian Zhong,Wei Li

Although a number of researchers have used the hedonic pricing model to value transit improvements by comparing prices of real estate properties within a certain distance from a transit station with those beyond that distance, the accuracy of these assessments is subject to questioning due to methodological limitations. By analyzing single-family and multi-family property sale transactions in Los Angeles (CA) during 2003 and 2004, this spatial hedonic study examines how the property value effects of rail transit can become volatile depending on housing markets, rail transit technologies, near-station land uses and transit development phases. By contrasting results from the spatial Durbin models and the Geographically Weighted Regression models with those from the conventional Ordinary Least Squares approach, the study shows the estimation accuracy can be improved considerably by controlling for the spatial dependence effect. Proximity to mature rail transit stations generally benefits multi-family property values, but the effect is negative for single-family properties. Residents (especially those from single-family households) seem to favor proximity to heavy rail transit more than light rail services. The premiums for rail transit accessibility also largely depend on different development phases and can be heavily discounted by the existence of Park-and-Ride facilities. This study provides policy makers with new empirical evidence and analytical tools to revisit value capture as a financing alternative and to reform investment strategies for rail transit services.

Tailoring empirical research on transit access premiums for planning applications

- Transport Policy---2016---Tao Xu,Ming Zhang

Existing studies on transit access premiums focus primarily on hypothesis testing and methodological sophistication. There is a disconnect between the study efforts and the practice of transit-oriented planning and policy making. This paper aims at building this connection through a case study of Wuhan, China. The study applies established conceptual frameworks and analytical procedures in the field to 1) examine the spatial extent of rail transit impacts on housing market; 2) estimate transit access premiums and their spatial distribution in the station area; and 3) simulate revenue streams to illustrate the potential of transit value capture. The empirical results show that in Wuhan the influence area extends to 700m for light rail transit (LRT Line 1), 900–1000m for metro rail (MRT Lines 2 and 4). The distance ranges differ from the conventionally accepted value of 400m and the value of 500–600m currently considered by Wuhan local planning agencies. This empirical knowledge enables transit planners to modify transit catchment areas for the interest of enhancing ridership forecasting and service planning.

Transit premium and rent segmentation: A spatial quantile hedonic analysis of Shanghai Metro

- Transport Policy---2016---Yiming Wang,Suwei Feng,Zhongwei Deng,Shuangyu Cheng

When measuring the betterment effect of public transit, most of the existing econometric research tends to use residential property price data and to focus on the conditional mean rather than the conditional variance in terms of the implicit price premium paid for access to public transit. However, because property sale price partly reflects speculation on future capital gains, it sheds little light on the renters' willingness-to-pay for living near public transportation facilities, let alone the variation in rent premium for transit proximity. We in this paper employ a spatial quantile hedonic regression method to gauge the rental impact of metro stations on

a large sample of two-bedroom-one-bathroom (2b1b) apartments across 2575 residential complex communities (or "xiaoqu" in mandarin Chinese) in Shanghai, China, as observed between December 2012 and January 2013. We find: a) a community's geographic adjacency to the nearest Shanghai Metro station tends to correlate positively with the xiaoqu's average asking rent of 2b1b apartments, indicating a significant rent premium for transit proximity; b) although the transit premium fluctuates across the different rent levels, the variation is statistically insignificant, suggesting no evidence of transit-induced segmentation of the local private residential rental market. Apart from its policy implications, this paper demonstrates a US-China comparative perspective and a novel spatial quantile regression approach to test the segmentation effect of mass transit in a dynamic urban housing market.

The impacts of urban mass rapid transit lines on the density and mobility of high-income households: A case study of Singapore

- Transport Policy---2016---Yi Zhu,Mi Diao

Urban rail transit could affect urban development in multiple aspects. Using Singapore as an example, we investigate the impact of planners' and developers' decisions on the density distribution of high-income households in areas around Mass Rapid Transit (MRT) stations and how these households respond to better access to urban rail transit systems. We find that the maximum density permitted by the master plan is only marginally correlated with the distances to MRT stations. Instead, the average unit size tends to be smaller, and the share of small-sized units tends to be higher in new private projects that are close to MRT stations after the new lines are in operation. This indicates that developers, who act mainly in response to the market, intentionally place more housing units in developments closer to MRT stations. Consequently, more upper- and upper-middle-class households that can afford private housing are accommodated in areas with greater accessibility to MRT. By comparing two household travel surveys before and after the opening of the Circle Line, we find that MRT did not change household demographics much in the station area, but there was an evident change in the mode share of trips made by the surveyed households, embodied by lower levels of car dependence and more reliance on MRT.

Subways near the subway: Rail transit and neighborhood catering businesses in Beijing

- Transport Policy---2016---Siqi Zheng,Xiaoke Hu,Jianghao Wang,Rui Wang

Beijing has made enormous investment in rail transit since the late 2000s. The rapidly growing subway system greatly improves the accessibility of neighborhoods nearby subway stations and often increases neighborhood population and employment densities, both resulting in a larger market for local retail businesses. While numerous studies have shown that rail transit investment tends to raise property value close to stations, few have provided direct evidence on rail transit's effects on local consumer amenities. Using citywide catering establishment data since 2004 from dianping.com (China's yelp.com), we study the effects of new subway stations on catering openings, diversity and consumer demand in neighborhoods near a subway station opened during 2004–2013. We find that a new subway station positively contributes to the quantity, diversity and consumer demand of nearby food and beverage services. These effects are heterogeneous spatially and in terms of catering types. This study enriches the limited extant empirical evidence on urban rail transit's impact on local economic activities and consumer amenities. In China, where unprecedented rail transit expansion has transformed large cities like Beijing in many ways, our findings can help us better understand how major public investment in cities affects local economy, quality of life, the housing market and related further policy concerns.

Density-oriented versus development-oriented transit investment: Decoding metro station location selection in Shenzhen

- Transport Policy---2016---Jiawen Yang,Junxian Chen,Xiaohui Le,Qin Zhang

The transit-oriented development literature has focused on the built environment around stations in operation, largely neglecting how the station location was selected. We hypothesize that city governments in China are likely to put stations outside established suburban centers. By putting metro stations at relatively underdeveloped places, city governments can lower right-of-way cost and gain more revenue from future land transactions. Using Shenzhen as a case study, we test this hypothesis with metro planning examples and land transaction data from 2000 to 2014. We found that metro alignment and station placement has bypassed the core of established communities. This planning practice is supported by a strong real estate market that appreciates transit accessibility, despite the high transit operation subsidy.

Developers' perspectives on transit-oriented development

- Transport Policy---2016---Andrew Guthrie,Yingling Fan

The success of transit corridors in promoting sustainable regional growth hinges on location decisions made by private-sector developers. This paper centers on a series of interviews with 24 residential and commercial developers in the Twin Cities region. Developers were recruited for interviews using random sampling by residential/commercial and urban/suburban specialty. The authors analyzed interview transcripts using close readings and computerized content analysis focused on word frequency analysis and topic co-occurrence statistics. Recommendations for promoting transit-oriented development include reforming zoning and development regulations, broadening the focus of TOD to include frequent bus routes, providing greater certainty of future transit improvements. Recommendations for integrating TOD with affordable housing development include pursuing affordable-by-design solutions and engaging with affordable housing specialists.

The transit metropolis of Chinese characteristics? Literature review, interviews, surveys and case studies

- Transport Policy---2016---Jiangping Zhou

In 2011, the Ministry of Transport (MoT) of China announced to competitively select and fund at least 30 cities in their respective efforts of building a transit metropolis. Incentivized by MoT, many Chinese cities have started planning for a transit metropolis and even implementing related measures. This signifies some larger-than-ever government-led efforts towards the transit metropolis that we have heard of. Why did China/MoT initiate the transit metropolis program? Is the transit metropolis idea of MoT similar to what Robert Cervero defines in his book, which introduces the concept of transit metropolis and illustrates it using 12 exemplars? If not, why? Have Chinese cities followed the same principles or taken comparable measures proposed or identified by Cervero? Or, have they produced brand new principles or measures? If so, what is the implication? This article answers the above questions through literature review, interviews, surveys and case studies. It shows that MoT's idea of the transit metropolis differs notably from that of Cervero. Even though MoT proposes more universal and quantitative performance measures for a transit metropolis than Cervero, its perspectives and policies are still parochial. Local governments, nevertheless, have comparable principles or measures like Cervero. But compared to a transit metropolis exemplar such as Curitiba, they overlook issues such as the match between regional commuter sheds and the services/administrative boundaries of local transit-related entities, coordinated, regionalized transit services and fares, pedestrian-friendly streets and parking pricing strategies. The above indicate that more work is needed to better define, plan and implement a transit metropolis in China.

Urban transport social needs in China: Quantification with central government transit grant

- Transport Policy---2016---Haopeng Deng,Ye Li,Wenxiang Li,Yuewu Yu

Social inclusion requires suitable measures to improve public transport, thus satisfying the needs of socially disadvantaged groups (SDGs). Although numerous measures are available in principle, in practice, however, financial problems hinder the implementation of these measures. This study addresses an important issue in China—how to finance a socially inclusive public transport system given the incomplete nature of fiscal reforms at local government level. Central government grants are required to achieve a more equitable distribution of public transport resources. To calculate the demand for central government grants, an approach was developed to quantify transport social needs (TSNs). A primary component regression model was established to identify the factors that affect the SDGs using public transport. Further, a need-based method is proposed for the allocation of central government grants. The allocation procedure was designed with the categorization of cities to avoid distorted incentives, and a two-step formula was used to address the funding allocation equity problems. The data obtained from 252 municipal cities in China in 2010 show that the TSNs were 37.63 billion trip-kilometers. The corresponding central government grant was ¥18.82 billion. The results of the proposed allocation show that more funding was provided to small and low-density cities had unfavorable situations due to local public transport investment. This investigation would help in a more equitable distribution of public transport funding.

Modeling the propensity to join carsharing using hybrid choice models and mixed survey data

- Transport Policy---2016---Dimitrios Efthymiou,Constantinos Antoniou

Carsharing combines the positive elements of both private and public transportation. This feature renders it attractive to a significant percentage of the population, especially younger people who do not own a car. To maximize the effectiveness of such systems, the characteristics of potential users have been investigated in this research.

Carsharing and sustainable travel behavior: Results from the San Francisco Bay Area

- Transport Policy---2016---Regina R. Clewlow

Over the past decade, carsharing has grown considerably in the United States, particularly in major metropolitan areas. This innovative business model offers individuals the opportunity to rent cars by the hour, providing them with greater flexibility for their mobility. Previous work on carsharing suggests that its adoption leads to a decline in household vehicle ownership, vehicle miles traveled, and associated greenhouse gas emissions. Utilizing representative data from the 2010–2012 California Household Travel Survey, this paper presents an analysis of travel behavior and vehicle ownership among carshare members versus non-members in the San Francisco Bay Area, focusing on a subsample of the population with access to carsharing at the U.S. census tract level. Consistent with previous findings on vehicle reduction, these results show that carsharing members own significantly fewer vehicles than non-members. However, lower levels of vehicle ownership are only found among households living in urban areas. In dense, urban neighborhoods, households with carsharing membership own 0.58 vehicles per household as compared with 0.96 vehicles of a control group. Suburban carshare members drive less than their non-carshare member counterparts – although the extent to which this difference can be attributed to self-selection it is unknown. This study also finds that among carsharing households that do own vehicles, a greater share of those vehicles are alternative vehicles (e.g., hybrid, plug-in hybrid electric, and battery electric). Among vehicles owned by the subsample examined in this study, electric drive vehicles represent 18.3% of those owned by carshare member households, as compared with 10.2% of the vehicles owned by non-carsharing households. This analysis finds that not

only are urban carshare members likely to own fewer vehicles than the rest of the population, if they do own vehicles, they are more likely to own a vehicle with a smaller environmental footprint.

Casual carpooling in the San Francisco Bay Area: Understanding user characteristics, behaviors, and motivations

- Transport Policy---2016---Susan A. Shaheen,Nelson D. Chan,Teresa Gaynor

Casual carpooling is an informal form of commuter ridesharing operating in Washington, D.C.; Houston, Texas; and San Francisco, California. In contrast to new forms of shared-use mobility, casual carpooling has been in existence for over 30 years and uses no information communication technology, and is entirely run informally by its users. Researchers have been fascinated by this phenomenon and have conducted studies in the past, but there remains a lack of up-to-date quantitative data. This study examines the motivations and behaviors of casual carpoolers in the San Francisco Bay Area to understand user characteristics and motivations. In Winter 2014, the authors observed and counted participants and vehicles at four casual carpooling locations, interviewed participants riding in carpooling vehicles (N=16), and conducted intercept surveys (N=503) at 10 East Bay pickup locations. The results indicate that the motivations for casual carpooling participation include convenience, time savings, and monetary savings, while environmental and community-based motivations ranked low. Casual carpooling is an efficient transportation option for these commuters, while environmental sustainability benefits are a positive byproduct. Seventy-five percent of casual carpool users were previously public transit riders, and over 10% formerly drove alone. Logit modeling found that casual carpool role (i.e., always a rider or sometimes a driver), age, and employment status were key drivers in modal choice. Further research on a larger scale is needed to identify the elements needed for system replication in different areas.

Do people value bicycle sharing? A multilevel longitudinal analysis capturing the impact of bicycle sharing on residential sales in Montreal, Canada

- Transport Policy---2016---Ahmed El-Geneidy,Dea van Lierop,Rania Wasfi

Many studies have aimed to assess the impacts of major transportation investments, such as freeways expansions and light rail presence on property value. Yet, few studies have attempted to understand the impact of active transportation investments on housing prices. This study attempts to understand the relationship between a new bicycle sharing system and home sale prices in Montreal, Canada. Using multiple sales for units in multifamily housing that are reported in the Multiple Listings Service (MLS) of Montreal between 1996 and 2012 we develop step wise multilevel longitudinal hedonic regression models analyzing this relationship while controlling for various spatial and temporal factors that are known to impact home sales. Our results show that the presence of a bicycle sharing system in a neighborhood with 12 stations serving an 800-meter buffer is expected to increase the property value for units in multifamily housing by approximately 2.7 percent. Policy makers wishing to improve the local urban environment while benefiting from economic gains can work on increasing the availability of bicycle sharing systems as this will likely result in increasing property values, improved neighborhood health, and a more vibrant urban environment.

The competitiveness of alternative transport fuels for CO2 emissions

- Transport Policy---2016---Silvio Nocera,Federico Cavallaro

This paper examines the potential role of hydrogen and electricity in reducing CO2 emissions from transport. First, we describe the main characteristics, costs and supporting policies of the two alternative fuels. Then we quantify and valuate economically the expected CO2 savings, examining the Italian province of South Tyrol a case study. Through the analysis of

three alternative scenarios, results reveal a potential reduction of the Tank-To-Wheel emissions up to 59% in comparison to the do-nothing option, which corresponds to an economic saving of about €543M. These results constitute an instance of the effectiveness of alternative fuels for limiting the effects of climate change deriving from mobility. In terms of transport policy, the integrative approach of hydrogen and electricity, often seen in competitive terms, can indeed be fruitful, especially in a first penetration phase, provided that policy-makers have a long-term vision about future mobility. This should include not only issues related to the technological improvement, but also thoughtful and balanced measures for an efficient carbon policy.

Indicator-based evaluation of sustainable transport plans: A framework for Paris and other large cities

- Transport Policy---2016---Céline Chakhtoura,Dorina Pojani

Using the City of Paris as a case study, this article makes a case for employing clear indicators to evaluate the effectiveness of sustainable urban transport plans. The article assesses the extent to which transport sustainability targets have been achieved, and whether the existing evaluations have been adequate. In addition to exploring the case study, the article addresses a meta-question: Which set of indicators is the most appropriate to evaluate transport sustainability achievements in a large and complex city like Paris? The flexible analytical framework constructed here can serve as an evaluation template for other, similar places.

Cluster analysis of fare evasion behaviours in Melbourne, Australia

- Transport Policy---2016---Alexa Delbosc,Graham Currie

Fare evasion on transit can reduce revenue by millions of dollars, undermining financial viability. Research has examined how design solutions, such as ticket barriers and ticket inspections, can reduce fare evasion. However little research examines how transit users think about fare evasion or attempts to understand why people fare evade. This research uses a quantitative cluster analysis to segment fare evasion behaviours into three categories which show distinct personality and behavioural characteristics. A web-based survey of was administered to residents of Melbourne, Australia with a total sample size of 1561. The questionnaire was introduced as a survey about transit travel and ticketing but included questions about various aspects of fare evasion behavior. Notably, three broad types of fare evasion were explored: 'accidental' fare evasion (e.g. meant to pay but machines were not working), 'unintentional' fare evasion (e.g. meant to validate but I was in a hurry or I forgot) and 'deliberate' fare evasion (e.g. decided not to pay because I was only going a few stops). A two-step cluster analysis was conducted using a range of categorical and continuous variables including fare evasion behavior, predicted likelihood of continuing to fare evade, age and frequency of transit use. Three clusters of fare evaders emerged: deliberate evaders, unintentional evaders and never-evaders. Deliberate evaders were the smallest cluster but the most frequent transit users. In contrast, unintentional evaders were more common but only fare evaded infrequently. The clusters also had distinct personality differences; deliberate evaders were more likely to be sensation-seekers and believed it was acceptable to bend the rules to save money. Implications for transit policy and practice are discussed.

Demographic determinants of car ownership in Japan

- Transport Policy---2016---Michiyuki Yagi,Shunsuke Managi

This study empirically examines the demographic determinants of car ownership in Japan between 1980 and 2009. Unique car cohort data, composed of the car age and 11 car types, at the prefectural level, is analyzed. The primary reason for examining the demographic determinants of car ownership in Japan is because Japan is projected to face radical demographic changes in the next few decades. These projected

changes include depopulation and an aging population with diminishing household size. This study will be the first empirical study of the car cohort model with large countrywide observations in the recent literature. This study classifies the demographic determinants into five categories: (I) longitudinal factors, (II) economic factors, (III) natural factors, (IV) social factors, and (V) other transports. Although some tendencies vary among car types, this study finds the following tendencies of ordinary car ownership (compact four-wheel drive trucks and regular and compact passenger cars). Regarding the longitudinal factors, the long-run effect is much higher than average in the recent literature, whereas the semi elasticity of car age is approximately 7%. Regarding the economic factors, the elasticities of income and fuel price on car ownership tend to be less intense than in earlier studies. Regarding the natural factors of population increase, the elasticities of population and average household size on car ownership tend to be negative. This indicates that a decrease in population and household size in Japan will accelerate car ownership. In addition, the ratio of elderly people has various effects depending on car types. Regarding the social factors of population increase, car ownership tends to be encouraged by the concentration of population within prefecture, and increased and decreased for relatively new (aged 2–11) and old (aged 12+) cars, respectively, by the concentration of population across prefectures. The former is probably due to a composite effect in urban and rural areas, whereas the latter may be a quick update cycle due to an effect of urbanization. Regarding other transports, the degrees of train and bus use tend to be negatively associated with ordinary car ownership. However, these effects are considerably small and often insignificant as in the literature.

Which smartphone's apps may contribute to road safety? An AHP model to evaluate experts' opinions

- Transport Policy---2016---Gila Albert,Oren Musicant,Ilit Oppenheim,Tsippy Lotan

Smartphone usage while driving is a worldwide phenomenon which is acknowledged as a major concern for road safety. While being a major cause of risk, smartphones apps may also serve as a means to control and reduce risky driving behavior. However, it is still unclear which apps should be favored and what features and functions compose such valuable apps. The purpose of this paper is to establish a blueprint for smartphone apps that will have the greatest potential to reduce injury crashes. The study is based on apps mapping and experts' opinions retrieved through an Analytic Hierarchy Process (AHP). Thirty seven experts participated in the study and evaluated and graded nine widespread types of apps according to various criteria. When weighing safety considerations versus acceptance concerns, they were found to be almost equally important. The results clearly define the desirable types of smartphone apps: collision warning, texting prevention (both no-typing and no-reading), voice control (both text-to-speech and commands), and Green Box (In Vehicle Data Recorder – IVDR). However, while texting prevention and IVDR are not likely to be widely accepted and used, collision warning and voice control apps are expected to gain public support.

Perspectives of electric mobility: Total cost of ownership of electric vehicles in Germany

- Transport Policy---2016---Steffen Bubeck,Jan Tomaschek,Ulrich Fahl

The transport sector is a major source of greenhouse gas emissions worldwide as well as in Germany and is therefore able to contribute significantly to the achievement of climate protection goals. With this in mind and the steadily increasing electricity generation from renewable energy sources in Germany, electrically driven vehicles can be an attractive option to reach the climate targets of the EU and the German government. The target of the German government to have at least one million electric vehicles registered by 2020 seems currently far from realisation. For this reason, this article analyses the total cost of ownership (TCO) of electric passenger vehicles in Germany on a component-based approach and gives an estimation about the further development until 2050. To represent the German market, we investigate different vehicle sizes, user types

and drive technologies. Furthermore, we show the CO2 abatement potential offered by different types of electric vehicles. Finally, we analyse buyer's premiums as an incentive to accelerate the uptake of electric vehicles on German roads.

Planning resilient roads for the future environment and climate change: Quantifying the vulnerability of the primary transport infrastructure system in Mexico

- Transport Policy---2016---Xavier Espinet,Amy Schweikert,Nicola van den Heever,Paul Chinowsky

Climate projections predict an increase in future climate variability. To ensure economically, socially and environmentally responsible transportation planning, it is necessary to consider future weather variations driven by climate change. Despite growing evidence that considering climatic changes is an imperative for resilient future infrastructure, management agencies rarely incorporate climate change into decision-making processes. One reason is the lack of tangible information and tools to help predict and plan for future conditions.

An assessment of knowledge gap in service quality for air freight carriers

- Transport Policy---2016---Show-Hui S. Huang,Wen-Jui Tseng,Wen-Kai K. Hsu

This paper aims at assessing the knowledge gap in service quality for air freight carriers. In this paper, based on the relevant literature and the operational features of air freight carriers, the service requirement attributes (SRAs) for air freight were first investigated. A Knowledge Gap Model (KGM) based on a fuzzy analytic hierarchy process (AHP) approach was then proposed to evaluate the perceived gap on those SRAs between air freight carriers and their customers (air freight forwarders). Finally, as an empirical study, the air freight carriers and air freight forwarders in Taiwan were investigated. The results indicate the top SRAs with higher gaps are: Cargo delivery perfectively, Information system supports and Adequate shipping spaces. The result provides practical information for air freight carriers to improve service quality. Further, The KGM provides a methodology for relevant studies on service quality.

Policy tools for sustainable transport in three cities of the Americas: Seattle, Montreal and Curitiba

- Transport Policy---2016---Jean Mercier,Mario Carrier,Fábio Duarte,Fanny Tremblay-Racicot

Cities around the world are trying to implement transport policies to reduce the dramatic environmental impacts of motorized modes. There is no single method to determine the success of sustainable transport systems, but comparative studies can be illuminating despite inevitable data inconsistencies. This study brings to the forefront different styles of regulation and mix of policy tools used by cities that have been trying to implement sustainable transport systems. To this end, a classification scheme of policy instruments was developed based on asymmetries of information and legitimacy, generating four types of instruments: Self-regulative, Informative/Limited action, Proactive/Government and Interactive/Governance. Using 39 semi-structured interviews with key informants from different levels of government and stakeholders, this paper compares the instrument choice in terms of sustainable urban transport policy in Seattle, Montreal and Curitiba. The main conclusions drawn from our interviews is that the distinction between government/proactive instruments and governance/interactive instruments does not appear as dichotomous and clear as expected and that each city deploys somewhat different patterns of instrument choice, in accordance with its political and institutional context.

Determinants of urban mobility in India: Lessons for promoting sustainable and inclusive urban transportation in developing countries

- Transport Policy---2016---Sohail Ahmad,Jose A. Puppim de Oliveira

Studies from developed economies have analyzed the

key factors for understanding urban mobility, which are important to design appropriate interventions to reduce the volume of transport needs and to promote more sustainable modes of transportation. However, there are limited studies in urban areas of developing economies, which can hinder our capacity to formulate sustainable transport policies that are fit for the reality of those countries. In order to fill this gap, this study quantifies the influence of city features and socio-economic and socio-cultural variables on mobility patterns to identify evidence-based policy interventions for promoting more inclusive and sustainable transportation paths. The research estimates the amount of public and private transport (proxied by out-of-pocket travel expenditure) and modal choices, employing multivariate analyses, using a nationally representative household survey from the 98 largest Indian cities. Findings reveal that densification in Indian cities reduces the amount of transport as well as enhances the probability of using public transport. Small and medium sized cities predominantly use private transport, whereas large cities prefer public transport but lack non-motorized transportation. Moreover, income is the most important determinant of the amount of transport and the use of motorized and private transport. The top quintile is the only with positive income elasticity of transport demand. Results show that public and non-motorized transport infrastructures will provide sustainable and inclusive development, besides other co-benefits, such as energy security. Based on these findings, several policy recommendations are proposed to improve the sustainability and inclusivity of urban mobility in Indian cities.

An effects analysis of logistics collaboration in last-mile networks for CEP delivery services

- Transport Policy---2016---Hyeongjun Park,Dongjoo Park,In-Jae Jeong

Rapid increases in courier, express, and parcel (CEP) delivery demand have made environment- and traffic-related issues important in metropolitan areas. This study analytically formulates CEP delivery behaviors in last-mile networks to estimate the effects of logistics collaboration for apartment complexes. Reflecting courier delivery behavior, the CEP delivery problem was divided into horizontal and vertical routing problems. Optimization methodologies commonly utilized in the operations research area were employed for the analytical modeling of these two routing behaviors. The proposed methodologies were applied to apartment complexes in Seoul, Korea. It was found that the financial feasibility of CEP collaboration is guaranteed when the number of households in an apartment complex exceeds about 900. From the financial perspective, CEP collaboration is applicable to 9.1–19.4% of the apartment households in Seoul. In addition, CEP collaboration was analyzed to provide a meaningful amount of social cost savings, implying its economic feasibility. The public sector's roles in stimulating CEP collaboration are discussed from financial and legislative perspectives.

Long- and short-run asymmetric responses of motor-vehicle travel to fuel price variations: New evidence from a nonlinear ARDL approach

- Transport Policy---2016---Junwook Chi

Understanding the responsiveness of travel demand to fuel price changes has an important policy implication on fuel taxation. In this paper, we employ an asymmetric nonlinear ARDL approach to investigate the short- and long-run impacts of fuel price increases and decreases and fuel price volatility on motor-vehicle travel in Korea. Using monthly data from January 2000 to December 2013, the results show that travel responds differently depending on the direction of fuel price changes. In examining the sensitivities of travel demand, the traffic volume is significantly responsive to fuel price changes when prices fall, while it is insensitive to fuel price changes when prices rise in the long-run. The fuel price volatility has a negative long-run impact on travel demand, indicating that a rise in fuel price uncertainty can induce drivers to reduce transport fuel consumption and motor-vehicle travel. The GDP and the road length are also found to be vital factors determining travel demand. In comparing the magnitude of the short- and long-run effects of fuel price changes, the short-run elasticities tend to be

smaller than the long-run elasticities in absolute value.

The conceptual mismatch: A qualitative analysis of transportation costs and stressors for low-income adults

- Transport Policy---2016---Kate Lowe,Kim Mosby

Research on transportation and low-income groups has often focused on job accessibility and modeled travel times. Such models disconnect transportation from the more comprehensive social goal of enhancing well-being and fail to account for the full stress and time costs that low-income populations may face. To examine the actual, lived experiences of low-income adults, we conducted 52 interviews in two medium-sized metropolitan areas. Results show that low-income travelers have time costs beyond what is modeled, that low-income populations face stressors, like uncertain and unstable transportation, and that the dynamics of ride giving may strain social relations. In conclusion, we argue that placing transportation within the life experiences of low-income adults is critical for understanding how transportation could support or undermine health and well-being.

Assessing productive efficiency in Nigerian airports using Fuzzy-DEA

- Transport Policy---2016---Peter Wanke,Carlos Barros,Obioma R. Nwaogbe

Performance analysis has become a vital technique for managing airport practices. However, most DEA models applied to airports assume that inputs and outputs are known with absolute precision. Here, we use Fuzzy-DEA models to capture vagueness in input and output measurements obtained from Nigerian airports. These results are subsequently treated by bootstrapped truncated regressions to control the random effects inherent to any sample. Results indicate that the joint use of bootstrapped regressions and FDEA models leads to more robust results, in the sense that fewer significant contextual variables are identified as efficiency drivers. When controlling for fuzziness and randomness, capacity cost was found to be the only significant variable, in addition to a learning component represented by trend. Policy design for Nigerian airports should focus simultaneously on third-party capacity management – such as privatization - while fostering continuous improvement practices to sustain the learning curve.

Making land use – Transport models operational tools for planning: From a top-down to an end-user approach

- Transport Policy---2016---Mathieu Saujot,Matthieu de Lapparent,Elise Arnaud,Emmanuel Prados

Land Use and Transport Integrated models (LUTIs) are promising approaches for urban planning. There is large literature describing their technical architectures or using them in various scientific contexts. Yet little attention has been paid to expectations of practitioners (planners) and to the operational use of such models. The gap between lab application and operational use for planning practice is still to be filled. We shed light on what would make them definitely accepted and more used by planners to evaluate a range of urban and transport policies. In addition to literature review and our own experience dealing with urban planning agencies, we have interviewed different types of end users in France to identify their motivations and barriers to use LUTI models. The results show demand for a far more bottom-up oriented approach: the models should consider objectives and general needs of end users to live up to their expectations. Only a closer collaboration between modelers and end users, and more efforts to integrate modeling into urban planning, will make LUTIs considered as relevant approaches.

Evaluation of the Swedish car fleet model using recent applications

- Transport Policy---2016---Muriel Beser Hugosson,Staffan Algers,Shiva Habibi,Pia Sundbergh

The composition of the car fleet with respect to age, fuel consumption and fuel types plays an important role on environmental effects, oil dependency and energy consumption. In Sweden, a number of different

policies have been implemented to support CO2 emission reductions. In order to evaluate effects of different policies, a model for the evolution of the Swedish car fleet was developed in 2006. The model has been used in a number of projects since then, and it is now possible to compare forecasts with actual outcomes. Such evidence is relatively rare, and we think it may be useful to share our experience in this respect.

Rider perception of a “light” Bus Rapid Transit system - The New York City Select Bus Service

- Transport Policy---2016---Dan Wan,Camille Kamga,Jun Liu,Aaron Sugiura,Eric B. Beaton

The Bus Rapid Transit (BRT) system in New York City (NYC), called Select Bus Service (SBS), is a “light” BRT system with some but not all BRT features. Focusing on it, this study aims to contribute to a better understanding of riders' perceptions of BRT service implemented with limited space and capital funding. A total of 1700 SBS riders on four routes were interviewed using the survey methodology developed in this study. Statistical analysis and regression modeling were used to analyze rider socio-demographics, investigate the relationship between rider satisfaction levels, and the key factors driving them. The results show that, while most of them are transit dependent, new SBS riders are mainly attracted by better service and accessibility. Riders on different routes were found to have different socio-demographics. The statistical tests of satisfaction means provide further insight into the disparity in service evaluation between/among groups of riders (e.g. gender, experience, weather, route, trip purpose). Service frequency, speed, and on-time performance were found to have a positive influence on rider satisfaction across all routes. Variables related to off-board ticket machines and travel information are more valued than others. The effects of external factors vary according to characteristics of the routes and rider groups. This study suggests potential applications of the results for future planning and improvement to increase rider satisfaction and thereby retain and increase ridership.

Residents’ responses to proposed highway projects: Exploring the role of governmental information provision

- Transport Policy---2016---Marije Hamersma,Eva Heinen,Taede Tillema,Jos Arts

Despite increased efforts to actively consult residents in highway infrastructure planning to i.a. increase acceptance of plans, the involvement of most residents is passive and limited to receiving information. By means of multivariate regression analysis, this paper explores the role of governmental information provision in residents’ responses towards highway project proposals, measured by the expected change in residential satisfaction i.e. the match between housing needs and conditions, as a consequence of those projects. We also pay specific attention to permeability of and satisfaction with information provided. The analyses are based on questionnaire data collected among 484 residents living close to two announced plans for highway adjustment in the Netherlands.

The importance of service quality attributes in public transportation: Narrowing the gap between scientific research and practitioners’ needs

- Transport Policy---2016---Begoña Guirao,Antonio García-Pastor,María Eugenia López-Lambas

Customer Satisfaction Surveys (CSS) have become an important tool for public transport planners, as improvements in the perceived quality of certain service attributes can lead to greater use of public transport and lower traffic pollution. The literature shows that the importance of quality attributes has until now been estimated indirectly, as they are derived from the Customer Satisfaction Index using various different and complex techniques. Little work has been dedicated to its direct estimation (stated importance) by designing ad-hoc surveys, an approach that represents a considerable reduction in the length of the questionnaire.

Justice and transportation decision-making: The capabilities approach

- Transport Policy---2016---Ravit Hananel,Joseph Berechman

The transportation literature has long addressed issues of social justice. And yet, justice considerations have traditionally played only a marginal role in transportation decision-making, such as those regarding investment in a new infrastructure project. Considerations of justice stress the plight of disadvantaged populations and thus aim to further equality between groups and individuals, especially equality of opportunities and mobility. But how can such considerations be derived from theories of justice and fairness in ways that make them applicable to real-world situations? In this article we offer a new framework for incorporating justice considerations into decision-making association with transport service provision. Our analytic framework is based on the capabilities approach developed by Sen and Nussbaum. After explaining the essence of this approach, we show how transportation allocation criteria can be derived and then incorporated into de facto decision-making. Finally, we provide a real-world example of the implementation of this approach in the provision of transportation services.

Proactive vehicle emissions quantification from crash potential under stop-and-go traffic conditions

- Transport Policy---2016---Cheol Oh,Jinheoun Choi,Soyoung Jung

Driving behavior from vehicle interactions, such as acceleration, deceleration, and stop-and-go, is highly associated with traffic environment and safety conditions. This study is intended to investigate the connection between traffic environment and safety, more specifically, vehicle emissions and crash potential occurring in freeway traffic. Individual vehicle trajectory data collected from the US-101 freeway are used to investigate the relationship. Vehicle emission and crash potential indices are derived to characterize traffic environment and safety conditions, respectively, and relate those indices using correlation and regression. The resultant findings reveal that vehicle emissions are positively correlated with crash potentials in a statistically significant relationship. The methodological process for vehicle emissions and crash potential estimation developed in this study is expected to be used to monitor vehicle emissions from traffic conflict potential. Correspondingly, the methodological process is also to evaluate traffic control technology and policy implementation for improvement of transportation system efficiency with the goal of transportation emissions reduction.

Motivations for motorcycle use for Urban travel in Latin America: A qualitative study

- Transport Policy---2016---Jonas Xaver Hagen,CarlosFelipe Pardo,Johanna Burbano Valente

Motorcycle use for utilitarian trips in Latin American cities has grown significantly in recent years. The researchers used qualitative methods to understand the motivations of motorcycle users that might contribute to this growth in six cities: Barranquilla, Bogotá (Colombia), São Paulo, Recife (Brazil), Caracas (Venezuela), and Buenos Aires (Argentina). Researchers used semi-structured interviews and focus groups to gather data from six categories of motorcycle users: motorcycle taxi drivers, motorcycle taxi users, motorcyclists for delivery, motorcyclists for private use, owners in the process of selling their motorcycles, and potential motorcyclists (those seeking to buy motorcycles). Common themes emerged across the six cities, including the time advantage that motorcycles offered versus deficient public transportation and congested auto traffic, the low cost of motorcycles versus other transport modes, the vulnerability of motorcyclists to traffic injury and death, and cultural aspects of motorcycle use. Policy implications include the need to make motorcycle travel safer and improve public transportation in Latin American cities.

Optimal sustainable road plans using multi-objective optimization approach

- Transport Policy---2016---Jin-Hyuk Chung,Yun Kyung Bae,Jinhee Kim

To construct a sustainable road network, the three dimensions of sustainability—economic efficiency, environmental impact, and social equity—should be significantly and simultaneously taken into account at the planning stage. Because these dimensions have trade-off relationships among them, we developed a multi-objective optimization model for planning optimal road capacity improvement. Three indicators, each measuring one dimension of sustainability, were used as the objectives in the proposed model. The total travel cost, which combines the monetized value of travel time and operating costs, was adopted as the economic indicator. The total emissions cost and the GINI coefficient based on zonal accessibility were adopted as the environmental and equity indicators, respectively. We performed an experimental test with three model scenarios to compare the single- and multi-objective approaches and different objective functions. We obtained Pareto optimal solutions using the elitist non-dominated sorting genetic algorithm. The results show that the proposed model, which is based on the multi-objective approach and considers all three dimensions of sustainability, is more suitable than other options for designing a sustainable road network. In addition, we suggest that the frequency rate of a link within Pareto solutions can be used to prioritize capacity improvement for maximum road network sustainability.

Road-based public transportation in urban areas of Indonesia: What policies do users expect to improve the service quality?

- Transport Policy---2016---Tri B. Joewono,Ari K.M. Tarigan,Yusak O. Susilo

This study investigates the relationship between road-based public transport users' preferences and expectations of particular levels of support and their support of a set of improvement policy scenarios in Indonesia. A series of structural equation modelling estimations was carried out, using empirical surveys among road-based public transportation users in three major urban areas: Jakarta, Bandung and Yogyakarta. The results show that negative experience, service importance and dissatisfaction are factors that significantly correlate with the user preferences in accepting improvement policies along with fare adjustment. The users' travel behaviours and their socio-demographic characteristics were also found to be significant in influencing the degree of such support. However, the results also show discrepancies in the influence of key determinants across the three studied cities, which indicates a need for locally designed approaches.

Public transport user's perception and decision assessment using tactic-based guidelines

- Transport Policy---2016---Mahmood Mahmoodi Nesheli,Ceder, Avishai (Avi),Simon Estines

An important step in the development of an integrated system is for policy-makers and public transport (PT) operators to remove the uncertainty of PT service performance in real-time. Implementing proper control actions, such as tactics, leads to reducing passenger waiting time and preventing missed transfers. These two undesirable features are major contributors to PT' s negative image. However, there has been no specific investigation of the effect of implementing tactics on passengers' perceptions and decisions (demand side). This paper presents the results of a qualitative and quantitative study of PT users to obtain a deeper understanding of travelers' attitudes toward transport uncertainty and to explore perceptions of real-time operational tactics on PT service quality. The study is undertaken in two-parts: (a) assessment of the effects of delay on PT users' perception and decision to change route or mode; (b) evaluation of users' decision based on various real-time operational tactics. To investigate users' perception and decisions related to various operational tactics, a user-preference survey was conducted at a major terminal in Auckland, New Zealand, and Lyon, France. The survey data was modeled following a Multinomial Logistic Regression and

a decision-tree-based method. The statistical analysis emphasized that, in various situations (e.g., waiting at a stop for more than 10min), more than 60% of the travelers will change their decision and adapt travel behaviors based on a decision-support tool. The findings provide policy makers with an understanding of the behavioral aspect of real-time operational tactics.

State aid to airlines in Spain: An assessment of regional and local government support from 1996 to 2014

- Transport Policy---2016---David Ramos-Pérez

State aid to increase air traffic at airports has been wide-spread in Spain since the 1990s Its monetary value and distribution among the various airports and carriers are little known aspects, as different formulas have been used for the transfer of funds and little research has been conducted. The use of a wide range of secondary sources has led to the creation of a database that permits an accurate description to be made of the true circumstances of state aid over these years. This paper estimates, for the first time, the amount of subsidies paid from 1996 to 2014, analysing their design and objectives and assessing their level of compliance with current EU legislation.

Transportation and spatial development: An overview and a future direction

- Transport Policy---2016---Masanobu Kii,Hitomi Nakanishi,Kazuki Nakamura,Kenji Doi

This paper provides a comprehensive review of urban land use and transport interaction (LUTI) studies over the last five decades and discusses future directions of LUTI studies. We found that the current LUTI models perform well in practical applications with regard to urban policy and infrastructure planning. However, there is concern that a vast fragmented array of models may have limitations in coping with emerging practical requirements, particularly as the analytical requirements for urban policies concerned with sustainability are growing wider and deeper. This paper provides insight into the two viable directions of LUTI studies: one is more flexible and complex, and involves intensive modeling at the local scale; the other involves simplified modeling at regional, national, and global scales. The co-evolution of these two approaches is expected to contribute to sustainability science. By cross referencing these two distinct approaches a balance can be found between the details of reality and the abstraction of theory thus increasing knowledge within the field. This would further enhance the potential of LUTI studies as urban environments become more dynamic and unpredictable.

The politics of delivering light rail transit projects through public-private partnerships in Spain: A case study approach

- Transport Policy---2016---Samuel Carpintero,Matti Siemiatycki

This paper illustrates the influence of partisan politics on transit projects delivered through public-private partnerships (PPPs) by analyzing two case studies of light rail projects in Spain. The use of public-private partnership (PPP) arrangements to deliver urban transit projects is supposed to reduce the influence of politics on project-level decisions. However, the paper illustrates how relevant decisions about these light rail projects were based primarily on political considerations, starting with the decision the deliver the projects through PPPs. Our analysis shows how the influence of political considerations have impacted on a range of factors that affect the performance of these projects, including the route selected and the integration of the system into the wider transit network and urban landscape.

The estimation of minimum efficient scale of the port industry

- Transport Policy---2016---Young-Joon Seo,Jin Suk Park

Terminal scale has been the subject of discrete episodes of hotly contested policy debates. From the perspective of port authorities or governments, knowing the

Minimum Efficient Scale (MES) is salient, because they sometimes determine the port development or expansion based on the port capacity or the existing size of the terminal. Notwithstanding the importance of knowing the exact MES, extant literature has not managed to estimate MES in the port industry. This study aims to estimate the MES in the port industry in South Korea in order to identify whether Container Terminal Operators (CTOs) are under economies of scale, constant economies of scale or diseconomies of scale; we explore a bottom point of the average cost curve in order to suggest an adequate scale for the port industry in Korea. The finding demonstrates that undercapacity may be a strong issue in Korean container ports. However, CTOs in Busan port are in an overcapacity area given the market demand of container throughput in 2013, which is approximately 25 times larger than the estimated MES; in fact, all CTOs in Busan port operate at more than 20% of MES. This study then can provide port policy makers with a helpful tool to derive ex-ante MES level at the terminal designing stage and to adjust ex-post port investment decisions at the additional port capacity designing stage, which may contribute to avoiding overcapacity.

The publicness of public transport: The changing nature of public transport in Latin American cities

- Transport Policy---2016---Laurel Paget-Seekins,Manuel Tironi

Public transport can be 'public' in multiple ways and without specificity when one public aspect changes there is no way to consider the impacts of that change. Currently there is a process of transit formalization taking place in Latin American cities that is changing the publicness of their systems. This paper identifies four publicness types- public space, public goods, public ownership, and public concern- and discusses the implications of transit projects in Santiago, Bogotá, Quito, and Mexico City on all four. While the impacts are not heterogeneous, governments are recognizing transit as a public good and introducing public funding and public ownership of Bus Rapid Transit and other infrastructure. These changes have the potential to strengthen public transit's role as public space and are increasing transit as an issue of public concern, but there has been little formalization of public participation in the process. Public transit is now a three way relationship between private operators, government agencies, and the community, but most of the focus in this new arrangement has been on the contracts between the operators and government and less attention has been paid to the relationship with the public.

Rail access charges and internal competition in high speed trains

- Transport Policy---2016---Óscar Álvarez-SanJaime,Pedro Cantos-Sánchez,Rafael Moner-Colonques,José Sempere-Monerris,Óscar Álvarez San-Jaime

This paper develops an ex ante analysis of the introduction of on-track competition in High Speed Rail (HSR) lines. The distinctive elements of our analysis are the consideration of: (i) the vertical structure of the rail sector, (ii) operators that compete in prices and number of services, and (iii) access charges for the use of the rail infrastructure that are endogenous. We provide simulation results for three Spanish HSR routes. The socio-economic viability of entry is found to depend on whether infrastructure and rail operations are integrated or separated, and also on the policy rule to set rail access charges. Firstly, separation without entry is not an appropriate good policy: the reduction in prices is followed by a reduction in the number of services that leads to lower consumer surplus and lower industry profits. Secondly, marginal cost pricing, that would entail losses to the infrastructure manager, would make entry profitable because access charges are much lower; welfare gains would be in the range of 6–9% higher than in the pre-entry scenario. This conclusion holds for large increases in rail traffic. Thirdly, the consideration of a more realistic scenario (where the entry of a new operator would lead to a modest rise in the whole rail traffic), while encouraging entry, would imply welfare losses yet consumer surplus would go up as long as access charges are set to marginal cost

pricing.

Implementation of accessibility policy in municipal transport planning – Progression and regression in Sweden between 2004 and 2014

- Transport Policy---2016---Berglind Hallgrimsdottir,Hanna Wennberg,Helena Svensson,Agneta Ståhl

Practitioners and transport planners should be aware of the different policies in transport planning and laws and regulations in relation to them. Nevertheless, research has shown that implementation of transport policies, whatever their focus may be, does not always result in them being employed in the daily transport planning. In Sweden, accessibility policy has a long tradition but gained increased interest in 1999 with an action plan which aimed at ensuring participation of all people with all kinds of disabilities. The overall aim of this study was to investigate how accessibility policy for older people and people with disabilities in the outdoor environment has been implemented in the daily transport planning and how it has progressed/regressed over time. The results in this paper are based on longitudinal data from questionnaire sent out to all municipalities in Sweden in 2004 and 2014. The results indicate that it has become more established to consider accessibility in transportation planning. However, the results also show that there are still some considerable differences between the municipalities regarding their level of implemented accessibility policy. Also, the municipal transport planners seem to be less aware of the legislative directives and recommendations in 2014 than in 2004. Overall, there is need for improved knowledge and awareness of accessibility issues among all actors involved in municipal planning and a need for a more effective and systematic approach when planning and designing outdoor environments for all.

The effect of minimum parking requirements on the housing stock

- Transport Policy---2016---Matts Andersson,Svante Mandell,Helena Braun Thörn,Ylva Gomér

The cost of parking is in many cities subsidized and instead channelled through higher housing prices, wages, taxes, etc. The effects on other markets are principally well known, but the work on the area is limited. In this paper, we study how parking norms affect the size of the housing stock. Our analysis is based on a model of the rental, asset- and construction markets, the results are quality-assured by interviews with market actors. Prices and profits are affected when constructors are forced, through parking norms, to build more parking spaces than the customers demand. Parking norms reduce the housing stock by 1.2% and increase rents by 2.4% (SEK 300) in our example suburb.

Sharing urban sidewalks with bicyclists? An exploratory analysis of pedestrian perceptions and attitudes

- Transport Policy---2016---Lei Kang,Jon D. Fricker

Bicycling and walking are gaining popularity for both commuting and recreation. However, when faced with limited right-of-way width, many transportation agencies find it impractical to designate separate space for bicyclists in urban roadway corridors, instead devoting their limited funds to other projects. As a result, some bicyclists – feeling threatened by motor vehicles – use sidewalks for at least part of their trip. Laws governing bicyclist use of sidewalks are not consistently enforced in various cities and countries. Pedestrian-bicycle shared space has rarely been studied from a pedestrian's perspective in an urban context. Therefore, gaining a better understanding of the factors that influence pedestrian attitudes toward sharing a sidewalk with bicyclists can be useful in evaluating shared space strategies and guiding investments in bicycle facilities. Using the responses of 114 persons to 15 carefully constructed 60-s video clips of urban sidewalks in four Chinese cities, this study characterizes pedestrian attitudes regarding sharing sidewalks with bicycles under different sidewalk configurations. By estimating a random parameters ordered probability model (to account for unobserved heterogeneity across respondents), we found pedestrians who wanted a "safe distance" greater than 1.5meters were more

likely to possess a less tolerant attitude. Attitudes of pedestrians toward bicyclists on sidewalks also depend on the presence or absence of dedicated bicycle facilities. The effects of other significant factors are also quantified in this paper. Implications for policy makers in evaluating shared-space strategy can be drawn from this empirical study.

Instability and dynamic cost elasticities in freight transport systems

- Transport Policy---2016---Paolo Ferrari

The paper studies two properties of freight transport systems with dynamic cost functions. The first property is that the dynamic cost functions can give rise to situations in which the transport system is unstable. This property has a number of consequences. One of them – important from a practical point of view – is that, if a transport mode implements a plan of improvements of its characteristics in order to stop the decline of the proportion of freight flow it carries, there is a time threshold to start the improvements, beyond which the plan is unsuccessful. The other property is that the dynamic cost functions give rise to cost elasticities that vary over time, with asymptotic values that tend to zero as transport cost decreases. This means that, if one implements successive improvements of the characteristics of a transport mode, their effects diminish progressively.

At the core of airline foreign investment restrictions: A study of 121 countries

- Transport Policy---2016---Jan Walulik

There is a growing discrepancy between the success of economic liberalization in international air services and the remaining limits to trans-border airline investment, especially the constraints embedded in national airline establishment regimes. The discussion on this problem should be backed with adequate legal research concerning the actual state of regulations and government actions regarding airline investment. The aim of this article is, therefore, to deliver practical information on these limitations worldwide, along with careful annotations. The paper portrays the world-wide scale and extent of the discussed restrictions by presenting regulations on airline ownership and control in 121 states and territories. Normative characteristics of the airline nationality requirements are discussed based on the above material, key rulings and literature. This includes an analysis of legal construction of the limitations, their sources and addressees, relations of the ownership and control tests and the role of discretionary regulatory policy. The study shows that airline investment rules worldwide generally remain restrictive and that the potential for reform is outside the ownership and control-based system rather than within it.

Border crossing design in light of the ASEAN Economic Community: Simulation based approach

- Transport Policy---2016---Sathaporn Opasanon,Songyot Kitthamkesorn

Customs post is a logistics infrastructure playing a critical role in international transportation. This research provides a systematic framework and simulation analysis for designing operations and infrastructure for modern customs and cross-border transport. A case study of the largest customs post of Thailand in terms of cargo traffic, is carried out to portray the procedural steps of the proposed approach. Literature review and in-depth interviews with associated control agencies were conducted to identify required infrastructure components, border clearance procedures and customs formality in light of the ASEAN Economic Community. Linear regression models were developed to predict the future annual volume of traveler and vehicle flow. Simulation models were constructed to justify various operations and designs of key border-crossing facilities, including immigration control booths, vehicle inspection station and truck clearance area. The principles of transport and trade facilitation were adopted to ensure the effectiveness and efficiency of border crossing process. The results suggest that split configuration with joint inspections on both sides is the most practicable

border control for the customs post where joint customs inspection is performed in the country of entry. To avoid unnecessary traffic interruption by different types of traffic, passenger and freight flow are separated in the design. For personal vehicles, a drive-through border crossing is proposed to allow a driver to obtain immigration and customs checks via the vehicle inspection booths without getting off the car. The analytical framework and simulation analysis proposed in this research is practical and useful for analyzing the design of other customs posts with similar traffic and cross-border patterns.

Understanding the determinants of demand for public transport: Evidence from suburban rail operations in five divisions of Indian Railways

- Transport Policy---2016---Syed Rahman,Chandra Balijepalli

This paper analyses suburban rail fare elasticity and compares the results across five suburban divisional operations of the Indian Railways in three cities viz., Chennai, Kolkata and Mumbai. The three cities chosen have a highly varying modal share of public transport trips and thus offer interesting insights into the attitudes of trip makers towards the changes in operational variables such as fares, service levels. This paper contributes towards understanding of the determinants of demand for public transport in a developing country and applies econometric methods involving static and dynamic modelling methodologies. This research addresses the question of smaller sample sizes which constrain the use of standard regression approaches and applies a bootstrapping method which substitutes for traditional assumptions on distributions and asymptotic results. It was found that the suburban rail demand is inelastic to fare which indicates that the revenue would increase with an increase in fare. Finally, the paper illustrates the use of computed elasticities by estimating the demand for suburban rail in Kolkata.

Financial sustainability of rail transit service: The effect of urban development pattern

- Transport Policy---2016---David Z.W. Wang,Hong K. Lo

The positive correlation between urban population density and transit service patronage is well recognized, as was ascertained via statistical approaches in previous studies. In this study, we seek to derive some prescriptive results of the relationship between urban population density and the financial sustainability of rail transit service. We consider an idealized metropolitan region with a central business district (CBD) at its center, whose population is distributed according to a certain density gradient pattern. Trips generated from the region to the CBD are either served by the rail service supplemented with feeder buses, or by autos. We study the effect of urban development density on the financial sustainability of the rail service by examining the supply and demand patterns. The analysis result sheds light on the threshold urban density required to ensure financially sustainable rail transit service. The result also provides guidelines to policy makers for planning urban developments with financially sustainable rail services.

The role of involvement in regards to public transit riders' perceptions of the service

- Transport Policy---2016---José Luis Machado-León,Rocío de Oña,Juan de Oña

Research on involvement of public transit customers, which can be defined as the level of interest or importance of public transit to a passenger, is scarce and no study has attempted to comprehensively analyze this concept in the public transit sector. Based on behavioral and marketing literature, this paper tests three possible roles of involvement in regards to passengers' perceptions of a Light-Rail Transit (LRT) service in Seville (Spain): the mediator, moderator and antecedent roles. The structural equation modeling approach was used to test the conditions of mediation and moderation in social psychology and to evaluate

the theoretical relationships of involvement as an antecedent. A nested model strategy allowed us to compare competing models and a multiple group analysis was conducted to test for moderation. Our results indicate that involvement of public transit users could positively affect their evaluations of the service quality, and enhance their intentions to reuse the service and recommend it to others. Furthermore, involvement could also moderate the direct effect of service quality perceptions of highly involved users on their behavioral intentions. Consequently, higher levels of involvement could lead perceptions of service quality to affect positive behavioral intentions mainly through customer's satisfaction. Furthermore, the level of product hierarchy at which passengers make their decisions to use a transportation mode may affect how they make their evaluations and decisions in regards to that mode. These results lead to important and practical considerations for transportation managers who aim to enhance passengers' intentions to reuse the service and recommend it to others. The insight gained with this paper in regards to the effect of involvement on passengers' perceptions may allow the design of effective marketing strategies that aim to grow transit ridership by increasing the importance of public transit for passengers.

Competitive tendering and cross-shareholding in public passenger transport

- Transport Policy---2016---Terje Andreas Mathisen

Competitive tendering is a widespread procurement strategy for increasing efficiency in the passenger transport industry. Motivated by the structural changes following the increased use of competitive tendering observed in the Norwegian local bus industry, this paper uses first-price single-bid auction theory to demonstrate that rational firms can respond strategically with cross-ownership when exposed to the uncertainty entailed to competitive tendering. This could raise the equilibrium bid implying that the subsidy reduction rationale for introducing competitive tendering is partly invalidated. Transport authorities should be aware of such possible structural changes when considering further implementation of competitive tendering.

A random utility model for park & carsharing services and the pure preference for electric vehicles

- Transport Policy---2016---Armando Cartenì,Ennio Cascetta,Stefano de Luca

Most of the existing Carsharing business models mainly rely on gasoline vehicles and diesel vehicles, but in recent years there has been a significant increase in hybrid electric vehicles (HEVs) and a resurgence in electric vehicles (EVs). Within this framework, this paper investigates and models the choice to switch from a private car trip to a carsharing service available in peripheral parks as well as the propensity to choose an electric vehicle for such a service. In particular, three issues are addressed: (i) investigating and modelling the propensity to choose carsharing as a transport alternative within a neighbourhood residential carsharing business model; (ii) estimating the effect of also having an EV option available; (iii) measuring the "pure preference", if any, in using electric vehicles over traditional ones, in a context excluding factors that may bias such users preference (e.g. purchase price, energy costs, recharging facilities etc). The analyses are based on a stated preferences survey undertaken on 600 car drivers entering the city centre of Salerno (Southern Italy), and on the estimation of a binomial Logit model with serial correlation. Results allow an interpretation of the main determinants of the short-term choice of carsharing services (i.e. without any car-ownership changes), give general behavioural insights, make it possible to quantify the "pure preference" for EV and the demand elasticity with regard to different pricing strategies of the carsharing services.

An international experience on the evolution of road costs during the project life cycle

- Transport Policy---2016---Uven Chong,Omar Hopkins

The Millennium Challenge Corporation (MCC) is a United States government development agency that

promotes economic growth and poverty reduction in poor but well-governed countries. MCC is legislatively mandated to obligate total grant amounts at the start of a project and to implement within 5 years. As a result, MCC transport infrastructure projects are sensitive to cost variability. Existing quantitative literature on transport infrastructure costs in developing countries is sparse and concentrated on the construction phase. This study evaluated the cost variability for MCC road construction projects and identified mitigating strategies. The mean increase between funding authorization and final costs was 135%. Project cost estimates were most uncertain during the design phase, where the mean increase between funding authorization and engineer's estimates was 100%. Three policy strategies to manage variations between planned and actual costs are discussed: improving funding authorization estimates, improving contingency policies, and using economies of scale in procurement packaging.

A new evaluation and decision making framework investigating the elimination-by-aspects model in the context of transportation projects' investment choices

- Transport Policy---2016---R. Khraibani,André de Palma,Nathalie Picard,I. Kaysi

The Transportation Elimination-by-Aspects (TEBA) framework, a new evaluation and decision making framework (and methodology) for large transportation projects, is proposed to elicit, structure and quantify the preferences of stakeholder groups across project alternatives. The decision rule used for group decision making within TEBA is the individual non-compensatory model of choice elimination by aspects (EBA). TEBA is designed to bring out the decision rule employed by decision makers when ranking the options presented, incorporate various criteria types and ease communication of relevant information related to options and criteria for multiple stakeholder groups. It is a platform for democratizing the decision making process. The TEBA framework was tested using a case study investigating alternative land connections between Beirut and Damascus. Key results showed that (1) stakeholders have employed EBA in making decisions, (2) a defined group of decision makers will rank options differently when provided with modified sets of criteria, (3) the public sector and general public groups ranked Impact on Employment among the top criteria, (4) the most important criterion per group from EBA was as expected; (5) the EBA analysis suggested that only 3–4 criteria are significant in reaching a decision; (6) aggregation of user assigned weights masked relative importance of criteria in some cases; and (7) analysis of user assigned weights and Minimum Threshold (MT) values suggest higher risk perception with increased criterion importance. Policy implications include recommendation to reach out to stakeholders for input on decisions, including the "people" but refrain from relying on criteria weights assigned by "experts" and reduce the "experts"' role in decision making. Also, it is recommended to model the decision making in a probabilistic framework rather than a deterministic "one score" approach, seek to identify a consensus ranking, place particular attention on determining the values of the criteria that emerged as "top" at the evaluation stage and continue to emphasize risk measures.

Critical renegotiation triggers of European transport concessions

- Transport Policy---2016---Sérgio Domingues,Joaquim Miranda Sarmento

In this paper, we assess the critical factors for the renegotiation of transport infrastructure concessions. We depart from a literature review on the renegotiation of infrastructure concessions and of the main renegotiation triggers and the methodologies used to assess them. By collecting data from a total of 32 transport PPP projects, in 13 European countries, we identified a total of 37 renegotiations. Our findings corroborate the literature in that a country's economic and legal environment has an important impact on the likelihood of renegotiation. The occurrence of elections is shown to have an indirect impact on increasing renegotiations. Furthermore, both the uncertainty associated with developing new PPP projects with budgetary motivations,

and the operational stages of long term contracts, play a critical role in contractual renegotiation.

An evaluation of the operational efficiency of turkish airports using data envelopment analysis and the Malmquist productivity index: 2009–2014 case

- Transport Policy---2016---H. Hasan Örkcü,Cemal Balıkçı,Mustafa Isa Dogan,Aşır Genç

Turkey's airport industry has experienced substantial growth over the recent years, but few studies have analysed their operational efficiency. This paper uses Malmquist productivity index (classical and bootstrapping) to assess the operational performance of 21 Turkey airports during the period of 2009 through 2014. The findings indicated that the efficiency and productivity of the majority of the Turkish airports increased during the period under investigation. However, in the period of 2011–2012, a significant decline was observed in efficiency. The main reason of this stagnation is the significant increase in the physical capacity of the Turkish airports in 2011. The non-reflection of the increasing physical capacity to passenger and cargo traffic caused a decline in 2012. In spite of declining in the period of 2011–2012, efficiency values of Turkish airports have increased again since 2013. Moreover, decomposition of the Malmquist index showed that most Turkey airports experienced losses in efficiency; however, in terms of technology, they have progressed. Two significant factors (i.e. operating hours and percentage of international traffic) were identified by the Simar-Wilson double bootstrapping regression analysis as explaining variations in airport efficiency.

Evaluating the impacts and benefits of public transport design and operational measures

- Transport Policy---2016---Masoud Fadaei,Oded Cats

Design and operational measures are designed and implemented to improve public transport performance and level-of-service. In the case of urban bus systems, priority, operational and control measures are aimed to elevate bus services to buses with high level of service (BHLS). Even though there is an explosive growth in design and operational measures implementation and growing research interest in investigating their impact on performance indicators, there is lack of a systematic evaluation of their benefits. We present an evaluation framework and a detail sequence of steps for quantifying the impacts of public transport design and operational measures. The effects of service performance on travel times and costs are assessed by accounting for relations between reliability and waiting times, crowding and perceived travel times, and vehicle scheduling and operational costs. The evaluation integrates the implications of reliability on generalized passenger travel costs and operational costs. We deploy the proposed evaluation framework to a field experiment in Stockholm where a series of measures were implemented on the busiest bus line. The results suggest that the total passenger and operator benefits amount to 36.8 million Swedish crowns on an annual basis. The overall assessment of the impacts of design and operational measures enables the comparison of different implementations, assess their effectiveness, prioritize alternative measures and provide a sound basis for motivating investments.

Linking to compete: Logistics and global competitiveness interaction

- Transport Policy---2016---Şule Önsel Ekici,Özgür Kabak,Füsun Ülengin

A country's ability to trade globally depends to a great extent on the traders' access to efficient logistics networks. The efficiency of logistics networks, in its turn, depends on government services, investments, and policies. Building infrastructure, developing a regulatory regime for transport services, and designing and implementing efficient customs clearance procedures are the areas where governments play an important role. One of the measures for logistics performance at national level is the Logistics Performance Index (LPI) published by the World Bank Group. LPI is composed of six indicators namely customs, infrastructure, service quality, timeliness, international shipments, and

tracking and tracing. This study argues that there is a close relationship between global competitiveness and the logistics efficiency of a country and it analyzes the validity of these relations using an artificial neural network (ANN) and cumulative belief degrees (CBD) approach. For this purpose; initially, a screening process is carried out to find the World Economic Forum' s competitiveness indicators that may have an impact on each of the LPI indicators. Subsequently, the relationship between the competitiveness indicators and LPI indicators is analyzed using ANN where the LPI indicators are represented by CBDs. As a case study, this methodology is used to analyze Turkey' s logistics performance and to develop the basic strategies to be adopted by the government to achieve a targeted LPI level for the country. Among the many factors relating to logistics performance, it was found that fixed broadband Internet availability is the most important target area for improvement related to sustainable logistics policy.

Identifying transportation disadvantage: Mixed-methods analysis combining GIS mapping with qualitative data

- Transport Policy---2016---Elizabeth Shay,Tabitha S. Combs,Daniel Findley,Carl Kolosna,Michelle Madeley,David Salvesen

Rural residents, including elderly, low-income or people with language or physical mobility challenges, may experience transportation disadvantage when land use patterns, built environment and transportation services fail to meet their mobility needs. A technique for identifying transportation-disadvantaged populations, intended for use by local practitioners and designed with their skills and professional routines in mind, was piloted in five rural counties in North Carolina. Maps showing areas of elevated theoretical risk of transportation disadvantage were constructed by overlaying layers of readily available, Census-based geospatial data, to generate composite maps where increasing intensity of shading denotes populations with multiple risk factors. The maps were used in key informant interviews with local transportation-relevant professionals to access their expert knowledge, and in focus groups with non-expert residents to probe their travel routines and need to access essential goods, services and activities. These multiple data sources supported an iterative process of initial mapping, stakeholder outreach, revised mapping, and continued discussion.

Value of travel time changes: Theory and simulation to understand the connection between Random Valuation and Random Utility methods

- Transport Policy---2016---Manuel Ojeda-Cabral,Caspar Chorus

This paper identifies and illustrates the theoretical connection between the Random Valuation (RV) and Random Utility (RU) methods for Value of Travel Time Changes (VTTC) analysis. The RV method has become more and more popular recently, and has been found to lead to very different estimation results than conventional RU models. Previous studies have reported these differences but did not explain them, which limited the confidence in the RV model as a useful foundation for transport policy analysis. In this paper, we first analytically show in what way exactly the two models are different and why they may generate different estimation results. Based on this deeper understanding of the connection and difference between the two models, we formulate hypotheses regarding the conditions under which differences in estimation results are expected to be smaller or larger. Using synthetic data, we empirically test these expectations. Results provide strong support for our hypotheses, allowing us to derive a number of practical recommendations for analysts interested in using the RV and RU models in their VTTC-analysis.

Transportation planning and quality of life: Where do they intersect?

- Transport Policy---2016---Richard J. Lee,Ipek N. Sener

Policy makers and researchers are increasingly recognizing the connections between public health and

transportation, but health improvements are typically framed from a physical health perspective rather than considering broader quality of life (QOL) impacts. Currently, there is a limited understanding of the ways in which transportation and QOL intersect, and little is known about how metropolitan planning organizations (MPOs) in the United States are addressing QOL outcomes. This study addressed these gaps by developing a conceptual framework holistically linking transportation to QOL. The proposed framework identified four transportation-related QOL dimensions—physical, mental, social, and economic well-being—which are predominantly influenced by three components of the transportation system: mobility/accessibility, the built environment, and vehicle traffic. This framework then formed the basis for a content analysis of 148 long-range transportation plans in the United States to evaluate the extent to which QOL is being considered in the planning process. The results of the analysis and a follow-up examination of 13 plans revealed that MPOs are inconsistently addressing QOL. Plans primarily targeted QOL enhancement from the perspective of physical well-being, while mental and social well-being were rarely considered. Policy recommendations were provided to more comprehensively integrate QOL into the transportation planning process.

Modeling and evaluating FAIR highway performance and policy options

- Transport Policy---2016---Wenbo Fan,Xinguo Jiang,Sevgi Erdogan,Yanshuo Sun

Fast and Intertwined Regular (FAIR) highway had been proposed as a road pricing concept that distributes credits to the low-income commuters. The paper models the FAIR highway operations considering the heterogeneity of commuters and lane-by-lane variations. A bilevel programming framework is established to concurrently model the FAIR operator’ s pricing strategies (at the upper level) and commuters’ mode and lane choices (at the lower level). Various operation policy scenarios are designed and tested to evaluate the FAIR highway performance on an experimental highway corridor. A series of sensitivity analyses are conducted with respect to the key conditional factors such as travel demand levels and lane-by-lane variations. Numerical results show that compared to the do-nothing case the FAIR scheme can significantly alleviate the traffic congestion and promote the use of high-occupancy vehicles. The FAIR highway, however, has two potential disadvantages: (i) the toll level is increased when subsidizing the low-income commuters and (ii) the divergence of lane utilization is aggravated on the FAIR highways compared to the do-nothing case. The study provides insights for the decision-makers and practitioners on the potential outcomes of a FAIR highway application.

Modeling the demand for a shared-ride taxi service: An application to an organization-based context

- Transport Policy---2016---Zahwa Al-Ayyash,Maya Abou-Zeid,Isam Kaysi

Traffic congestion has become a worldwide concern. One way to address this problem is to enhance the performance of the transport system by means of sound public transportation that is capable of appropriately addressing the demand of travelers, especially in highly urbanized areas of the world. The implementation of shared-ride transportation has been a viable transportation solution in many areas. The purpose of this study is to evaluate the market demand potential of a Shared-Ride Taxi (SRT) service in an organization-based context. It presents an integrated choice and latent variable modeling framework for modeling the number of times per week a Shared-Ride Taxi would be used if it were implemented at an organization. The study involves extensive analysis of practical policy scenarios through which the impact of cost incentives (subsidies) and multiple SRT attributes on travelers’ behavior is examined.

Users’ willingness to ride an integrated public-transport service: A literature review

- Transport Policy---2016---Subeh Chowdhury,Ceder, Avishai (Avi)

The research question this review focused on is "What are the factors that influence commuters' willingness to ride an integrated public transport (PT) system?" . Transfers are a key component in the successful operation of an integrated system. The role of transfers is two-folds. First, transfers increase the accessibility of various destinations for users. Second, interchanges that facilitate transfers need to be provided in the network at strategic locations to reduce duplication of the PT routes; thus improving the reliability of the network. This work provides a comprehensive review of the studies focusing on mode switch to PT with emphasis on factors influencing commuters' willingness to make transfers. It is categorized into three perspectives: psychological, operational and policy. This qualitative systematic review reveals that the predominant focus of studies related to transfers has been on the operational aspect. The number of studies related to the psychological aspect and the effects of policies, on integrated systems, to encourage ridership of routes with transfers is limited. This is a major shortcoming in our current capability, as without a clear understanding of all three aspects, transfers are unlikely to be designed properly when developing an integrated multimodal system.

Transportation disadvantage and activity participation in the cities of Rawalpindi and Islamabad, Pakistan

- Transport Policy---2016---Muhammad Adeel,Anthony Gar-On Yeh,Feng Zhang

This paper explores public transport related issues and their impact on activity participation in everyday life in the Pakistani urban context. The study is based on primary data collected through questionnaire survey from four case study communities in the twin cities of Rawalpindi and Islamabad, each of whom experience reduced access to public transport. Results show that out of home activity uptake is gender segregated. Men were more likely to travel for almost all activities. They were also more likely to either walk or use public transport for daily activity participation. On the other hand, women participated less frequently in the out of home activities. They were more likely to use personal automobile as well. Quantitative analyses highlight that transport related issues such as the financial costs of travel, availability and quality of public transport played a major role in shaping individual's activity participation. People often cut down their activities that required the use of motorized, particularly public transport. Women appeared to be additionally disadvantaged due to limited access to economic resources and increased reliance on personal means of transportation in the study area.

Do exchange rate volatility and income affect Australia's maritime export flows to Asia?

- Transport Policy---2016---Junwook Chi,Seu Keow Cheng

Given that existing literature does not explicitly take exchange rate volatility into account in an international maritime freight model, this paper attempts to examine the short- and long-run impacts of real income, bilateral exchange rate, and exchange rate volatility on Australia's maritime export volume to its major Asian trading partners (China, Japan, Republic of Korea, Taiwan, India, Indonesia, and Malaysia). Using quarterly data for the period of 2000:Q1-2013:Q2, we include two measures of real exchange rate volatility (GARCH(1,1) and mean-adjusted relative change measures) for comparison purposes. The results show that real income is a crucial determinant of maritime export volume in both the short- and long-run, implying that Australia's maritime exports are predominantly driven by the economic growth in its major Asian trading partners. This paper finds evidence that exchange rate volatility has a significant long-run effect in the majority of cases, suggesting that exchange rate volatility appears to be an important factor affecting maritime export volume. The effects of exchange rate volatility are found to vary across country-pairs, and hence confirming the importance of using disaggregate data to uncover the differential effects on maritime exports by country. This study also reveals that the two measures of exchange rate volatility can produce different effects and thereby, it is important to select

an appropriate measure of exchange rate volatility.

Managerial perceptions of incentives for and barriers to competing for regional PSO air service contracts

- Transport Policy---2016---Rico Merkert,O' Fee, Basil

While it has been established in previous research that public support for air services to peripheral or economically underdeveloped regions is justifiable, the current EU Public Service Obligation (PSO) air service mechanism and particularly, the level of competition for PSO contracts, can be improved. This paper sets out to identify best practice for PSO contract sponsors by viewing issues from an air operator perspective. The heart of this paper is a survey of European regional airlines. We examine the airline managers' perspectives in relation to assessing and bidding for PSOs on scheduled air services. Possible areas for improvement include issues around the dissemination of PSO opportunities in the single market, adequate response times for proposal preparation/submission and preparing for the service launch date as well as incentives to develop the air service during the contract period in terms of revenue and patronage. We also highlight issues related to entry barriers, risk sharing, transparency and effectiveness of PSO contract awarding procedures.

Who will be affected by a congestion pricing scheme in Beijing?

- Transport Policy---2016---Joshua Linn,Zhongmin Wang,Lunyu Xie

Equity concerns have been an important obstacle to adopting congestion pricing, in both developed and developing countries. However, the existing evidence on the equity effects of congestion pricing has come only from developed countries. In this paper, we shed light on the distributional consequences of a congestion pricing scheme currently under consideration in Beijing. We find that under this scheme, which covers the areas within the city's third ring road, a very small proportion of motorized trips would be subject to the full congestion charge. The directly affected individuals typically have higher household incomes and are wealthier than individuals who are not directly affected by the congestion pricing scheme. This finding reflects the fact that individuals who drive to work in Beijing are relatively wealthy. More important, we find that the Suits index for the congestion charge is 0.027, indicating that the congestion charge is slightly progressive.

Are fuel-efficient aircraft worth investing in for non-Annex country airlines? An empirical analysis of Kenya Airways with an aircraft appraisal cost–benefit analysis model

- Transport Policy---2016---Chikage Miyoshi,Eva Ruiz Ibáñez

This paper aims to assess the impact of the European Union Emissions Trading Scheme (EU ETS) legislation on non-Anne country airlines by using a cost-benefit analysis (CBA), assuming those airlines are treated equally. A financial appraisal model of a case study of Kenya Airways is created to answer two key questions: (1) whether the EU ETS results in a negative impact on airlines located in developing countries or not, and (2) whether new and fuel efficient aircraft can be an effective mitigation option for those airlines and how its impacts could be different compared to other carriers in developed countries serving the same market. The results suggest that the option of keeping the current aircraft is preferred for airlines due to the additional large investment cost, while the fuel efficient aircraft option provides benefits across all stakeholder and related groups such as passengers, the workforce, and the environment. It is found that, compared to airlines in developed countries, the high investment requirement burdens carriers in developing countries to a greater extent due to the higher discount rate and exchange rate volatility. For global market based measures (MBMs), the option to support carriers in developing countries can be a possible measure to retain the equity balance among the parties involved, as it may lower barriers to implement new technology-such as new and fuel efficient aircraft-which mitigates air-

craft emissions. Specifically, carbon financing through the revenue from global MBMs' offset schemes could be used towards this objective.

Survey methodology for measuring parking occupancy: Impacts of an on-street parking pricing scheme in an urban center

- Transport Policy---2016---Oded Cats,Chen Zhang,Albania Nissan

Parking pricing policies can be used as a policy instrument to steer the parking market and reduce the externalities caused by traffic in general and parking in particular. A more efficient management of parking demand can improve the utilization of the limited parking capacity in high-demand areas. Even though parking policies are often a topic of public debate, there is lack of systematic empirical analysis of various parking measures. This paper proposes a survey methodology to empirically measure the impacts of on-street parking policies based on automated parking transaction data. Parking performance is computed based on data available from ticket vending machines calibrated using floating car films. The survey method allows comparing parking occupancy including its temporal variations, allowing the analysis of the accumulated utilization pattern. Average and maximum parking occupancy levels, throughput, parking duration and total fare collection are compared prior and following the introduction of a new parking scheme for visitors to Stockholm inner-city, Sweden. The results indicate that the policy fulfilled its objective to increase the ease of finding a vacant parking place in the central areas and even resulted with underutilized parking spaces.

The pursuit of satisfaction: Variation in satisfaction with bus transit service among riders with encumbrances and riders with disabilities using a large-scale survey from London, UK

- Transport Policy---2016---David Verbich,Ahmed El-Geneidy

To retain and grow ridership, transit agencies continuously survey riders to learn how to improve services and understand what leads to rider satisfaction. Nevertheless, transit riders are not a homogeneous entity and understanding the distinctions between transit riders can help transit agencies in their efforts to provide satisfactory service to retain existing riders and attract new ones. To uncover how diverse aspects of bus services can differentially impact satisfaction of different riders, we use data from a large-scale, multiyear bus satisfaction survey from London, UK. Specifically, we model satisfaction using logistic regressions to learn how encumbered riders and riders with physical disabilities value different features of bus services compared to other types of riders. For riders traveling with large items, shopping bags, or children, we find that satisfaction depends on the presence and condition of a bus shelter and the availability of a seat. Satisfaction of riders with disabilities depends on information availability at the bus stop, as well as trip speed and reliability. Our findings indicate that improving waiting area conditions and providing information at the stop can increase the satisfaction of riders with encumbrances and disabilities, respectively. Findings from this paper can be of benefit to transit planners and policy makers as it offers new insights about the determinants of satisfaction of two groups of bus riders not often considered in the public transport literature.

Trip mode and travel pattern impacts of a Tradable Credits Scheme: A case study of Beijing

- Transport Policy---2016---Meng Xu,Susan Grant-Muller

We examine how trip mode and travel pattern of travelers are influenced by a given Tradable Credits Scheme (TCS). An analysis framework is proposed to investigate the effects of a basic TCS. Using a simulation analysis and case study from the Beijing municipality, we demonstrate that a TCS can achieve a target for reducing the expected car kilometers. The research demonstrates that a TCS will have an effect on travelers' mode choice. However, it is likely to have only a minor effect on the overall travel pattern in terms of

OD movements.

An application of the double hurdle model to petrol and diesel household expenditures in Ireland

- Transport Policy---2016---John Eakins

The objective of this study is to examine the determinants of household petrol and diesel expenditures using a large micro data set of Irish households. This research is timely given the switch in purchases from petrol cars to diesel cars arising out of changes in how vehicle registration tax and motor tax rates are calculated. The study finds that households living in urban areas, households that spend money on public transport and households that do not possess a car will spend less on both petrol and diesel. In contrast, households in possession of higher number of cars, households with more occupants working and households with higher levels of household spending will spend more on petrol and diesel. The econometric methodology employed takes into account the fact that the dependent variable contains zero expenditures. Such an approach has never previously been applied to analyse Irish household transport use and provides interesting insights. In particular the effect that the explanatory variables have on participation in the market is quite different for petrol and diesel. For example, the model predicts a much larger increase in the probability that households will spend in the diesel market relative to the petrol market as income increases. The results have implications for the design of tax policy in the transport sector as the Irish economy recovers and average household income increases.

Valuation of sitting and standing in metro trains using revealed preferences

- Transport Policy---2016---Alejandro Tirachini,Lijun Sun,Alexander Erath,Artem Chakirov

The estimation of differences in the value of in-vehicle time sitting and standing is usually made with stated choice (SC) data, partly due to the lack of revealed preference data. In this paper, we use the observed behaviour of a subset of metro users in Singapore, who are willing to travel a longer time (into the opposite direction or backwards) to secure a seat for the actual trip in the direction towards their destination. We use smart card transactions to estimate the share of users who are willing to travel in the opposite direction during the first part of their trip and the average train occupancy per section to estimate differences in the valuation of travel time sitting and standing – translated into a standing multiplier or standing premium, which is analogous to the crowding multiplier that is usually found in the crowding valuation literature. We find that the standing multiplier is between 1.18 and 1.24 with the current crowding levels in the morning peak and can be as much as 1.55 with a density of 3 standing passengers per square metre. The results are compared to previous SC studies from other countries. The values found here are an indication of a standing premium that can be used to assess the social benefit of increasing the seat capacity of a public transport system and of applying peak spreading strategies.

Evaluation of subsidies programs to sell green cars: Impact on prices, quantities and efficiency

- Transport Policy---2016---Juan Jiménez González,Jordi Perdiguero,Carmen García

During the recent period of economic crisis, many countries have introduced scrappage schemes to boost the sale and production of vehicles, particularly of vehicles designed to pollute less. In this paper, the authors analyze the impact of a particular scheme in Spain (Plan2000E) on vehicle prices and sales figures as well as on the reduction of polluting emissions from vehicles on the road. They considered the introduction of this scheme an exogenous policy change and because they could distinguish a control group (both non-subsidized vehicles and the same vehicles in Slovenia) and a treatment group (subsidized vehicles), before and after the introduction of the Plan, the authors were able to carry out their analysis as a quasi-natural experiment. The study reveals that manufacturers increased vehicle prices by 600 € on average. In terms of sales, econometric estimations revealed that the Plan would not cause

any increase in sales. With regard to environmental efficiency, comparing the costs (invested quantity of money) and the benefits of the program (reductions in polluting emissions and additional fiscal revenues) and it has been found that the Plan would only be beneficial if it boosted demand by at least 30%.

Degrees of freedom and innovations in construction contracts

- Transport Policy---2016---Johan Nyström,Jan-Eric Nilsson,Hans Lind

DB (Design and build) and DBB (Design-bid-build) represent two different contracting forms in construction. The first provides the contractor degrees of freedom in design, which enables innovation. DBB is the safe and traditional contracting form, where the client is responsible for the design and the contractor builds accordingly. Using a case study approach of five Swedish road construction projects, the present paper compares these contracting forms in terms of innovation. In this, the client's labelling of a contract being DB or DBB is taken at face value. It is established that the actual degrees of freedom for the contractors are highly restricted and that no important difference can be seen between the contracting forms regarding innovation. This implies that it is no reason to expect more innovation simply by labelling contracts as DB. Rational explanations for the usage of DB-contracts with bounds on the degrees of freedom are also suggested. Policy implications for promoting innovation in infrastructure contracting finalise the study.

Exploring the effects of perceived values, free bus transfer, and penalties on intermodal metro–bus transfer users' intention

- Transport Policy---2016---Yung-Hsiang Cheng,Wei-Chih Tseng

This study examines metro passengers who use intermodal transfer service during their metro system and bus travel and develops research hypotheses based on the perceived value theory. The intentions of potential and retained passengers to use intermodal transfer are influenced by the different amounts of information they possess as well as potential intermodal transfer penalties and benefits (perceived value and free bus transfer). Thus, this study adopts the information processing theory to investigate such behavior intentions and to derive various market segmentation strategies between potential and retained passengers concerning their transfer service use. We also look at the interrelationships between the two main constructs, transfer penalties and benefits, and adopt structural equation modeling to test our hypotheses. The analytical results show that perceived transfer penalties, perceived values, and free bus transfer all influence metro–bus transfer intentions. Perceived value is the most essential determinant of behavioral intention among all the other attributes related to transit transfer in this study and can mediate the relationship between free bus transfer and transfer intentions. The study's conclusions have managerial implications for metro system and bus system agencies and may be applied to intermodal transfer services in other transportation industries. Perceived value of metro–bus transfer service usage can possibly be elevated through the following measures: timetable coordination between metro and bus agencies, passenger guidance information, comfortable bus shelters and waiting environment provisions, low-floor bus services, and smart card integration between the metro and buses.

Public regulation and technical efficiency in the Spanish Port Authorities: 1986–2012

- Transport Policy---2016---Pablo Coto-Millán,Xose Luis Fernández,Soraya Hidalgo,Miguel Ángel Pesquera

This research analyses the impact of public regulation on the efficiency of the Spanish Ports Authorities during the last three decades. To this end, using Stochastic Frontier Analysis (SFA), an input-oriented distance model has been estimated for a sample of 26 Port Authorities during the period 1986–2012. This paper contributes to the literature by establishing a direct correlation between the reform and the change in efficiency.

Green helpfulness or fun? Influences of green perceived value on the green loyalty of users and non-users of public bikes

- Transport Policy---2016---Shang-Yu Chen

This work aims to understand how to establish green loyalty for public bike schemes using a modified version of the technology acceptance model (modified TAM). Moreover, the findings also reveal that the mediation effect of perceived fun to use has stronger power, and perceived ease of use has no obvious influences on sustainable loyalty for either users or non-users, the implication of which is that fun in people's lives hugely reduces the significance of usefulness for users, and perceived ease of use cannot produce sustainable loyalty to public bikes. Therefore, governmental policies are needed to promote users' perception of enjoyment of using the bikes and non-users' perceived usefulness so as to increase their green loyalty to public bike-sharing.

The impact of curbside parking regulation on garage demand

- Transport Policy---2016---Albert Gragera,Daniel Albalate

Parking regulation is seen as a good option to encourage modal shift in order to tackle congestion and pollution in metropolitan areas. Market-clearing curbside pricing is rarely implemented and policy makers have tended to make off-street parking provision their main tool to address excessive curbside demand. Research devoted to garage parking is far less well developed, even though public authorities provide both curbside and garage parking that compete with privately operated facilities.

Equitable and progressive distance-based user charges design and evaluation of income-based mileage fees in Maryland

- Transport Policy---2016---Di Yang,Eirini Kastrouni,Lei Zhang

As a result of the declining purchasing power of fuel tax revenues, the Highway Trust Fund (HTF) is currently insufficient to maintain and expand the U.S. surface transportation system. Alternative revenue sources should be considered to address the insolvency of the current funding system. Mileage fees and value pricing have long been attractive options to researchers and decision-makers, but they often raise concerns of equity. This paper aims to design and evaluate equitable and progressive distance-based user fee policies, focusing specifically on income-based fee rate structures. In addition to equity, the policy design criteria must also include practicality, simplicity, revenue generation, and a consideration of the design's impact on surrounding jurisdictions. Three variable-rate vehicle-miles-traveled (VMT) fee scenarios with respect to income are introduced: Ramsey pricing, fixed-interval incremental, and fixed-percentage incremental structures. All policy scenarios are tested with a statewide transportation model in Maryland. Results show that income-based VMT fees can better protect lower-income households while generating additional revenue; however, a standard fee structure based on Ramsey pricing, or the inverse-elasticity rule, does not work as well as the fixed-interval incremental fee structure. The latter is progressive across all income groups while ensuring that equity and revenue goals are met.

Operational and financial performance of Delhi's natural gas-fueled public bus transit fleet: A critical evaluation

- Transport Policy---2016---Christian Krelling,Madhav G. Badami

Following a Supreme Court of India directive, the bus fleet of the Delhi Transport Corporation (DTC) was converted to run on compressed natural gas (CNG) from around 1999 to 2000, to address the city's air pollution. We critically evaluate the operational and financial performance of DTC's bus fleet from 1989–90 to 2010–11 – that is, from ten years prior to CNG implementation until 10 years after – to assess how this performance was affected by the fuel switch, as well as the introduction of low-floor CNG buses.

What are the causes of transport insecurity? Results from a survey with transport operators

- Transport Policy---2016---Luca Urciuoli

Available statistics give indication that very often the freight transport business is a constant victim of crime. Previous research has proposed diverse security technical solutions and managerial strategies. However, anecdotal evidence suggests that these are not being implemented. This investigation aims to identify what factors may influence transport security. The study undertakes an exploratory approach to identify potential factors influencing transport insecurity. Thereafter, research hypotheses are formulated and tested by means of a survey study and multivariate techniques. Findings show that services differentiation and freight rates increments, JIT deliveries and insurance demand/supply behavior may influence the security level of transport companies.

Open access passenger rail competition in the Czech Republic

- Transport Policy---2016---Zdeněk Tomeš,Martin Kvizda,Monika Jandová,Václav Rederer

This paper analyses open access passenger railway competition in the Czech Republic between 2011 and 2014. This competition emerged when the major railway connection between Prague and Ostrava, which was operated only by the incumbent, was entered by two private operators, RegioJet in September 2011 and LEO Express in January 2013. Theoretical studies and experience from other countries suggest that this competition should lead to a price war, intensive market dynamics and product differentiation. The findings from the market development on the Prague–Ostrava route are broadly consistent with these predictions. The open access competition has led to an intensive price war with 2nd class tariff declines reaching 46%. Innovative marketing and selling strategies have significantly increased the spread of prices, and price discrimination and yield management techniques are used extensively. All operators has been unprofitable on the line, leading to financial stress and accusations of predatory pricing on the part of the incumbent. The quality of service on the line has increased substantially with standardisation, new on-board services and higher frequency. The average number of seats per train has declined significantly, and new operators have been able to win 55% market share from the incumbent. Service frequency is higher but is strongly concentrated during rush hours.

Deregulation of the Norwegian long distance express coach market

- Transport Policy---2016---Jørgen Aarhaug,Nils Fearnley

This paper offers new insight to the effects of long distance express coach deregulation in Norway, which formally happened gradually between 1998 and 2003. We study data over a period that spans from the years prior to deregulation and up to 2010. We document the degree of both competition and cooperation in the market, which has taken a particular form in Norway due to historical requirements on coach operations. We also document that the market has changed character as a consequence of intermodal competition, in particular with air traffic. Our paper documents the successful development of an often neglected public transport mode, which has the potential to make long distance passenger transport more efficient more sustainable, and with hardly any subsidy requirements.

Institutional rail reform: The case of Ukrainian Railways

- Transport Policy---2016---Kateryna Grushevska,Theo Notteboom,Andrii Shkliar

Rail reforms are aimed at increasing the share of rail in a country's or region's modal split through an efficiency improvement in railway operations, a stimulation of intra- and inter-modal competition and an increased financial accountability and sustainability of the railway company. The recent approaches to railway institutional change in the leading economies of the world was guided by deregulation and liberalization of railway transport. Rail reform in the European Union aimed

at a more open market and a clear division of roles between infrastructure managers and railway operators is well documented. The reforms taking place elsewhere in Europe received less attention. This paper deals with the reform of the Ukrainian Railways taking into account the difficult economic, political, social and financial environment the country is in.

Passenger satisfaction evaluation model for Urban rail transit: A structural equation modeling based on partial least squares

- Transport Policy---2016---Weiwei Shen,Weizhou Xiao,Xin Wang

The rail transit has played an important role in economic vitality of the urban area. Providing services with high levels of quality is essential in order to promote public transportation by customizing the users of the services, and to reduce traffic congestion by shifting people away from private car use. For this reason, it is essential to understand passenger satisfaction with urban rail transit from a quantitative and systematic perspective. This paper borrows the fundamental concept of the American Customer Satisfaction Index (ACSI) model to establish a passenger satisfaction evaluation model for urban rail transit in China. A structural equation modeling (SEM) method and its parameter estimation method: Partial Least Squares (PLS), are applied to estimate the proposed model. An evaluation indicator system including three levels of indicators is established to measure passengers' satisfaction on the services offered by the rail transit operation companies. The satisfaction index is obtained to quantize the degree of passenger satisfaction. The IPA matrix is used as an assist tool to show the advantages and disadvantages of the services of rail transit. Suzhou rail transit line 1 was used as a case study, four models with different latent constructs or estimation methods were built and compared, to demonstrate the proposed PSI model based on PLS estimation method was reliable and the sign and magnitude of parameters were reasonable. The causality between passenger satisfaction and its influence factors were confirmed by path coefficients of the model.

Exploring mobility equity in a society undergoing changes in travel behavior: A case study of Aachen, Germany

- Transport Policy---2016---Abdolmatin Shirmohammadli,Conny Louen,Dirk Vallée

This study highlights the necessity of mobility equity analyses in transportation system of societies with an increasing number of non-drivers. The demographic shift towards older people, declining car accessibility for the younger generation and public concerns about environmental issues are some reasons of change in trip behavior and mobility demand structure as well as increase in potential mobility disadvantage groups in Germany. This paper explores the horizontal and vertical mobility equity statuses of various districts and socio-economic groups in the city of Aachen considering different trip modes. A set of statistical measures including the Gini index were utilized in a horizontal equity analysis, and the role of urban texture in mobility equity analysis is highlighted. Despite an overall fair distribution of mobility between the inhabitants of different districts, the vertical equity analysis shows a significant variation between different socio-economic groups and different transportation modes. This study also suggests some strategies to improve mobility equity based on the results of the analyses.

User response to parking policy change: A comparison of stated and revealed preference data

- Transport Policy---2016---Nada Milosavljević,Jelena Simićević

In the available literature it is difficult to determine the impact of the real parking price change on parking demand–probably because the application of such measures requires more recent data. In any case, in the future, once this measure is defined, quantification of the effects should be expected, which will be of great significance for further outlooks on this policy. This paper studies and quantifies the impact of an increase in parking price on the demand and operation of parking garages in central Belgrade. In addition, the paper

investigates to what extent the planned demand, estimated on the basis of users' attitudes toward parking price, is in agreement with the actual demand after the price change. Confirmed agreement between the forecasted and actual demand contributes to a greater reliability in achieving the expected effects on the basis of the price determined through predicted demand.

An endogenous lottery-based incentive mechanism to promote off-peak usage in congested transit systems

- Transport Policy---2016---David Rey,Vinayak V. Dixit,Jean-Luc Ygnace,S. Travis Waller

In this paper, we evaluate a lottery-based revenue-neutral incentive mechanism to reduce the congestion in urban transportation systems. Specifically, we test the use of random lottery-based reward schemes to promote public transit usage during off-peak periods. We derive the theoretical equilibrium for this decision-making game and test the validity of the proposed mechanism through monetized laboratory experiments. We use methods from experimental economics to investigate the behavioral assumptions within such an incentive-based mechanism. We find counterintuitive results where a Pure Nash Equilibrium explains behavior in one regime and Quantal Response Equilibrium explains behavior in another regime. Specifically, there is no shift to off-peak periods when the expected value of traveling in the off-peak is less than that at peak, which is explained by a Pure Nash Equilibrium. However, there is a substantial shift to the off-peak period when the expected value of traveling in the off-peak is larger than that of the peak, but much less than that predicted by a Pure Nash Equilibrium. The Quantal Response Equilibrium performs reasonably well in this condition, and we conclude that risk attitudes play a significant role in explaining behavior in lottery-based incentive mechanisms. This study, which relies on the gamification of travel behavior, finds that the proposed mechanism can provide a sustainable shift in users' choices.

Selecting the public transit projects with PCA-DP technique: The example of Xiamen City

- Transport Policy---2016---Wangtu Xu,Weihua Lin

Many cities in China are in the process of investing in public transit projects in order to reduce the growing problem of traffic congestion and enhance mobility of travelers. Cities all tend to pursue large public transit projects when it comes to investment options. There seems to be an urgent need to study these options from the standpoint of planning objectives and travel requirements. This paper compares the payoff of alternative projects of the public transit system for Xiamen City. We formulate the transit project selection problem as a mathematical model. With the proposed PCA-DP technique which integrates the principal component analysis (PCA) into a dynamic programming (DP) model, the optimal solution can be obtained based on indicators that cover four aspects of transit system performance evaluation: the level of service, the predicted relevant income and cost, and the expected external influence. The bi-hierarchy PCA model, constructed with data from 15 cities of China, generates the payoff function used as input to the DP model for the multi-phase transit project selection process for the City of Xiamen. The empirical analysis shows that for most of the scenarios, upgrading the existing bus rapid transit (BRT) into light rail transit (LRT) system and constructing a mass rail transit (MRT) routes in the next 10 years appear to be the most cost-effective option. Combined with other findings from this study, the result of our work can be used by practitioners to facilitate transit system planning and transportation project prioritization. The solution technique discussed provides a methodological framework that can be potentially used for the selection of a future transit system.

Valuation of a transfer in a multimodal public transport trip

- Transport Policy---2016---Rik Schakenbos,Lissy La Paix,Sandra Nijenstein,Karst T. Geurs

Improvement of chain mobility is considered a major

issue in public transport use. Transfers within a public transport trip are the least appreciated part of the trip. This research quantifies the experienced transfer disutility of a transfer between BTM and train. The influence of travel time, transfer time, headway, costs and station facilities on the valuation of a transfer is estimated, based on a web-based stated preference (SP) experiment with over 1145 respondents. A set of mixed logit models was estimated, including sub-models by trip purpose, travel frequency, access/egress mode and journey stage (access or egress). The modeling results show that the total disutility during the interchange depends on the total time, the distribution of the time spent (access, transfer, waiting time) and headway. In general, the most optimal transfer time is found to be 8min, but relevant differences are found among respondents and stations. The highlighted preferences of different groups of travelers can be used by public transport service to meet the travelers' needs in a transfer, and decrease the transfer disutility.

Travel behaviour and CO2 emissions in urban and exurban London and New York

- Transport Policy---2016---Caralampo Focas

Car travel and associated greenhouse gas emissions per capita in London's outer region are more than double than the ones of its metropolitan area. In New York's outer region car travel is four times per capita than what it is in its urban area. The comparative analyses are based on the UK National Travel Survey and the US National Household Travel Survey. The population outside Greater London' Green Belt and New York's periphery has been growing relentlessly since the 1950s. The transport structure of the South East of England and the New York Tri-State area has been largely shaped around the private car. Measures that aim to meet CO2 emission targets will need address the nature of the cardependent developments of London's and New York's growing outer fringe. The paper compares the current travel structure of the outer regions of the two cities that are nearly exclusively moulded around the motorcar. Using specially commissioned spatial breakdowns of the respective household travel survey data, detailed travel behaviour is analysed for both the urban and exurban areas. The data illustrates the stark contrast in mobility of the urban and exurban areas of the cities. Through an analysis of current vehicle use, estimates of CO2 emissions are made using established average emission factors per vehicle in each region. In our study of London and New York regions the exurban areas produce the bulk of car-based CO2 emissions: 77% for the London region and 87% for the New York region. Furthermore, using existing population forecasts and estimates of future average CO2 emissions per vehicle, future levels of CO2 emissions from private vehicles are estimated. Our estimates show that the CO2 emission reduction targets that have been set will not be met by a large margin.

Addressing wrong-way driving as a matter of policy: The Florida Experience

- Transport Policy---2016---Raj V. Ponnaluri

Wrong-way driving (WWD) incidents garner considerable interest from the media, elected representatives, and policy makers. Almost a half-century after Hulbert and Beers (1966), the National Transportation Safety Board and others continue to research WWD countermeasures. The recent increase in WWD rekindled a national discussion in the United States of America, and is bringing about a significant change in the approach to addressing this crash type. The main purpose of this work is to present a policy-oriented framework toward addressing WWDs in a systematic manner and to suggest a systemic discipline for transforming policy objectives to actionable outcomes. To accomplish this goal, the leadership of the Florida Department of Transportation played a pivotal role in converting strategy to reality by promoting organizational linkages and active collaboration. The method included: (a) implementing pilot projects; (b) conducting a statewide study with crash evaluation and field reviews, identifying interchange types, and developing countermeasures; (c) evaluating and deploying experimental devices specifically approved by the Federal Highway Administration; (d) conceptualizing a human

factors study; (e) transforming recommendations to design guidance; (f) discussing with planners on interchange types susceptible to WWDs; (g) retrofitting exit ramps with the recommended countermeasures; and (h) leveraging the media to promote awareness and to educate the public about the dangers of driving under the influence. The result of this policy push is that, from an engineering view point, design changes were made; from an education perspective, WWD awareness was prioritized; and from an enforcement angle, the Florida Highway Patrol proactively detects and addresses WWD crashes.

A new rail access charging policy: Hunter Valley coal chain case study

- Transport Policy---2016---Masoud Talebian,Martin Savelsbergh,Chad Moffiet

We study a rail track access charging policy proposed by the Australian Rail Track Corporation (ARTC), in which a discount on access charges is offered if above-rail operators employ the "efficient train". The efficient train is a train with a particular length, which results in the efficient use of a train path. The ARTC uses train paths to allocate access to the rail infrastructure. We discuss the motivation for and the goals of the proposed policy. As the new policy does not allow for differences in the equipment and track section, we argue that it may distort decisions about the net to gross tonne ratio, and it may not give the right incentives for future investment. Therefore, we conclude that defining the efficient train only in terms of length may not achieve its stated short term and long term goals and may have unintended consequences.

An agent-based electric vehicle ecosystem model: San Francisco case study

- Transport Policy---2016---Adedamola Adepetu,Srinivasan Keshav,Vijay Arya

The widespread commercial availability of plug-in electric vehicles (EVs) in recent years motivates policies to encourage EV adoption and infrastructure to cope with the increasing number of EVs. We present an agent-based EV ecosystem model that incorporates EV adoption and usage with spatial and temporal considerations and that can aid different EV industry stakeholders such as policymakers, utility operators, charging station planners, and EV manufacturers. The model follows an ecological modeling approach, and is used to determine how different policies and battery technologies affect EV adoption, EV charging, and charging station activity. We choose model parameters to fit San Francisco as a test city and simulate different scenarios. The results provide insight on potential changes to the San Francisco EV ecosystem as a result of changes in rebates, availability of workplace charging, public awareness of lower EV operational costs, and denser EV batteries. We find that our results match those obtained using other approaches and that the compact geographical size of San Francisco and its relative wealth make it an ideal city for EV adoption.

Commuting practices: New insights into modal shift from theories of social practice

- Transport Policy---2016---Noel Cass,James Faulconbridge

The automobile commute makes an important contribution to carbon emissions but has proven stubbornly resistant to modal shift policy initiatives. In this paper we use theories of social practice to develop insights into why this stubbornness might exist, and what might help accelerate transitions to bus- and cycle-commuting. By analyzing qualitative data about everyday mobility in two UK cities, we examine how the availability of the constituent elements of bus- and cycle-commuting practices is crucial for modal shift to occur, but they are often absent. We also draw attention to time-space contingencies that render recruitment to low-carbon commuting practices more or less likely, including how commuting is sequenced with other social practices and how the sites of these practices interact with the affordances, and spatial infrastructure, of bus- and cycle-commuting. These insights lead us to argue that choice and land use planning focussed policy initiatives designed to invoke modal shift need to coexist in integrated policy configurations with initiatives designed

to reshape both mobility and non-mobility practices. This means addressing the structural barriers caused by the lack of availability of the elements that constitute bus- and cycle-commuting, and intervening in the timing and spatiality of a range of social practices so as to reduce the tendency for commutes to have spatial and temporal characteristics that militate against the use of bus and cycle modes.

Evaluating the attractiveness of a new light rail extension: Testing simple change and displacement change hypotheses

- Transport Policy---2016---Carol M. Werner,Barbara B. Brown,Calvin P. Tribby,Doug Tharp,Kristi Flick,Harvey J. Miller,Ken R. Smith,Wyatt Jensen

Many communities in the United States have been adding new light rail to bus-predominant public transit systems. However, there is disagreement as to whether opening light rail lines attracts new ridership or merely draws ridership from existing transit users. We study a new light rail line in Salt Lake City, Utah, USA, which is part of a complete street redevelopment. We utilize a pre-test post-test control group quasi-experimental design to test two different measures of ridership change. The first measure is calculated from stops along the light rail route; the second assumes that nearby bus stops might be displaced by the rail and calculates ridership change with those stops included as baseline. Both the simple measure (transit use changes on the complete street light rail corridor) and the "displacement" measure (transit use changes in the one-quarter mile catchment areas around new light rail stops) showed significant (p

Economic savings linked to future Arctic shipping trade are at odds with climate change mitigation

- Transport Policy---2016---Haakon Lindstad,Ryan M. Bright,Anders H. Strømman

This paper assesses costs, emissions, and climate impact by freight shipping in the Arctic with main focus on the Northern Sea Route. The entire route lies in Arctic waters, which due to global warming, has become ice free during summer and autumn. The route goes from the Atlantic Ocean to the Pacific Ocean along the Russian Arctic coast and reduces voyage distance by 40% between Northern Europe and Japan. Traditionally, comparisons of the climate impact of transport solutions have been based on fuel consumption and carbon dioxide (CO2), while other trace emissions in the exhaust gas have been ignored. It is becoming increasingly well-known however, that aerosols, and their precursors emitted from shipping are strong climate forcers, with a magnitude that is intimately connected to the specific region of emission. Taking into account these considerations, we apply region-specific Global Warming Potential (GWP) characterization factors to estimate the relative magnitude of the short-lived climate forcers in the Arctic compared to traditional shipping regions and to the impact of CO2 emissions in light of reduced overall fuel consumption. The results indicate that there are no general climate benefits of utilizing the Northern Sea Route, even with cleaner fuels, since the additional impact of emissions in the Arctic more than offsets the effect of shorter voyages. In terms of climate change mitigation, managing this trade-off will be challenging, as the Northern Sea Route offers cost savings per ton of freight transported.

Exploring the drivers of port efficiency in Latin America and the Caribbean

- Transport Policy---2016---Tomas Serebrisky,Javier Morales Sarriera,Ancor Suárez-Alemán,Gonzalo Araya,Cecilia Briceño-Garmendía,Jordan Schwartz

We developed a technical efficiency analysis of container ports in Latin America and the Caribbean using an input-oriented stochastic frontier model. We employed a 10-year panel with data on container throughput, port terminal area, berth length, and number of available cranes in 63 ports. The model has three innovations with respect to the available literature: (i) we treated ship-to-shore gantry cranes and mobile cranes separately, in order to account for the higher productiv-

ity of the former; (ii) we introduced a binary variable for ports using ships' cranes, treated as an additional source of port productivity; and (iii) we introduced a binary variable for ports operating as transshipment hubs. Their associated parameters are highly significant in the production function. The results show an improvement in the average technical efficiency of ports in the Latin American and Caribbean region from 52% to 64% between 1999 and 2009; the best performing port in 2009 achieved a technical efficiency of 88% with respect to the frontier. The paper also studies possible determinants of port technical efficiency, such as ownership, corruption and income per capita. The results revealed a positive and significant association between technical efficiency and private port operations.

Willingness to pay for carbon tax: A study of Indian road passenger transport

- Transport Policy---2016---Monika Gupta

Transport plays an important role in everybody's life; but transport, specifically road transport contributes highly to the emissions of CO2 and other Green House Gases. Road transport bears 73% share of total CO2 emissions from transport sector. High concentration of these gases leads to air pollution in terms of poor air quality and health related risks. Many countries have adopted carbon tax as a cost effective measure to correct environmental externality and reduce CO2 emissions since early 1990s. But before adopting carbon tax as a policy measure, it is important to determine people's willingness to pay (WTP) for effective implementation of the same. In order to know the effectiveness of carbon tax in Indian road passenger transport, this study presents the contingent valuation analysis of people's willingness to pay with the help of primary data collected from three different metropolitan cities – Delhi, Mumbai and Bangalore. Probit and tobit regression models are used to analyse the data. Findings show that people of India are willing to pay. Environmental awareness in terms of people's interest in environment, their environmental activities, education, income and age have significant role in determining WTP. The study suggests macro level policy recommendations in terms of utilizing fiscal instruments (such as tax) for environmental externalities. It also helps to analyse sustainability oriented behaviour in terms of society's willingness to pay to avoid environmental risks through contingent valuation method.

Using hierarchical tree-based regression model to examine university student travel frequency and mode choice patterns in China

- Transport Policy---2016---Guangjun Zhan,Xuedong Yan,Shanjiang Zhu,Yun Wang

This paper applies a nonparametric statistical method, hierarchical tree-based regression (HTBR) model, to explore university student travel frequency and mode choice patterns in China, using the data collected by a web-based travel survey. In this study, HTBR models were constructed to predict student travel frequency and classify student mode choice. It was found that student grade, school location city, public transit station coverage ratio (PTSCR) and family income have impacts on student travel frequency, and travel distance, bicycle ownership, school location city, PTSCR and student gender are significantly correlated to student mode choice. The study results reveal travel characteristics of university students in China at a disaggregate level and provide information to better understand their travel behaviors.

Evaluating the impact of transport investment on the efficiency of regional integrated transport systems in China

- Transport Policy---2016---Tao Li,Wenyue Yang,Haoran Zhang,Xiaoshu Cao

The development of transport infrastructure is characterized by intensive capital input, intensive energy consumption, and pollution emissions. Against the background of the continuous intensification of resource and energy constraints in China. Therefore, the analysis of China's regional transport efficiency and its determinants has practical significance. This paper

attempts to evaluate regional total factor transport efficiency in China based on the Super-SBM DEA model considering undesirable output and explores the influence factors of transport efficiency in China during the period 1995–2012. The empirical results indicate that during the research period, most provinces in China are not performing efficiently in transport systems. Additionally, the overall average level of China' s total factor transport efficiency is low and the spatial pattern of the total factor transport efficiency demonstrates a declining trend from eastern to western China, which coincides with the spatial pattern of economic development in China. The analysis of the influence factors by the regression model shows that economic development and government influence can decrease overall transport efficiency, while industrial structure, population density, and geographical position can influence transport efficiency. The influence of these factors varies by region. Finally, this paper provides policy recommendations to improve transport efficiency in China.

The greenhouse gas automotive advertisement study

- Transport Policy---2016---Pasquale Scopa,Maria Luisa Scapellato,Egle Perissinotto,Andrea Trevisan,Mariella Carrieri,Giovanni Battista Bartolucci

Automobiles are an important source of carbon dioxide (CO2) and other greenhouse gases (GHG) involved in climate change and human health impairment. Correct information on the environmental impact of cars in terms of CO2 emissions and fuel consumption is necessary in car advertisements.

A systems model for achieving optimum parking efficiency on campus: The case of Minnesota State University

- Transport Policy---2016---Anthony Filipovitch,Emmanuel Frimpong Boamah

An economic model of parking behavior was designed to consider the relationship between costs and benefits in meeting parking demands of the range of users on an urban university campus. Using Minnesota State University, Mankato campus as the case area, model simulations were run to answer the question, "How do we price parking permits to minimize parking supply surpluses/shortages on campus and still meet the cost of parking?" The study's results indicate that there is an over/undersupply of parking spaces when parking demand is determined only by the expected permit purchases without considering the peak use of parking facilities. This leads to the issues of excess parking costs and parking shortages which characterize the iterative process in campus parking pricing and supply policies. By running the model through several simulations, an "optimum parking price level" – that which minimizes supply excesses/shortages while also ensuring that revenue generated meets at least the annual operations and maintenance costs – was determined for each parking permit on campus.

A framework for measuring transport efficiency in distribution centers

- Transport Policy---2016---Milan Andrejić,Nebojša Bojović,Milorad Kilibarda

Performances of distribution systems are largely affected by the performances of transport systems. This paper is devoted to the analysis of the efficiency of transport subsystems in distribution centers. Transport is a logistics process with the highest energy consumption. In the transport systems two aspects of measuring efficiency are identified. The first aspect is the fleet efficiency which is related to the higher level of decision making. The second aspect of decision making is the vehicle efficiency as operational level of decision making. The main objective of this paper is to propose models for measuring transport efficiency, as well as to identify main factors that affect transport efficiency. The proposed models are based on Principal Component Analysis and Data Envelopment Analysis approaches. According to the results fleet management system, catchment area, vehicle capacity, the age of vehicles and manufacturers are the basic factors that affect transport efficiency.

Pedestrian's needs matter: Examining Manila's walking environment

- Transport Policy---2016---Iderlina Mateo-Babiano

Developing cities report higher walk shares in comparison to their developed city counterpart. Also, they present a strikingly different set of challenges and opportunities in their pedestrian environments. The need to enhance our understanding of environmental attributes, which encourage pedestrians to participate (or not) in walking and walking-related activities, has prompted this pedestrian-scale face-to-face questionnaire survey on one developing city. This paper has three aims, namely: examine the pedestrian decision making process, apply the Analytic Hierarchy Process (AHP) to empirically define the hierarchy of pedestrian needs (criteria), and examine the relative priorities of environmental attributes (alternatives) that satisfy the pedestrian needs, with the end goal of realising a positive walking environment. A total of 70 respondents were collected via face-to-face questionnaire survey which was rolled out in the Quiapo District (Manila, Philippines). Results of this study demonstrated the feasibility of AHP in supporting an evidence-based approach to defining the pedestrian need hierarchy. Moreover, it established that the most important criteria is protection rather than mobility. Traditionally, the design of pedestrian facilities (e.g. sidewalks/pathways) was premised on the need to move. Moreover, based on the survey, the relative priority of the criteria in the order of most important to least important priority is: protection, ease, equitable access, mobility, identity and enjoyment. This comprises the pedestrian need-hierarchy, which served as the theoretical framework of this paper. This paper presents an alternative approach at quantifying qualitative criteria and attributes that served relevant to the pedestrian decision-making process. Moreover, this research sheds light on the importance of a user-centred needs-assessment approach to better understand pedestrian decision-making and behaviour.

The complex relationship between school policy, service quality, satisfaction, and loyalty for educational tour bus services: A multilevel modeling approach

- Transport Policy---2016---Vatanavongs Ratanavaraha,Sajjakaj Jomnonkwao,Buratin Khampirat,Duangdao Watthanaklang,Pawinee Iamtrakul

The results of this study provide useful information for schools and bus companies. Schools are offered guidance as to how to choose quality bus services, and bus firms are given ideas as to how to be profitable by building customer loyalty and satisfaction. For this purpose, data were gathered through a mail survey of 3261 teachers from 742 schools. The study applied a multilevel SEM technique to investigate a research question that had not been previously studied. The results from the model indicated that service quality has a positive influence on satisfaction, which was found to be significantly and positively related to loyalty at both the individual and school levels. The quality of bus services was measured using three factors: type of vehicle, driver response, and bus management. These factors were determined to be priorities for bus businesses in developing user loyalty and satisfaction. When investigating the school level, factors related to government-allocated school resources, participation, and safety policies were found to have a significant direct effect on service quality.

Dynamics of electric bike ownership and use in Kunming, China

- Transport Policy---2016---Christopher R. Cherry,Hongtai Yang,Luke R. Jones,Min He

The rapid adoption of electric bikes (e-bikes) (~150 million in 10 years) has come with debate over their role in China's urban transportation system. While there has been some research quantifying impacts of e-bikes on the transportation system, there has been little work tracking e-bike use patterns over time. This paper investigates e-bike use over a 6-year period. Four

bi-annual travel diary surveys of e-bike users were conducted between 2006 and 2012 in Kunming, China. Choice models were developed to investigate factors influencing mode-transition and motorization pathways. As expected, income and vehicle ownership strongly influence car-based transitions. Younger and female respondents were more likely to choose car-based modes. Systematic and unobserved changes over time (time-dynamics) favor car-based modes, with the exception of previous car users who already shifted away from cars being less likely to revert to cars over time. E-bikes act as an intermediate mode, interrupting the transition from bicycle to bus and from bus to car. Over 6 years, e-bikes are displacing prospective bus (65→55%), car/taxi (15→24%) and bicycle (19→7%) trips. Over 40% of e-bike riders now have household car access so e-bikes are effectively replacing many urban car trips.

Acceptability of increasing petrol price as a TDM pricing policy: A case study in Tehran

- Transport Policy---2016---Majid Khalilikhah,Meeghat Habibian,Kevin Heaslip

Many cities around the world suffer from air pollution but Tehran is among the worst. Tehran suffers severely from congestion and air pollution, which is caused primarily by private vehicles. To mitigate these problems, Transportation Demand Management (TDM) policies should be instituted across the city to reduce private car usage. However, the acceptability of these policies is a major concern for policymakers. The goal of this research was to gauge individual opinions with regards to the increasing petrol price policy, followed by a comparison of these opinions with other TDM pricing policies, including cordon pricing or parking pricing. To do this, we conducted a survey of 366 car commuters in Tehran. Throughout the analysis of collected data, it was observed that increasing petrol price was the least acceptable of the above policies. In order to identify the effects of trip-related and socio-economic characteristics of car commuters on their acceptance of increasing petrol price, we developed an ordered logit model and identified the most significant factors affecting commuters. Next, we suggested policies that could lead to better acceptance of the increasing petrol price policy. This examination of the acceptability of TDM pricing policies helps policymakers to understand how pricing policies will have a greater chance of successful implantation and acceptance by the general public, thus allowing them to make informed policy implementation decisions.

Assessing inequalities on public transport affordability in two latin American cities: Montevideo (Uruguay) and Córdoba (Argentina)

- Transport Policy---2016---Claudio Falavigna,Diego Hernandez

This paper addresses public transport affordability inequities for Córdoba, Argentina, and Montevideo, Uruguay. In calculating public transport affordability, we consider two different criteria based on the "observed mobility" and the "potential mobility". Using household travel survey data, we estimate that on average, observed public transport affordability indexes are below 7% (6.2% in Córdoba and 3.8% in Montevideo). Nonetheless, for the lower quintile, this index reaches 11.7% in Córdoba and 6.4% in Montevideo. The observed affordability index is based on the expenditure on observed public transport trips, which does not consider those trips that, even when necessary, may not be performed due to financial restrictions. Because this measure underestimates financial constraints for the poorest groups, we propose to consider a new measure: potential affordability as an attempt into build a more realistic basket trip. It is computed considering motorized trip rates of the middle-class groups' as a benchmark. After analyzing potential affordability results, assessing its limitations and controlling by household composition we conclude that this is a very promising complementary measure since it helps to better understand the affordability gap for low-income groups.

Performance evaluation of public transit systems using a combined evaluation method

- Transport Policy---2016---Chunqin Zhang,Zhicai Juan,Qingyu Luo,Guangnian Xiao

The goal of this paper is to evaluate the performance of public transit systems based on a combined evaluation method (CEM) consisting of information entropy theory and super efficiency data envelopment analysis (SE-DEA). Taking 13 transit operators in Yangtze Delta Region of China as the research object, we integrate the public transit industry regulations, transit operation and passenger requirements to construct an evaluation indicator system based on satisfaction and efficiency. The CEM is used to evaluate the performance. The results show significant differences in the efficiency scores between CEM and SE-DEA. The CEM can reduce the risks of SE-DEA affected by the dimensions of indicators, and improve its discrimination capability. The evaluation outcomes of the CEM seem to be more objective, therefore, provide a more suitable basis for decision-making related to public transit service performance, as well as for the study of operation and management.

Just a better taxi? A survey-based comparison of taxis, transit, and ridesourcing services in San Francisco

- Transport Policy---2016---Lisa Rayle,Danielle Dai,Nelson Chan,Robert Cervero,Susan Shaheen

In this study, we present exploratory evidence of how “ridesourcing” services (app-based, on-demand ride services like Uber and Lyft) are used in San Francisco. We explore who uses ridesourcing and for what reasons, how the ridesourcing market compares to that of traditional taxis, and how ridesourcing impacts the use of public transit and overall vehicle travel. In spring 2014, 380 completed intercept surveys were collected from three ridesourcing “hot spots” in San Francisco. We compare survey results with matched-pair taxi trip data and results of a previous taxi user survey. We also compare travel times for ridesourcing and taxis with those for public transit. The findings indicate that, despite many similarities, taxis and ridesourcing differ in user characteristics, wait times, and trips served. While ridesourcing replaces taxi trips, at least half of ridesourcing trips replaced modes other than taxi, including public transit and driving. Impacts on overall vehicle travel are unclear. We conclude with suggestions for future research.

Determinants of global logistics hub ports: Comparison of the port development policies of Taiwan, Korea, and Japan

- Transport Policy---2016---Yi-Chih Yang,Shu-Ling Chen

This paper explores global logistics hub port assessment criteria, and compares the competitiveness of three major international hub ports in Northeast Asia, namely the ports of Busan, Tokyo, and Kaohsiung, from a logistics perspective employing a hybrid multi-criteria decision-making approach incorporating the analytical hierarchy process (AHP) and gray relational analysis (GRA). A total of 20 assessment criteria are obtained under the five dimensions of political–economic environment, operating environment, cost environment, infrastructure facilities environment, and preferential incentive environment. The AHP results show that, from the perspective of all respondents, the top five assessment criteria are transport and distribution costs, convenience of customs clearance procedures, harbor and stevedoring costs, cost of land, and soundness of investment system and incentive measures. Based on GRA outcomes, Busan has the highest level of satisfaction as a global logistics hub port, followed by Tokyo and Kaohsiung.

A systematic review of economic analyses of active transport interventions that include physical activity benefits

- Transport Policy---2016---Vicki Brown,Belen Zapata Diomedi,Marj Moodie,J. Lennert Veerman,Rob Carter

Physical inactivity is one of the leading causes for the growing prevalence of non-communicable diseases

worldwide and there is a need for more evidence on the effectiveness and cost-effectiveness of interventions that aim to increase physical activity at the population level. This study aimed to update a systematic review published in 2008 by searching peer-reviewed and unpublished literature of economic evaluations of transport interventions that incorporate the health related effects of physical activity. Our analysis of methods for the inclusion of physical activity related health effects into transport appraisal over time demonstrates that methodological progress has been made. Thirty-six studies were included, reflecting an increasing recognition of the importance of incorporating these health effects into transport appraisal. However, significant methodological challenges in the incorporation of wider health benefits into transport appraisal still exist. The inclusion of physical activity related health effects is currently limited by paucity of evidence on morbidity effects and of more rigorous evidence on the effectiveness of interventions. Significant scope exists for better quality and more transparent reporting. A more consistent approach to the inclusion of benefits and disbenefits would reinforce the synergies between the health, environmental, transport and other sectors. From a transport sector perspective the inclusion of physical activity related health benefits positively impacts cost effectiveness, with the potential to contribute to a more efficient allocation of scarce resources based on a more comprehensive range of merits. From a public health perspective the inclusion of physical activity related health benefits may result in the funding of more interventions that promote active transport, with the potential to improve population levels of physical activity and to reduce prevalence of physical activity related diseases.

Mutual causality in road network growth and economic development

- Transport Policy---2016---Michael Iacono,David Levinson

This paper investigates the relationship between the growth of roads and economic development. We test for mutual causality between the growth of road networks (which are divided functionally into local roads and highways) and changes in county-level population and employment. We employ a panel data set containing observations of road mileage by type for all Minnesota counties over the period 1988 to 2007 to fit a model describing changes in road networks, population and employment. Results indicate that causality runs in both directions between population and local road networks, while no evidence of causality in either direction is found for networks and local employment. We interpret the findings as evidence of a weakening influence of road networks (and transportation more generally) on location, and suggest methods for refining the empirical approach described herein.

Does the expansion of a motorway network lead to economic agglomeration? Evidence from China

- Transport Policy---2016---Nannan Yu,Gert de Roo,Martin de Jong,Servaas Storm

In contrast to most existing studies examining the generative effects of transport infrastructure, this paper addresses the distributive effects of transport infrastructure in China. Using panel data from 274 Chinese municipalities in the 2000–2010 period, our study explores the role of motorway network in the evolution of spatial economic agglomerations. Our results confirm the existence of a distributive effect of road infrastructure in China, and show that an improvement in the motorway network leads to a higher degree of geographic concentration of economic activities. However, in our simulation new motorway construction appears to facilitate spatial dispersal when transport costs fall below a critical level. Moreover, the improved road network has led to a loss of industry in China's lagging areas. Accordingly, current transport investment policy, especially in lagging western areas, has not contributed to spatial equity in China, which contrasts with investment in education, for example.

Transport safety agency's success indicators – How well does a performance management system perform?

- Transport Policy---2016---Petri Mononen,Pekka Leviäkangas

Whereas transport safety research has long and established traditions, the pivotal public task of integrally governing, managing and overseeing transport safety in an effective and socio-economically cost efficient manner is yet a largely uncharted area within science. Therefore, it should not be taken for granted that all public resources are allocated where they add value the most. This is due in part to historical reasons and the inertia within how governments respond to changes around them. This article investigates the performance management system of a national transportation safety agency with qualitative methods. First, it introduces the evolution history and the surrounding institutional architecture of the agency. Next, the goal-setting, steering and management control mechanisms are described, followed by a cross-check of mandated tasks and objectives and the associated performance indicators. The main finding is that significant gaps between stated policy objectives, operational annual performance targets and available indicators can be identified. Especially with regard to societal objectives, the steering framework turns out to provide less than comprehensive coverage. Performance indicators for some major objectives are missing and vice versa, some measurement metrics do not seem to link clearly to set objectives. Not all the set objectives need (or even could) necessarily be measured, but certain shortcomings in the performance control system may prove critical. The findings imply that there is a risk of sub-optimal use of public resources if the targets and indicators of agencies are not thoroughly considered so that they logically cover agencies' mandates. The implications of the discovered gaps are outlined, together with recommendations for a more balanced approach. The analysis concludes with some recommended steps in order to cover the blind spots. With the aid of these steps, performance management systems can be improved to better meet policy and societal objectives.

Measurement modelling of the perceived service quality of a sightseeing bus service: An application of hierarchical confirmatory factor analysis

- Transport Policy---2016---Sajjakaj Jomnonkwao,Vatanavongs Ratanavaraha

Sightseeing buses were taken to use as main vehicles for students' excursions because of a large number of students participating in each trip. Schools should give significant importance to good quality sightseeing buses. This study aimed to develop the indicators monitoring and evaluating sightseeing bus services. This study examined the sightseeing tour buses' service quality factors according to 27 parameters applied as criteria for evaluating and improving service. Data were gathered from 3387 teachers and educational staff involved with educational field trips. The results of exploratory factor analysis (EFA) classified the parameters into three groups: vehicles, drivers and crews, and management factors. Subsequently, confirmatory factor analysis (CFA) was used to confirm the factor structure. The findings verified that the 27 parameters can indicate three perspectives of quality performance. CFA loading scores were quite high, implying that the parameters had strong potential usefulness for assessing sightseeing bus service quality. Likewise, the second-order CFA found that the three aforementioned latent variables are powerful indicators of tour service quality level at the 0.01 significance level. In this regard, the factor of vehicles exhibited the largest CFA loading (β =0.935). The results of this study potentially provide schools or entrepreneurs for the development of check list in assessing sightseeing bus quality which will make each trip more comfortable in travelling and safety.

Environmental norms, transport priorities and resistance to change associated with acceptance of push measures in transport

- Transport Policy---2015---Trond Nordfjærn,Torbjørn Rundmo

The negative short- and long-term consequences of

excessive car use in urban areas are well-documented. The core aim of the present study was to investigate the relative role of environmental norms, transport priorities and resistance to change for acceptance of transport push measures in an urban Norwegian public with car access. A questionnaire survey was carried out in a randomly selected representative sample of the Norwegian population in six urban regions obtained from the Norwegian population registry (n=881). Regression analysis showed that transport priorities and resistance to change added to the explained variance in acceptance of transport push measures, while adjusting for environmental norms in the Norm Activation Model (NAM) and demographic characteristics. Awareness of consequences and personal norms were associated with more acceptance, whereas priorities of flexibility and priorities of safety and security were associated with a low acceptance of transport push measures. Emotional reactions to change were also related to a low acceptance of these measures. SEM supported the assumptions in the NAM theory, but a direct relation between awareness of car use consequences and acceptance of transport push measures was found to improve model fit. A short-term focus on change was also related to a low ascription of responsibility in the NAM. High education was the sole demographic characteristic associated with more acceptance of transport push measures. Campaigns aimed to promote acceptance of transport push measures need to consider additional factors to environmental norms. The findings suggest that people who prioritize travel flexibility and safety and security need to be focused in order to increase acceptance of transport push measures in the urban public. Furthermore, efforts to promote environmentally significant behaviour may benefit by taking the resistance to change trait into account.

Children's travel to school—the interaction of individual, neighbourhood and school factors

- Transport Policy---2015---Sue Easton,Ed Ferrari

The increase in average distance from home to secondary school over recent decades has been accompanied by a significant growth in the proportion of pupils travelling to school by motorized means as opposed to walking or cycling. More recently this switch in travel mode has received considerable attention as declining levels of physical activity, growing car dependence and the childhood obesity "crisis" have pushed concerns about the health of future generations up the public health agenda, particularly in the U.S., but also in the UK and Europe. This has led to a proliferation of international studies researching a variety of individual, school and spatial characteristics associated with children's active travel to school which has been targeted by some governments as a potential silver bullet to reverse the trend. However, to date national pupil census data, which comprises annual data on all English pupils, including a mode of travel to school variable, has been under-utilised in the analysis of how pupils commute to school. Furthermore, methodologically, the grouped nature of the data with pupils clustered within both schools and residential neighbourhoods has often been ignored - an omission which can have considerable consequences for the statistical estimation of the model. The research presented here seeks to address both of these points by analysing pupil census data on all 26,709 secondary pupils (aged 11–16) who attended schools in Sheffield, UK during the 2009–10 school year. Individual pupil data is grouped within school, and neighbourhood, within a cross-classified multilevel model of active versus motorised modes of commuting to school. The results support the findings of other research that distance to school is key, but suggest that sociospatial clustering within neighbourhoods and schools is also critical. A further finding is that distance to school varies significantly by ethnicity, with white British pupils travelling the shortest distance of all ethnic groups. The implications of these findings for education and transport policy are discussed.

Gender differences in activity and travel behavior in the Arab world

- Transport Policy---2015---Wafa Elias,Julian Benjamin,Yoram Shiftan

The purpose of this study is to extend the research on gendered differences in travel patterns in the Arab

world by an in-depth study of the interrelationship of travel-related activities and various socio-economic and demographic characteristics. This study is based on a unique data set that includes activity and travel diaries collected from three Arab communities in the Galilee region of Israel. Through descriptive statistics and nonlinear structural equations modeling, we found that gender plays an important role in both activity participation and travel behavior in these communities. Women tend to travel less than men in terms of both number of tours, defined as chain of trip segments that start and end at home, trips, and total time spent traveling. Women tend to work more within their communities and to conduct more of their activities by walking; they are also the ones who make more child-serving stops, which affect their travel patterns. Women tend to travel by car more as passengers, whereas men tend to be drivers. Those who made more tours also tended to make more complex tours, with more stops per tour, although, in general, complex tours are not substituted for making additional tours. People who work outside the community and make complex tours are more likely to drive, as the car is needed for these types of trips, which men make more than women.

Fundamental challenges in designing a collaborative travel app

- Transport Policy---2015---Janet E. Dickinson,Tom Cherrett,Julia F. Hibbert,Chris Winstanley,Duncan Shingleton,Nigel Davies,Sarah Norgate,Chris Speed

The growing capabilities of smartphones have opened up new opportunities for travel coordination and transport is a fertile area for app development. One stream of development is apps that enable collaborative travel, either in the form of lift sharing or collaborative shopping, but despite growing interest from governmental agencies, there is little evidence of the efficacy of such apps. Based on trials of purpose built travel collaboration apps, deployed in tourism, urban and rural residential communities, and logistics, this paper analyses the fundamental challenges facing users adopting such travel apps. The findings suggest that transport practitioners, policy makers and app developers need to better understand the challenges associated with attracting users, the use of incentives and the types of communities most appropriate to implement collaborative travel concepts using such approaches. Also, how the users' sense of time pressure and the issues around reciprocal exchange can impact on their long-term success and wider adoption.

How logistics performance of freight operators is affected by urban freight distribution issues

- Transport Policy---2015---José Geraldo Vidal Vieira,Jan C. Fransoo

This article is to shed light on the interactions among the various freight distribution constructs such as regulations, collaboration, detour, load/unload interfaces and logistical performance. The proposed model is empirically tested using Partial Least Squares with 119 freight operators. The findings reveal the moderating effect of regulations (negative effect) on the positive relationship between collaboration and load/unload interfaces regarding receivers and freight operators. According to the effects shown by our model, regulation, along with lack of collaboration, appear to be the Achilles' heel of freight distributors, in that both factors contribute (directly and indirectly) to detour, which results in less efficient logistical performance.

Assessing the impact of different policy decisions on the resource requirements of a Demand Responsive Transport system for persons with disabilities

- Transport Policy---2015---An Neven,Kris Braekers,Katrien Declercq,Geert Wets,Davy Janssens,Tom Bellemans

Demand Responsive Transport (DRT) services are frequently offered in the context of door-to-door transportation of elderly and persons with disabilities (PWD), but are expensive to provide. Therefore, the present study aims to determine the impact of different policy decisions on the resource requirements of a DRT system, in terms of vehicles and drivers required

and kilometers traveled. A number of policy scenarios are analyzed in the case study of Flanders for the prediction years 2015, 2020 and 2030: a base scenario assuming a geographically covering subsidized DRT system; a more economical scenario limiting the subsidized DRT services; a more accessible public transport; more flexibility of the users of the DRT system; an increase in the service area of the DRT service providers; and a doubling of the current supply of transport by volunteers.

Investigating Peltzman effects in adopting mandatory seat belt laws in the US: Evidence from non-occupant fatalities

- Transport Policy---2015---Jinpeng Lv,Dominique Lord,Yunlong Zhang,Zhi Chen

This study investigates the Peltzman effects in adopting mandatory seat belt laws in the US. According to the Peltzman offsetting effect theory, seat belt laws make drivers feel more secure and drive more aggressively, which could cause additional crashes and fatalities. A set of panel data containing 50 US states and the District of Columbia for the years from 1983 to 1997 are analyzed using such panel data techniques as fixed effects and instrument variables. Fixed effects consider both dimensions of states and time while instruments variables are proposed to reduce the endogeneity problem. Most data were collected as part of a previous research project. The fatality rate of non-occupants, which refer to pedestrians and cyclists on the road rather than drivers and passengers in the vehicle, is chosen as the dependent variable. The Peltzman effects are identified especially in the situation when the primary enforcement is directly introduced to a state. Moreover, sensitivity analyzes on seat belt laws and seat belt usage are conducted to check the robustness of the results on Peltzman effects. Furthermore, the dynamics of Peltzman effects is examined by constructing variables that represent the amount of time seat belt laws have been implemented in a state. The Peltzman effects are found to fade away over time, which could be a reason many previous studies failed to identify the Peltzman offsetting effects caused by seat belt laws.

Factors associated with students' parking-pass purchase decisions: Evidence from an American University

- Transport Policy---2015---Selima Sultana

The primary objective of this research is to provide an in-depth understanding about factors affecting university students' parking-pass purchase decisions by integrating concepts and variables developed in various disciplines. A sample of 2253 undergraduate students at the University of North Carolina at Greensboro (UNCG) collected through a web-based survey is used for this study. Results from cross-tabulation analysis and logistic regression indicate that parking-pass purchase decisions are largely determined by students' car ownership, daily car-use habits, and faster mobility needs despite viable alternatives. Conversely purchase decisions have little relation to gender, race/ethnicity, income, and environmental concerns. Holding a parking pass fulfilled students' aspirations seeking safety, reliability, flexibility, spontaneity, and mobility. Most importantly, socio-economic status and psychological motives of car use have the greatest magnitude of predicting parking-permit purchases, while the built environment where students live has a minor influence.

Pricing and mode choice based on nested logit model with trip-chain costs

- Transport Policy---2015---Xiao-Shan Lu,Tian-Liang Liu,Hai-Jun Huang

Commuters can complete their "home-work-home" trips by three options: subway-only mode, auto-only mode, and park-and-ride mode on a bottleneck-constrained corridor. The purpose of this paper is to enhance the insights into pricing mechanism for subway and parking and corresponding mode choice behavior on the corridor with elastic demand. A nested logit-based stochastic user equilibrium model is proposed to characterize the commuters' modal choice. Dispersion parameters in the nested logit model reflect the risk or uncertainty of mode choice. It is found by sensitivity analysis that the impacts of subway fare

and parking fee on the commute pattern are not always monotonous. Optimal strategies of subway fare and parking fee are discussed, respectively, under four market schemes by assuming that the subway and the parking lot at workplace are operated by either the government or a private owner. A numerical example is presented to illustrate how the pricing policies affect demand implementation, mode choice behavior and benefits of private owners and the whole transportation system.

Optimizing the use of public garages: Pricing parking by demand

- Transport Policy---2015---Gregory Pierce,Hank Willson,Donald Shoup

Many cities build public garages at great cost but with scant public scrutiny or economic analysis. Other than aiming to recover the cost of debt service and operations, cities appear to have few clear policy aims in managing these garages. In this paper, we outline how U.S. cities currently manage off-street parking structures under their control. We argue that this management largely ignores the logic of both economics and public benefits. We also make the conceptual case for how cities should manage their parking assets to maximize public benefits. Finally, we examine the most promising example of off-street parking public management, using data from 14 garages included in San Francisco's SFpark program. We find that SFpark increased the public use of garages by more than a third, reduced the average price for drivers, and maintained a stable revenue stream for the city.

Representations of everyday travel experiences: Case study of the Dallas-Fort Worth Metropolitan Area

- Transport Policy---2015---Dian Nostikasari

Disparity of access to transportation also affects access to essential urban resources, particularly for lower income populations and minorities. Studies have shown how current transportation planning practices are dominated by the notion of planners as experts that produce the knowledge of future transportation needs using a series of analytical steps and computer modeling. Consequently, existing practices such as transport modeling perpetuate barriers to mobility and lack of accessibility, and therefore, there is a need to make explicit how these existing practices exclude particular population groups. Using the Dallas-Fort Worth (DFW) Metropolitan Area as a case study, this paper makes a stronger connection between the assumptions planners make regarding transportation needs and goals with everyday travel experiences of a variety of residents. This research utilizes travel diaries to provide in-depth understandings of individual' s travel experiences from various neighborhoods in the DFW Region to understand how differences in mobility and accessibility affect access to places.

Housing rent and road pricing in Milan: Evidence from a geographical discontinuity approach

- Transport Policy---2015---D' Arcangelo, Filippo Maria,Marco Percoco

To cope with severe problems of pollution and congestion, a road pricing scheme (the Ecopass) to enter the city centre was introduced in Milan in January 2008. This paper assesses the impact of such a policy measure on the housing market in terms of variations in rent within the treated area. To this end, we adopted a geographical difference-in-discontinuities approach, which allowed us to control for area specific factors and to identify the effect of road pricing at the boundary of the treated area. By using detailed data from 55 zones over the period 2007–2012, we found that the Ecopass has had a small and positive impact on housing rent, equal to +0.75%.

How to make CBA more suitable for evaluating cycling policies

- Transport Policy---2015---Bert van Wee,Maria Börjesson

In this paper we argue that there is no reason to a priori reject the use of CBA for the evaluation of cycling policies. A CBA can be very helpful to ex ante evaluate

the impacts of candidate cycling policies although the outcomes need to be carefully examined and could be misleading. This is firstly due to current practice and modelling tools which do not address cycling well, key issues being the poor inclusion of cycling in transport models even in countries with high bicycle levels, and the use of aggregate average risk data which do not reflect marginal risk changes in specific cases. In addition it is doubtful whether the value of travel time gains can be captured by the cyclist' s willingness to pay. Secondly, some important effects are generally ignored, typically difficulties in quantifying and monetizing the potential impacts on the urban environment, social exclusion and the option value. We point out some research and modelling challenges essential for improving CBA for the evaluation of cycling policies.

Incorporating subjective elements into liners' seaport choice assessments

- Transport Policy---2015---Kenneth Button,Anthony Chin,Tomaž Kramberger

This paper provides a broader understanding of seaport choice. There has been considerable expansion in international maritime container based trade that is requiring substantial investment in seaport capacity. The growth in demand for port services has, however, neither been even over time nor across ports making the defining of appropriate investment policies challenging. Most studies of port choice, a major factor in the demand for any individual port, focus on relatively easily quantified measures, such as financial costs, to the neglect of less tangible factors that also influence decision-making. Here we examine the role played by subjective factors, namely the preference rates in port choice, by focusing on the optimal port of call of shipping lines serving South-east Asian and European ports drawing upon trade-offs between generalized costs and preference rates. An analytic hierarchy process is employed to ascertain the subjective element. The findings confirm that subjectivity does matter in influencing port choice, and thus failure to incorporate it in policy-making can involve leaving out an important element in the management of port investment and financing.

Quantifying and decomposing the uncertainty in appraisal value of travel time savings

- Transport Policy---2015---Phill Wheat,Richard Batley

This paper is concerned with computing interval estimates for appraisal values of travel time savings (VTTS) for non-work journeys. The paper has important conclusions relating to the benefits, in terms of uncertainty in appraisal VTTS, of resampling the base year VTTS and improving on the precision of the estimate of the GDP elasticity in the uprating equation. Importantly it is shown that the interval widths increase dramatically as VTTS is forecast further into the future. This has a significant modelling implication in that it is the uncertainty associated with the process of uprating base estimates of VTTS which results in the large interval width, rather than that associated with the base year VTTS estimate. This in turn implies a need to regularly resample the base VTTS, so as to avoid excessive temporal extrapolation of the base VTTS.

The impact of Universally accessible public transport–a before and after study

- Transport Policy---2015---Jørgen Aarhaug,Beate Elvebakk

The article studies the effects of universal design measures in public transport. It is based on an evaluation conducted by the authors in 2010-2012 - a before and after study of measures partfunded by a Norwegian government funding program for improved accessibility in six different cities. The article employs a two-pronged empirical approach; quantitative surveys of all passengers on the affected routes (supplemented by interviews with drivers and personnel), and qualitative case studies with individual public transport users with disabilities. The first part of the article describes how universal design measures are perceived by and affect passengers in general, and discuss whether such measures may lead to an increase in the number

of passengers. The second part considers how such measures influence the experience of travelling for passengers with disabilities, and what it takes for disabled passengers to be able to use public transport on par with other citizens. We conclude that previous surveys, which have not included control cases and questions, have probably overestimated passenger effects of universal design measures, as the results are affected by demographic factors. We still find that the measures have a positive impact on patronage. Like earlier studies, we find that the majority of respondents having trouble using public transport, report that this is due to bringing a pram or heavy luggage. We hypothesize that positive effects on passenger numbers due to reduced expulsion, (i.e. that certain groups are able to continue using public transport for a longer period when it is universally designed) may mean that effects on passenger numbers can increase over time. We find that in terms of social economics, universal design is profitable even with fairly low passenger numbers. The case studies demonstrate that although universal design measures contribute to enabling persons with disabilities to use public transport, such measures should be analyzed as parts of a transport system, not separately . The various elements of the system, including the people employed in it, must continuously work together to maintain universality. This goes for maintenance as well as for services provided by drivers. To secure mobility for people with disabilities, it is also essential that the systemis predictable and that accessibility is from door-to-door, not only from bus-stop to bus-stop.

A methodology for evaluating satisfaction with high-speed train services: A case study in Turkey

- Transport Policy---2015---Ozlem Alpu

Customer satisfaction is a prominent aspect of customer-oriented transportation services. To increase the quality of service and customer satisfaction, it is important to measure how the service provided is perceived and to determine customers' expectations and demands. In 2009, the Turkish Republic State Railways (known as TCDD in Turkey), which provide railway transportation services in Turkey, started High Speed Train (HST) transportation services. HSTs are comfortable and technologically modern transportation vehicles that attract both current and potential customers. Since 2009, efforts have been made to expand HST services to other cities. The current HST service between the cities of Istanbul and Ankara in Turkey can be used as a model to evaluate customer satisfaction and quality of service during the development of additional HST services between other cities. Therefore, the purpose of the present study was to create a mathematical model to determine which areas of service influenced customers' views and satisfaction regarding HST services in Turkey and the magnitude of contribution of these factors to overall satisfaction. Thus, factor analysis was conducted to determine the relevant factors affecting satisfaction with HST services. A mathematical model was then created with the help of factor scores. As residual outliers were found during the creation of the model in both the x and y directions, certain bounded influence estimators resistant to outliers in both directions were proposed for the estimation of model parameters. The mathematical models established in this study enabled the analysis of the influence of advertisements and information services, food service, physical conditions, the attitudes and behavior of personnel on customers' overall satisfaction with HST services.

Commuting to college: The effectiveness and social efficiency of transportation demand management policies

- Transport Policy---2015---Lucia Rotaris,Romeo Danielis

Commuting is the single largest impact a University has on the environment and represents a noticeable share of urban traffic, when the University is located within a city. There is a large amount of literature on which policies could reduce car use and improve the environmental and social sustainability of commuting to college. However, most studies focus, to the best of our knowledge, only on the effectiveness of such policies, disregarding their social efficiency, measured as the difference between the social costs and benefits.

This paper presents an estimate of the effectiveness and the efficiency of nine hypothetical transport policies regarding the University of Trieste, Italy, on the basis of a transport demand model estimated via revealed and stated choice data. All policies but one are effective in reducing car use, but only six of them appear to be efficient. We find that fully subsidizing bus fares would be the most effective and efficient policy. However, it is doubtful whether fully subsidizing bus fares is financially sustainable. The second best policy would be a mix of bus subsidies and parking restrictions. In case of the University of Trieste, our model suggests the adoption of a policy mix based on a relatively low hourly parking tariff (€0.3 per hour) and the use of the parking revenues to subsidize the bus users. The methodology and the results presented in this paper can be used by the college Mobility Managers to design better transport policies.

Adding value to the decision-making process of mega projects: Fostering strategic ambiguity, redundancy, and resilience

- Transport Policy---2015---Mendel Giezen,Willem Salet,Luca Bertolini

Current practice in decision-making about mega projects seems to be aimed at reducing complexity by simplification. However, this is often detrimental to the resilience and added value of these projects. This article uses the concept of strategic capacity for analyzing the decision-making process on mega projects. This concept consists of three elements: strategic ambiguity (the tension between different purposes and goals), redundancy (having more options than necessary from an efficiency perspective) and resilience (is the process reactively or proactively resilient to outside demands?). Two transport mega projects in the Netherlands are analyzed. Our analysis demonstrates that creative solutions and added value are to be found in the recombination of policy options made possible by enhancing strategic capacity.

Barriers to urban freight policy implementation: The case of urban consolidation center in Oslo

- Transport Policy---2015---Marianne Elvsaas Nordtømme,Kristin Ystmark Bjerkan,Astrid Bjørgen Sund

As a measure for more environmentally friendly and efficient urban freight, the Norwegian capital Oslo sought to implement a UCC demonstration in the city center. However, the process of establishing UCC as a demonstration measure within the set time frame was ultimately stopped without success. By using the experiences from this process, the paper provides a more solid basis for renewed efforts at implementation in the future. With basis in implementation theory, the study identifies key barriers to implementation of UCC. Findings indicate that the barriers are primarily related to financial concerns and stakeholder acceptability. However, institutional, practical and legal barriers are also of significance. Strategies to overcome the identified barriers are suggested, most importantly the need for establishing a credible and sound business model. The study makes use of perspectives from political science regarding implementation theory in order to facilitate urban freight policy. As such, it represents a novel scholarly approach in the field of urban freight research. The evaluation framework can be useful for similar studies to come and for policymakers in the design and implementation of new policy measures for urban freight.

The impact of baggage fees on passenger demand on US air routes

- Transport Policy---2015---Davide Scotti,Martin Dresner

In recent years, US airlines have unbundled ancillary fees from base air fares. As a result, the carriers have implemented a variety of fees on a range of optional services. Among these, checked baggage fees now represent a significant source of airline revenues. This paper assesses the impact of baggage fees on passenger demand and airline fares. We study a sample of US domestic routes over the period 2007–2010 where

passengers have a choice between carriers that charge fees for checked baggage and Southwest Airlines, which allows passengers one or two "free" checked bags. A system of simultaneous equations is estimated. Our results show that, on an average route, a $1 increase in baggage fee leads to a loss of 0.7 passengers and is associated with a $0.11 reduction in fare levels. Interestingly, an equivalent increase of $1 in fares results in a much greater decline in passengers (eight times greater). Therefore, our results support the idea that substituting additional baggage fees for higher fares may be a beneficial strategy for carriers in terms of generating revenues and maintaining market share.

The impact of government failure on tourism in the Philippines

- Transport Policy---2015---Wilfred Manuela Jr,Manuel J. de Vera

While the Philippines aspires to be one of the top tourist destinations in Southeast Asia, self-inflicted wounds like the failure of the government to comply with international aviation safety standards may derail the country from achieving its goals. This article estimates the short- and long-term impact of the US FAA downgrade of the Philippine civil aviation system in 2008 and the EU ban of Philippine carriers in 2010 on tourist expenditures, arrivals, and length of stay using monthly time series data. The econometric model, consisting of three equations due to the endogeneity of the tourist arrivals and length of stay variables in the tourist expenditures equation, is estimated simultaneously using the generalized method of moments. The results indicate that the US FAA downgrade and the EU ban impact monthly tourist receipts negatively in the short term while the downgrade also impacts tourist expenditures in the long term. Moreover, the ban impacts length of stay negatively in the short and long term while the downgrade impacts length of stay negatively only in the long term. The substantial decline in tourism receipts from 2008 to 2010 despite an increasing trend in tourist arrivals is due to the shorter stay of tourists, indicating that high-spending tourists have not returned following the downgrade and ban.

Low-cost carrier competition and airline service quality in Europe

- Transport Policy---2015---Branko Bubalo,Alberto Gaggero

The authors are investigating whether a higher presence and more efficient operations of low-cost carriers (LCCs) can increase the service quality in terms of on-time performance of all the flights landing at an airport. We sample 100 European airports located in 76 metropolitan areas of diverse sizes in 19 countries on both a daily and flight-by-flight basis during the period from April 2011 to December 2012. We construct a panel dataset at the flight code level comprising about 3.5 million observations. We find that LCCs contribute to a reduction of delays for airlines and flights landing at the observed airport. From the customers' point of view and taking into consideration the level of service, we conclude that the presence of LCCs represents a positive externality for an airport. Airport management may therefore consider the proactive increase of LCCs market share in their long-term business strategies.

Light handed regulation–Can it play a role in the developing world?

- Transport Policy---2015---Margaret Arblaster,Paul Hooper

The private sector has become essential for the development of airport infrastructure worldwide, but ICAO maintains that all governments ultimately are responsible for protecting users from the abuse of market power and therefore they need to establish appropriate regulatory arrangements. Nevertheless, economic regulation is difficult, it involves risk of failure, it can be costly, and careful analysis might well suggest that presumptions of significant market power are not supported by the facts. Developing countries, in particular, face challenges in providing necessary financial and (qualified) human resources for their regulatory authorities, but such regulation also has to function in a sub-optimal framework.

Towards realizing best-in-class civil aviation strategy scenarios

- Transport Policy---2015---Nadine Itani,O' Connell, John F.,Keith Mason

Developed and less developed countries follow different approaches during the formulation of aviation strategic plans. Additionally, there exists no pre-defined framework to guide developing countries in formulating civil aviation strategies matching their macro-environment and competitiveness levels while addressing their future vision for growth or sustainability. Instead, civil aviation planning over-look these priorities and is often dictated by local political pressures, and mostly influenced by uncoordinated foreign aid assistance. Hence, developing countries use dissimilar and un-structured approaches to reach what is known as "civil aviation master plan" or "draft civil aviation policy". Recognizing that a problem exists in the mechanism for civil aviation planning in this part of the world, research is encouraged to highlight this substantial topic. This paper uses a scenario-based approach to study the roles played by the macro-environment and industry-level performance in realizing best-fit national civil aviation strategies. The goals are achieved through utilizing a two-stage performance benchmarking technique named Data Envelopment Analysis (DEA) on country level data on a sample of 52 countries in different stages of development, followed by truncated regression. Results of the best performing countries—in terms of output efficiency, indicate that the country's macro-environment and air transport sector's performance serve as guidelines to identify aviation policy elements that are considered to impact efficiency. The regression results indicate that a more liberal air services approach is said to be of positive influence on efficiency levels. Further, we show that private airports are more efficient, while public airports are even less efficient than those with mixed ownership/management model. Hence, policy makers are encouraged to adopt an efficient peer analysis approach based on influential policy elements to bridge performance gaps, achieve better operating capacity, direct and prioritize investments in the civil aviation sector.

Hubs at risk: Exposure of Europe's largest hubs to competition on transfer city Pairs

- Transport Policy---2015---Tobias Grosche,Richard Klophaus

Hubs are airports used by airlines as transfer points to get passengers to their destinations. Each of the five largest European hubs – Amsterdam, Charles de Gaulle, Frankfurt, Heathrow, and Madrid – is closely associated with one former national flag carrier. Some concerns exist in Europe that the expansion of the Gulf carriers with their hubs in Dubai, Abu Dhabi and Doha threatens the existence of European hubs regarding transfer city pairs that include at least one long-haul leg. Our paper examines the actual exposure to competition by combining airline schedules data with methodology to measure competitive transfer connections. We provide the percentage of the transfer city pairs of the five largest European hubs that is exposed to competition. Further, we identify the main competitors to each of these hubs. One important result of our paper is that despite the increasing market share of Gulf carriers, the main competition for transfer traffic is still among the five largest European hubs, with Munich and Istanbul being another two strong contenders. Hence, our paper puts into perspective the competitive risk posed by Gulf carriers and their hubs.

Dominant carrier performance and international liberalization – The case of Northeast Asia

- Transport Policy---2015---Xiaowen Fu,Tae Hoon Oum,Ruowei Chen,Zheng Lei

This study investigates the links between domestic market regulation, dominant airline performance, and international market liberalization in Northeast Asia (NEA). The study focuses on China, where substantial regulations are still present in the aviation market, particularly in areas such as route entry, airport slot allocation, input supply, and aviation support services. These regulations limit the ability of entrant airlines to compete in hub airports, and allow dominant airlines to strengthen their market power and achieve substantial growth at the expense of their competitors. Current

Chinese regulations assist major state-owned carriers by suppressing domestic competition, particularly in markets linked to hub airports. If national policy in China continues to be guided by requirements created to support the dominant airlines, in the short term there will be limited liberalization on routes linked with hub airports. Promoting LCC services in the region is one practical alternative for the short term which could prevent major disruption to network carriers. This investigation suggests that Chinese airlines would be less resistant to bilateral liberalization with ASEAN, Oceanian or European nations than they would with other regions, as they are well positioned in these markets, and may be able to develop their hub airports into Asia's gateways to Europe. In the long term, however, there is no substitute for full liberalization if NEA governments want their nations to fully benefit from enabling their carriers and hub airports to achieve global competitiveness.

The proposed E.U.-ASEAN comprehensive air transport agreement: What might it contain and can it work?

- Transport Policy---2015---Alan Khee-Jin Tan

The European Union (E.U.) and the Association of Southeast Asian Nations (ASEAN) have agreed to commence negotiations on a comprehensive air transport agreement between both regions. The agreement will be the first substantive accord between two major trading blocs providing possibly for an "open skies" or "open aviation area" arrangement with unlimited market access for both sides' airlines and other significant mutual benefits. This paper assesses the aero-political factors influencing the prospects of a comprehensive agreement between the two regions, given the sizeable presence of sixth freedom carriers in the E.U.-ASEAN market and the incomplete formation of the ASEAN Single Aviation Market.

Liberalisation of international civil aviation – charting the legal flightpath

- Transport Policy---2015---Antigoni Lykotrafiti

The paper focuses on the issue of liberalisation of international civil aviation, examining how the law could accommodate a reform of the Chicago regime. It looks into the strengths and weaknesses of the most prominent legal options available to States to implement liberalisation, namely, amending the Chicago Convention, including market access in air transport in the GATS Annex on Air Transport Services, waiving the nationality clauses and concluding inter-regional air transport agreements. Via this process, the paper aspires to identify the optimal legal path to liberalisation. The analysis suggests that there is no single way to achieve liberalisation nor is there a shortcut. Instead, it appears that what catalyses liberalisation is the combined effect of the interplay between the various legal options. The paper concludes that, however accommodating the law might be, liberalisation occurs when economics and politics merge, an outcome which in international civil aviation appears to be a long way down the road, but certainly not out of sight.

What do we mean by a level playing field in international aviation?

- Transport Policy---2015---Mike Tretheway,Robert Andriulaitis

Over the past several decades international airline markets have been progressively liberalized. An issue that has emerged is whether there is a level playing field (LPF) between the carriers of the two nations that are party to a bilateral air services agreement. While the International Civil Aviation Association (ICAO) has drafted a model LPF clause for air services agreements and the European Commission has negotiated a few agreements with LFP clauses, the issues involved are at best vaguely specified and often ignore key elements of economics. This paper represents an initial attempt to develop a more comprehensive discussion of aspects of LPF definition. The paper categorises issues as either legitimate concerns or as issues that are matters of comparative advantage in international trade or that can and should be dealt with by competition or general international trade law rather than by sector specific bilateral trade treaties. The topic of

subsidies in LPF assessments is particularly addressed as economic welfare optimization can justify subsidies in some cases and because subsidy to infrastructure is more widespread than some stakeholders may realize.

In the wake of liberalisation: long-term developments in the EU air transport market

- Transport Policy---2015---Guillaume Burghouwt,Jaap G. de Wit

Using a 24-year analysis period (1990–2013), a new perspective is offered on long-term first- and second-order developments following liberalisation of the intra-EU air transport market. The focus of the analysis is on supply-side issues, such as airline output, structure of supply, yields, business models, and the position of (former) flag carriers.

Exploring differences in school travel mode choice behaviour between children and youth

- Transport Policy---2015---Raktim Mitra,Ron N. Buliung

A child's school travel behaviour may change with the transition toward adolescence. However, the topic remains understudied in current literature. This paper examines school travel mode choice behaviour of 11-year-old children and 14–15 year old youth in Toronto, Canada. Morning period school trip data was analysed using multinomial logit models. Distance to school was the most important barrier to walking for both age groups; neighbourhood built environment characteristics (i.e., major street intersections, retail density and block density) had a stronger association with a child's odds of walking; and access to transit was correlated with only a youth's travel mode outcome. In addition, a male youth was more likely to walk than a female youth; gender of a child was not associated with school travel mode. As school travel related programmes are beginning to be adapted to the high-school context, our results indicate that a current North American model that is largely designed around capital improvement of transport infrastructure may not be very successful. Rather, programmes and initiatives should emphasize education, and perhaps attempt to understand and reshape the culture of youth mobility, in order to encourage healthy and sustainable travel practices.

Does service reliability determine transit patronage? Insights from the Los Angeles Metro bus system

- Transport Policy---2015---Sandip Chakrabarti,Genevieve Giuliano

We explore whether improving service reliability can be effective in increasing transit patronage. Survey data shows that reliability is highly valued by passengers, because unreliability results in unpredictable wait times, missed transfer connections, and penalties associated with arriving at the destination earlier or later than desired. Consequently, transit planners have devoted significant effort towards measuring unreliability, exploring factors that cause unreliability, and developing strategies to increase reliability. However, we still know very little about how service reliability influences demand – i.e. whether reliability can be used as a tool to increase patronage.

Built environment and children's travel to school

- Transport Policy---2015---Carey Curtis,Courtney Babb,Doina Olaru

The decline in children's active travel has significant implications for urban planning and sustainable mobility. This research explores the influence of built environment on children's travel to school across a range of typical urban environments in Australia. The analysis draws on a sample of children and their parents from nine primary schools across four urban regions: Brisbane, Melbourne, Perth and Rockhampton. The built environment features for each school neighbourhood are measured. An analysis of travel, socio-demographics and attitudes to travel is conducted. The findings indicate that children residing in built environments that are more dense and urban are significantly associated with more active travel to school and for other journey purposes. Distance to school is critical for active travel (AT) and many children lived beyond walking

distance. While built environment is important, a decisive role for children's active travel to school and other places is seen in the combination of preferences and licences. Children who AT prefer to be more autonomous/independent travellers and have parents who foster their IM; conversely, children's preferences for being driven coincides with parents' fears for IM and lack of confidence in their children abilities to travel independently.

The looming crisis in French public transit

- Transport Policy---2015---Dominique Bouf,Faivre d' Arcier, Bruno,Bruno Faivre d'Arcier

The purpose of this paper is to present the problems of French public transit, facing a funding crisis. The prominent features of the French transit are presented. First, we describe the complex and opaque bidding process which is for the entire network. Then we evoke a payroll tax especially devoted to the transit and underline the fact that the system is heavily subsidised. As competing for the entire network might find its rationale in the scale and scope economies, we test some very simple models devoted to this issue. We found no evidence of economies of scale for bus networks. This, given the funding crisis of transit authorities, leads us to recommend a gradual reform of French transit competitive tendering process. This reform should lead to a slowdown in the upward trend of transit employee's salaries. Some smaller parts of the networks would be submitted to bidding processes. The contracts might be improved as well.

In search of sustainable road infrastructure planning: How can we build on historical policy shifts?

- Transport Policy---2015---Tim Busscher,Taede Tillema,Jos Arts

Road infrastructure planning is undergoing major changes. Infrastructure development is increasingly considered in relation to environmental degradation, climatic impacts and societal trends. Reinforced by the notion of sustainable development, infrastructure planning is increasingly focused on the realization of integrated planning goals. In planning practice, however, the transport infrastructure policy silo is strongly sectoral in nature, which can result in efforts fragmented along sectoral lines to realize integrated goals. As a result, a gap can be found between the formulation and implementation of these goals. Meanwhile, historical shifts in infrastructure policy and planning reveal that earlier planning approaches have been adopted in response to these issues. A project-oriented planning approach seems to have developed in response to the implementation gap, while an integrated planning approach is focused on solving fragmentation. In this article we aim to explore and conceptualize these policy shifts in transport policy and planning and investigate what lessons can be drawn from these approaches to dealing with these issues in today' s road infrastructure planning. We find that the current programme-oriented planning approach is focused on combining the strengths of both historical approaches. It aims at putting the focus on an integrated planning approach, while contextualizing projects in a project-oriented planning approach. As such, the emerging programmatic planning approach provides an interesting avenue for further research.

Inclusion of quality criteria in public bus service contracts in metropolitan areas

- Transport Policy---2015---Marta Rojo,dell' Olio, Luigi,Hernán Gonzalo-Orden,Ángel Ibeas

The aim of this research is to amend the current contracting system to improve the quality of inter-urban bus services in metropolitan areas and thereby increase demand and reduce externalities.

Troubled waters: An institutional analysis of ageing Dutch and American waterway infrastructure

- Transport Policy---2015---Arjan Hijdra,Johan Woltjer,Jos Arts

Waterways are one of the oldest systems for the transportation of cargo and continue to play a vital role

in the economies of some countries. Due to societal change, climate change and the ageing of assets, the conditions influencing the effective functioning of these systems seem to be changing. These changing conditions require measures to renew, adapt or renovate these waterway systems. However, measures with the sole aim of improving navigation conditions have encountered resistance, as the general public, and stakeholders in particular, value these waters in many more ways than navigation alone. Therefore, a more inclusive, integrated approach is required, rather than a sectoral one. Addressing these contemporary challenges requires a shift in the traditional waterway authorities' regimes. The aim of this study is to identify elements in the institutional setting where obstacles and opportunities for a more inclusive approach can be found. Two major waterway systems, the American and the Dutch, have been analyzed using the Institutional Analysis and Development framework to reveal those obstacles and opportunities. The results show that horizontal coordination and a low pay-off for an inclusive approach is particularly problematic. The American case also reveals a promising aspect – mandatory local co-funding for federal navigation projects acts as a stimulus for broad stakeholder involvement. Improving horizontal coordination and seizing opportunities for multifunctional development can open pathways to optimize the value of waterway systems for society.

Evaluating the efficiency performance of airports using an integrated AHP/DEA-AR technique

- Transport Policy---2015---Lai, Po-Lin,Andrew Potter,Malcolm Beynon,Anthony Beresford

Airport efficiency is an area of increasing interest to academics, policy makers and practitioners. This has resulted in a body of literature applying various econometric techniques to compare efficiency between different samples of airports. This paper uses the multi-criteria decision making method Analytic Hierarchy Process (AHP) to incorporate the weightings of input and output variables into Data Envelopment Analysis (DEA) and Assurance Region DEA (DEA-AR) models, with 24 major international airports in the empirical analysis. The paper concludes the discriminatory power in the proposed AHP/DEA-AR model is greater than in the basic DEA model when measuring the efficiency of airports. By applying this approach, policy makers and practitioners can effectively compare operational efficiency between airports, and therefore generate more informed decisions.

Innovation in the European transport sector: A review

- Transport Policy---2015---Tobias Wiesenthal,Ana Condeço-Melhorado,Guillaume Leduc

This article reviews innovation of the European transport industries. It combines a quantitative analysis of the R&D investment of manufacturers of transport equipment, transport service providers and the constructors of transport infrastructure for the years 2008 and 2011 with a qualitative assessment of their incentives to innovate. The latter takes into account sector-specific innovation systems, their distinct market environments and the products and services produced. The findings show that, although the transport sector as a whole is the largest industrial R&D investor in the EU, there are important differences in the level of innovation activities carried out by the highly heterogeneous sub-sectors. These differences seem to be of systemic nature: they are found consistently in the quantitative analysis and the theoretical considerations. The result is highly policy-relevant as it indicates that policies targeting innovation in transport need to take into account the specific innovation capacities of the various sub-sectors.

Peak car? Drivers of the recent decline in Swedish car use

- Transport Policy---2015---Anne Bastian,Maria Börjesson

It has long been well-known that economic variables such as GDP and fuel price as well as socio-demographic characteristics and spatial distribution are key factors explaining car use trends. However, due to the recently observed plateau of total car travel in

many high income countries, it has been argued that other factors, such as changes in preferences, attitudes and life-styles, have become more important drivers of car use. This paper shows that the two variables, GDP per capita and fuel price, explain most of the aggregate trends in car distances driven per adult in Sweden: as much as 80% over the years 2002 to 2012. The estimated elasticities are well in line with previous literature and can reasonably well reproduce the trend in car distances driven per adult back to 1980. We find, however, a substantial variation in elasticities between municipalities depending on public transport supply, population density, share of foreign-born inhabitants and the average income level.

Reframing safety: An analysis of perceptions of cycle safety clothing

- Transport Policy---2015---Rachel Aldred,James Woodcock

This article contributes to debates around cycle safety clothing, specifically helmets and high-visibility clothing. In England such items are widely promoted in safety campaigns and in broader cycling publicity, particularly for children. However, the impact of this approach on cycling safety and cycling uptake is unclear and contested. This article uses a combined analysis of three sets of qualitative interview data to explore talk about cycle helmets and high-visibility clothing. A thematic analysis involved coding all references to such safety clothing, and within that coding meanings, experiences, interactions, and links to other safety equipment.

The role of attitudes, transport priorities, and car use habit for travel mode use and intentions to use public transportation in an urban Norwegian public

- Transport Policy---2015---Özlem Şimşekoğlu,Trond Nordfjærn,Torbjørn Rundmo

The present study aims to identify clusters of transport users and to examine the role of transport priorities, travel mode use attitudes, and car use habit on travel mode use. An additional aim is to test whether such factors predict intentions to use public transport and reported use of public transport. Data were collected via a self-completion questionnaire survey conducted in June and August 2013. Participants included a total of 1039 people who were randomly selected from the urban regions of Norway using the Norwegian population registry. Due to missing data on travel mode use variables the analyses were conducted with 546 observed cases. Two clusters of transport users were identified; individuals who primarily use public and health-promoting transport (e.g. public transportation users, bicyclists) and car users. Logistic regression analysis showed that older age, strength of the car use habit, and priorities of flexibility (e.g. prioritize being able to choose the exact time of travel) increased the odds of car use. Structural Equation Modeling showed that priority of convenience, priority of safety and security, and favorable attitudes towards public transport use were positive predictors of intentions to use public transportation, while car use habit was a negative predictor of both intentions to use public transportation and reported public transportation use. Traffic safety campaigns aiming to increase public transportation use in the urban Norwegian public could focus on increasing the attractiveness of public transport, particularly by improving flexibility of such transport.

Carbon emissions growth and road freight: Analysis of the influencing factors in Tunisia

- Transport Policy---2015---M'raihi, Rafaa,Rafaa Mraihi,Riadh Harizi,Mohamed Taoufik Bouzidi

Based on data on total CO2 emissions and freight transport, we determine and analyze the effects of main driving factors of total CO2 emissions in Tunisia during the period 1990–2006. We have decomposed the annual emission changes into components representing changes in average emission of fossil fuels, fossil fuel share from road freight transport, fossil fuel intensity from road freight transport, road freight transport intensity and gross domestic production. The decomposing analysis results have shown that economic growth is the principal factor driving the CO2 emission growth.

Changes in average emission of fossil fuels is the primarily factor driving the CO2 emission changes. For road freight transport-related components, effects of fossil fuel share, fossil fuel intensity, and road freight transport intensity are all found secondary responsible for CO2 emissions changes. They have a main role especially in driving CO2 emissions increase. This study also shows that, given the drastically decline of economic growth since the popular revolution in 2010, the reduction of CO2 emissions become more difficult by the absolute decoupling of road freight transport from economic growth. The relative decoupling by switching to less emission intensive transportation modes, may the adequate solution. To this end, sustainable freight transport policy in Tunisia could apply some fiscal, economic and technical instruments to reduce fossil fuels consumption and CO2 emissions related to the road mode.

Evaluating the outcomes associated with an innovative change in a state-level transportation project prioritization process: A case study of Vermont

- Transport Policy---2015---David C. Novak,Chris Koliba,Asim Zia,Matt Tucker

In this paper we examine the outcomes associated with an innovative change in a state-level transportation project prioritization process within the United States (U.S.). A foundational component of the innovation is the development and implementation of a novel multi-criteria analysis (MCA) tool to aid decision-makers. The pre and post-MCA project prioritization processes are described in detail for the state of Vermont, and we use a mixed methodological approach to empirically evaluate the outcomes associated with the innovative change with respect to three objectives: (1) to make the project prioritization process more transparent, (2) to improve the project prioritization process by incorporating well-defined, objective evaluation criteria into the decision-making process, and (3) to reduce inequality in the allocation of transportation project funds between the local jurisdictions. We demonstrate that the innovative change in the project prioritization process was clearly successful in accomplishing objectives 1 and 2, but does not appear to be successful with respect to accomplishing objective 3. The findings are discussed in the context of the state of Vermont, and we offer suggestions for how funding inequality might be addressed in the future.

Harnessing motorists' potential demand for hybrid-electric vehicles in Lebanon: Policy options, CO2 emissions reduction and welfare gains

- Transport Policy---2015---Alexandra Irani,Ali Chalak

Air quality degradation is closely linked to the transportation sector in the Arab region. In Lebanon's capital, Beirut, levels of many transport-related pollutants are several times higher than world norms. In this paper, we elicit motorists' propensity to purchase hybrid-electric vehicles (HEVs) in Beirut by means of a choice experiment, and monetize attendant financial, welfare and environmental benefits. Simulations of aggregate switching behavior revealed that under a transitional scenario which assumes that HEVs are exempt from customs and excise duties (recently proposed, yet unimplemented, by the Ministry of Finance), car buyers would enjoy a 30.5 percent reduction in fuel consumption, 20.5 percent CO2 emission reduction and net benefits of $5684 per brand new car sale per year. Simulations of a more sustainable scenario in which customs and excise duties are reduced by around 38 percent reveal equally significant gains, with aggregate yearly fuel cost savings of $18.66 million and CO2 emissions reductions of 23,100 tons. Accordingly, endorsing the proposed tax amendments could be crucial to establishing a viable HEV market in Lebanon, later to be followed by a more sustainable tax incentive scheme consisting of partial tax discounts that would provide a win-win situation for both government and vehicle buyers.

Regulation of public bus services: The Israeli experience

- Transport Policy---2015---Yoram Ida,Gal Talit

The present research discusses structural reforms in the regulation of public bus services in Israel. In 2000, the market underwent a significant change; as a result, some of the bus services on fixed routes that were previously provided by two monopolistic operators are currently provided by means of competitive tendering. The research examined the reasons for this change, the measures taken in order to implement it, and the outcomes from the perspective of time. The findings indicated that, as in other countries, competitive tenders in Israel have succeeded in reducing costs, compared with the past, and this has led to a reduction in the related subsidies required of the government. At the same time, there was a general rise in the level of service provided to the public and a decline in fares. It seems that the government succeeded in improving its degree of control over the provision of bus services, but frequent changes in the structure of the tenders and their characteristics might reflect difficulties in the implementation of competition in the bus services in Israel.

Factors associated with the relationship between non-fatal road injuries and economic growth

- Transport Policy---2015---Teik Hua Law

This study reports the results of an empirical analysis of the Kuznets curve relationship between non-fatal road injuries and per-capita income. This relationship indicates that the number of road deaths increases with increasing per-capita income at lower income levels, but decreases once it has exceeded a threshold level. We apply a fixed effects negative binomial regression analysis on a panel of 90 countries over the period of 1963–2009. Results indicated evidence of an inverted U-shaped relationship between economic growth and non-fatal road injuries for both less developed and highly developed countries. Results also indicated that the turning point is higher in less developed countries than in higher developed countries. The evidence presented in this study suggests that improvements in road infrastructure, the quality of regulatory institutions, and increase in the use of safer transport modes will help reduce non-fatal road injuries.

Public transport demand elasticities during the recessionary phases of economic cycles

- Transport Policy---2015---Ruben Cordera,Cesar Canales,dell’ Olio, Luigi,Angel Ibeas

The serious recession suffered by the Spanish economy has had an important impact on the working of transport systems. This article provides evidence of how the state of the economy, measured using per capita income levels and unemployment rates, can influence the demand for public transport by bus with data from the city of Santander (Spain) for the period 2001–2012. The methodology used has involved the short and long run equilibrium demand elasticities estimation using a log–log regression model considering the presence of autocorrelation in the residuals and the endogeneity of the transport supply. The results show that the demand for transport is sensitive to changes in unemployment rates with an elasticity estimated at 0.133 in the static equilibrium model and of 0.210 in the long run dynamic model. The resulting elasticity for income levels was not significant in all the models, with a parameter estimated in the static model of 0.505 and of 0.861 in the long run dynamic model. The model estimated by two stage least squares validated using data from 2013 with unemployment rate as an independent variable gave the lowest average square error in validation.

Contestability and public concern about airfares: A case study in the Canary Islands

- Transport Policy---2015---Javier Campos,Juan Jiménez González,Jordi Perdiguero

This paper studies – both from a theoretical and empirical perspective – a case of contestability in the Canary Islands’ domestic air transport market. We show how after the exit of its rival in an initially duopolistic market, the remaining airline did not increase its prices in order not to provoke the entry of new rivals. According to our view, this result was explained by the ‘public concern’ that was created about the incumbent’s behaviour and its attempt of presenting itself as a benevolent monopolist. However, its strategy failed and a new

operator finally entered the market, with a subsequent drop in average prices. We prove our hypothesis by developing a theoretical multi-route oligopolistic model with differentiated services and by testing its implications using several difference-in-difference econometric techniques on a monthly prices database collected in 2012–2013.

Commuting mode choice in transit oriented development: Disentangling the effects of competitive neighbourhoods, travel attitudes, and self-selection

- Transport Policy---2015---Md. Kamruzzaman,Farjana Mostafiz Shatu,Julian Hine,Gavin Turrell

This research identifies the commuting mode choice behaviour of 3537 adults living in different types of transit oriented development (TOD) in Brisbane by disentangling the effects of their "evil twin" transit adjacent developments (TADs), and by also controlling for residential self-selection, travel attitudes and preferences, and socio-demographic effects. A TwoStep cluster analysis was conducted to identify the natural groupings of respondents' living environment based on six built environment indicators. The analysis resulted in five types of neighbourhoods: urban TODs, activity centre TODs, potential TODs, TADs, and traditional suburbs. HABITAT survey data were used to derive the commute mode choice behaviour of people living in these neighbourhoods. In addition, statements reflecting both respondents' travel attitudes and living preferences were also collected as part of the survey. Factor analyses were conducted based on these statements and these derived factors were then used to control for residential self-selection. Four binary logistic regression models were estimated, one for each of the travel modes used (e.g. public transport, active transport, less sustainable transport such as the car/taxi, and other), to differentiate between the commuting behaviour of people living in the five types of neighbourhoods. The findings verify that urban TODs enhance the use of public transport and reduce car usage. No significant difference was found in the commuting behaviour between respondents living in traditional suburbs and TADs. The results confirm the hypothesis that TADs are the "evil twin" of TODs. The data indicates that TADs and the mode choices of residents in these neighbourhoods is a missed transport policy opportunity. Further policy efforts are required for a successive transition of TADs into TODs in order to realise the full benefits of these. TOD policy should also be integrated with context specific TOD design principles.

An economic assessment of airport incentive regulation

- Transport Policy---2015---Nicole Adler,Peter Forsyth,Juergen Mueller,Hans-Martin Niemeier

There has been a gradual trend towards incentive regulation of airports since the privatization of BAA in 1986. Airports are price capped in several countries belonging to the European Union, as well as elsewhere, notably India. However, most of the price caps are not a pure price cap in which the X-factor is set independently of the cost of the regulated airport. Typically, hybrid price caps are used and combined with sometimes complex mechanisms like sliding scales, quality incentives and investment obligations, such that the incentive structures may become distorted. We provide an overview of the changes in the governance structure of airports as a result of privatization, analyze how far the regulatory institutions obey the principles of 'good' regulation, such as fairness and transparency, and investigate the performance of the new regulation in terms of allocative efficiency by reviewing benchmarking studies. Finally, we assess the impact of incentive regulation on productive efficiency using data envelopment analysis and second stage regression, which suggests that incentive regulation is superior to cost plus.

X-factor regulation in a developing country: The case of Lima's airport

- Transport Policy---2015---Enzo Defilippi

In theory, X-factor regulation provides better incentives for cost reduction than previously widely-used rate-of-return regulation. However, a deeper look into how this factor is effectively estimated shows the regulator enjoys a great deal of discretion, especially when selecting the methodologies used to estimate its components. As shown in this paper, discretion increases the likelihood of controversies between the regulator and the regulated firm.

Motorways economic regulation: A worldwide survey

- Transport Policy---2015---Paolo Beria,Francesco Ramella,Antonio Laurino

During the last few decades, the motorways sector greatly expanded around the world. Today it represents an essential infrastructure asset of a country. In the majority of cases the network was initially built and maintained with public funds through direct state provision. In the early 1990s many developed and emerging countries moved towards private involvement in toll roads provision, increasing the need for sound economic regulation. However, no comprehensive analysis of the existing regulatory and institutional frameworks has been carried out so far. Starting from a survey involving 21 countries, the paper tries to fill in this gap through a review of existing motorway regulatory frameworks. Various aspects of regulation have been collected and analysed in order to provide an overview of the current practices, both in quantitative and qualitative terms evidencing the strengths and the weaknesses among the various models.

The economic regulation of French highways: Just how private did they become?

- Transport Policy---2015---Alain Bonnafous

The French highway system is mainly managed by franchises and financed by tolls. It underwent major changes from 2000 onwards. The most obvious change was the privatization of the companies holding the franchises. Nevertheless, the most important was the transposition of a European directive that led the French government to open the competition for new franchised projects. This resulted in a new form of economic regulation of toll highways involving various economic tools.

Evolution and assessment of economic regulatory policies for expressway infrastructure in China

- Transport Policy---2015---Meng Xu,Susan Grant-Muller,Ziyou Gao

The primary goal of this paper is to illustrate the development of economic regulatory policies in China that have been aimed at accelerating the process of expressway infrastructure construction. Although China's expressway infrastructure originates from June 1984, this relatively late initiation still clearly demonstrates the characteristics of rapid expansion, which forms an interesting context for an analysis of regulatory policies. Based on levels of economic development and geography, China can be divided into three macro regions, i.e. eastern, central and western regions. The rapid development of expressway infrastructure, the pattern of investment, the sources of financing and regional differences in investment in the three macro regions are described. Finally, an ex-post evaluation of the principles underpinning the evolution of regulatory policies for expressway infrastructure in China is carried out, based on a qualitative equity and economic efficiency framework.

Why and how to manage the process of liberalization of a regional railway market: South-Eastern European case study

- Transport Policy---2015---Branislav Bošković,Mirjana Bugarinović

The processes of restructuring of the railway sector and liberalization of the railway market in different South-Eastern European (SEE) countries vary significantly in terms of models and dynamics. As a result, the effects of these processes, as well as competitiveness of railways in the transport market, become reduced. The aim of this paper is to answer the questions of how

and by which parameters the process of the market liberalization and restructuring of railways in the SEE region should be managed, i.e. how to harmonize and synchronize this process and increase its effects. The process of restructuring has been considered in four segments: market institutions and legislation related to the railway sector, restructuring of the incumbent, degree of the railway market liberalization and financial arrangements between the state and actors of the railway market. The parameters used to compare and discuss the levels of restructuring and how to manage the harmonization have been defined for all of the mentioned segments. As a response to the need for coordination and dynamic alignment of restructuring processes and market liberalization in a region with an atomized rail network such as the SEE region, it has been proposed that the liberalization of the railway market should be realized in phases.

Governance models and port concessions in Europe: Commonalities, critical issues and policy perspectives

- Transport Policy---2015---Claudio Ferrari,Francesco Parola,Alessio Tei

The paper analyses European port regulation, focusing primarily on the effectiveness of concession agreements in the port sector. Current heterogeneity in EU port regulation is widely recognised as having an impact on the competitiveness of ports. Moreover, Port Authorities have to take into account a wide range of goals in order to manage the interactions with private operators responsible for port activities. Thus, some trade-offs emerge, as in some cases a revenue stream or a strategic objective for the Port Authority may imply a cost for the concessionaire. This paper discusses how concession agreements can contribute to regulating these trade-offs.

Policy lessons for regulating public–private partnership tolling schemes in urban environments

- Transport Policy---2015---Omid M. Rouhani,H. Oliver Gao,R. Richard Geddes

Public–private partnerships (P3s) are likely to impact entire transportation systems in fundamental ways. However, few studies have examined the potential impact of P3s on large-scale transportation networks. These studies have focused on modeling rather than on policy analysis. The literature thus does not offer guidance for designing and administering P3s to improve transportation system performance while maintaining profitability. Using Fresno, California's transportation network as a laboratory, we consider the effects of alternative P3 tolling approaches on profit maximization and system performance optimization at full urban transportation network scale. Based on system modeling results, we offer the following recommendations for policy makers to design and promote successful P3s in urban settings: (i) to promote a profitable and a socially beneficial system, toll rates should be set examining both profit-maximizing and system-optimal rates; (ii) even though tolls (i.e., higher travel costs) on a few roads help reduce travel demand they may, counter-intuitively, lead to higher total travel cost for the overall transportation system because of users' decision to travel longer distances to avoid tolls, especially when high toll rates are applied; (iii) lower limit(s) on tolls (in addition to upper limits) may be required to enforce system-optimal tolling and avoid undercutting by private owners; (iv) a variable tolling approach (i.e., temporally- and spatially-varying tolls) significantly reduces congestion and increases profits relative to flat tolls; and (v) public officials should provide a comprehensive plan regarding past, current, and future P3 projects along with a detailed system-wide impact analysis to promote a more sustainable transportation system.

When supply travels far beyond demand: Causes of oversupply in Spain's transport infrastructure

- Transport Policy---2015---Daniel Albalate,Germà Bel,Xavier Fageda

Spain's transport infrastructure policy has become a paradigmatic case of oversupply and of mismatch with demand. The massive expansion of the country's transport infrastructure over the last decade has not been a

response to demand bottlenecks or previously identified needs. For this reason, the intensity of use today on all interurban modes of transport in Spain falls well below that of other EU countries. This paper analyzes the institutional and regulatory factors that have permitted this policy, allowing us to draw lessons from the Spanish case that should help other countries avoid the pitfalls and shortcomings of Spanish policy. Based on our analysis, we also discuss policy remedies and suggest reforms in different regulatory areas, which could help improve the performance of Spain's infrastructure policy.

Understanding pitfalls in the application of PPPs in transport infrastructure in Portugal

- Transport Policy---2015---Rosário Macário,Joana Ribeiro,Joana Duarte Costa

Over the last few decades, public–private partnerships (PPPs) have been increasingly used by governments to finance and manage complex operations in public investment, especially in the provision of transport infrastructure. Portugal has been in the forefront of the most active European countries in the market of PPPs, having adopted a specific legal framework and involving a large number of institutions in its PPP process. PPPs have had high costs for the State, with transparency issues leading to difficulties assessing performance and accountability. This paper attempts to relate those pitfalls of the Portuguese experience with PPPs with the regulatory framework that was adopted and changed along the decades, at the light of theory of regulation. It is a first step in further exploring the relationships between regulatory aspects and PPP performance in the Portuguese case. Several lessons can be learned from Portuguese experience to enhance the processes of successful implementation of PPPs. The paper addresses these elements and provides evidences on pitfalls that should be avoided.

A social stakeholder support assessment of low-carbon transport policy based on multi-actor multi-criteria analysis: The case of Tianjin

- Transport Policy---2015---Hui Sun,Yiting Zhang,Yuning Wang,Lei Li,Yun Sheng

Based on multi-actor multi-criteria analysis (MAMCA), this paper evaluates the low-carbon transport policies in Tianjin, China. MAMCA is a methodology that is used to evaluate different policy measures by explicitly accounting for the opinions of various stakeholders. This paper refines the model based on social network analysis to measure the weights of stakeholder opinions and applies the model to the case of Tianjin. Six intervention low-carbon transport policies (tax adjustment, pricing adjustment mechanisms, multi-operation mechanisms, environmental propaganda, traffic demand management, and state funding and subsidies) are evaluated based on the aims and objectives of various stakeholders (government supervisory authorities, end users, infrastructure operators, infrastructure suppliers, academics, the traffic management sector, the technology division, and the planning department) using snowball sampling techniques. Overall, the results showed that the most supportive policies are traffic demand management and state funding and subsidies. The MAMCA also provided insights into the position and preferences of stakeholders in relation to the aims and objectives of low-carbon transport policy. As such, the results can assist decision makers in comparing, selecting and adjusting low-carbon transport policies as well as attracting support for policy implementation.

Investigating the impact of maintenance regimes on the design life of road pavements in a changing climate and the implications for transport policy

- Transport Policy---2015---Michael A.P. Taylor,Michelle L. Philp

Environmental conditions are one of the key components that determine the design life and maintenance required for road pavements. This study investigates how climate change can impact road pavement design

life and the required maintenance regimes required to maximise the life of the surface. Using a pavement degradation model previously adapted by the authors for use with the Thornthwaite Moisture Index climate indicator, the authors investigate the impact of climate change on the design life and maintenance requirements along a real life case study corridor in South Australia. A literature review conducted by this study determines how climate change is being considered in infrastructure related policies and literature, with a focus on road pavements. The paper then further discussed the impacts of climate change on road pavement degradation and the implications for management and maintenance of this infrastructure, and the associated impacts for transport policy makers.

Trends in Thailand CO2 emissions in the transportation sector and Policy Mitigation

- Transport Policy---2015---Vatanavongs Ratanavaraha,Sajjakaj Jomnonkwao

Daily human activities have caused severe impacts on global warming. Such human activities, in particular travel and freight transportation, generate massive emissions of greenhouse gases (GHGs), e.g., carbon dioxide (CO2). Hence, the aim of this study was to predict the amount of CO2 emissions from energy use in Thailand's transportation sector as well as related factors, thus providing a substantial benefit to determine policies for reducing GHG emissions and its impacts. In this study, 5 independent variables, namely the size of the population, gross domestic product (GDP), and the number of small, medium and large-sized registered vehicles, were considered in the forecasting of the CO2 amount released from transportation energy consumption using 4 techniques: log-linear regression, path analysis, time series, and curve estimation. According to the findings, the time series exemplified the minimum mean absolute percent error (MAPE=5.388), followed by the log-linear regression model (MAPE=6.379). The results, based on a path analysis model, indicated the significant effects of the large-sized registered vehicle numbers, GDP, and population on the amount of CO2 emissions. With the CO2 emission forecast, the maximum predicted value was 225.33 million tons by 2030 using curve estimation (cubic), and the minimum predicted value was 91.68 million tons using log-linear regression.

The influence of weather characteristics variability on individual's travel mode choice in different seasons and regions in Sweden

- Transport Policy---2015---Chengxi Liu,Yusak O. Susilo,Anders Karlström

This paper investigates the influence of weather on the Swedish people's mode choice decision in different seasons and regions using a long term series of the Swedish National Transport Survey datasets (NTS) and weather data from the Swedish Meteorological and Hydrological Institute (SMHI). The weather data includes mean of daily temperature, amount of rain precipitation and road surface condition. The daily mean temperature is normalised based on each region and season and classified into five categories as 'very cold', 'cold', 'normal', 'warm', and 'very warm'. This normalisation approach enables us to investigate the impact of individual's heterogeneity in perceiving regional and seasonal variability of temperature. The impacts of these weather indicators' variability on individual's mode choice is investigated with multinomial logit models. The results show that the impacts of weather differ in different seasons and different regions. Pedestrians' perception of variation of temperature differs between those in the northern Sweden and those in the central and southern Sweden. Such perception also differs in summer and in spring and autumn. Similarly, northern Sweden cyclists are more aware of temperature variation than cyclists in the central and southern Sweden in spring and autumn when temperature changes significantly. The influence of temperature variation on motorised modes also varies among seasons and regions. However, the trend is less straightforward than that on non-motorised modes. The findings highlight the importance to incorporate individual and regional unique anticipation and adaptations behaviours within our policy design and infrastructure management.

Adaptation strategies of transport infrastructures to global climate change

- Transport Policy---2015---Wit Rattanachot,Yuhong Wang,Dan Chong,Suchatvee Suwansawas

Scientific records provide clear evidence of rising atmospheric greenhouse gases (GHG) concentrations. Global warming and rising extreme weather events are believed to be a result. Besides proactively combating global climate change, transport agencies may need to develop strategies for better preparedness of the impacts of climate change. This is particularly important for certain regions that are more vulnerable to the potential damages caused by climate change. A methodological framework for developing such strategies is presented in the paper. The framework is illustrated through two examples: the management of rural roads in Thailand where the vast road network is being threatened by increasing floods and rising sea levels and the improvement of pavement design strategies for expressways along the coast of Hong Kong. Adaption measures are proposed for the highway agencies to address the challenges caused by climate change.

Immense changes in traffic – Considerable stability in discourses. Road speed in Danish parliamentary documents 1900–2010

- Transport Policy---2015---Anu Siren,Claus Hedegaard Sørensen

Research on road safety acknowledges speed as having a major impact on both the number and severity of road crashes, and this seems to have been translated into policies. However, a closer look reveals that the societal debate and political context also seem to play a major role in the way road safety policies are shaped. Yet, the knowledge on the political discourse regarding speeding and speed management is scarce. In this paper, we analyze the ways speed has been managed and legislated in transport policymaking by studying Danish parliamentary documents from 1903 through 2010. Analyzing the material qualitatively in two phases, first, we looked for notable policy shifts in the material, and consequently identified five historical periods. Second, we analyzed these periods in more detail, and identified and analyzed four repetitive discourses about speed across them, which were as follows: speed, individual rights and responsibilities; speed and safety; speed, policy measures, and law enforcement; and speed and other societal goals. While the transport system has undergone a massive change during the last 100 years, we found a considerable stability in the discourses regarding speed policies. The themes and patterns we distinguished in the documents occurred repeatedly. Certain discourses are strongly connected to the way speed is discussed and governed, and these are likely to emerge when speed policies are taken up in the parliamentary context. We conclude that in addition to the current prominent discourses, past discourses may have a strong influence on the way safety measures and policies are being understood and accepted.

An evaluation on the criteria to prioritize transportation infrastructure investments in Brazil

- Transport Policy---2015---Saul Germano Rabello Quadros,Carlos David Nassi

This paper presents a study on the criteria priorities on the decisions of transportation infrastructure investments in Brazil, based on the application of the Analytic Hierarchy Process – AHP. We consider the definition of a set of seven criteria and respective parameters, structured in four groups: logistics/transportation, economic/financial, social and environmental. Representatives of four different sectors, which contribute to the decision making on transportation in Brazil, were used to find their different points of view about the criteria. With the main aim of prioritization of the criteria, it was considered one of the national policies of Brazilian transportation goals, i.e., the modal split balance of interurban cargo transportation. Thus, each expert provided a pair comparisons of the criteria and pondered their relative importance, attributing weights based upon the scale used by AHP. These comparisons do not consider which projects should be prioritized,

but only the importance of each criterion in relation to the others. As a main result, the criterion “reduction of transportation costs” was presented in several scenarios as the most relevant.

Modeling the effect of contractual incentives on road safety performance

- Transport Policy---2015---Thais Rangel,José Manuel Vassallo

New contracting approaches, such as Public Private Partnerships (PPPs) are becoming quite popular all around the world to improve the delivery of infrastructure in order to provide value for money. However, the goals of the Government and the private sector may conflict with each other. Whereas the government's goal should be to maximize social welfare through increasing value for money, the private sector is focused on maximizing its profit. Introducing performance based incentives—bonuses and penalties—tied to social goals in contracts is a popular way to align private and government objectives to achieve value for money. The goal of this paper is, by using a quantitative model, to evaluate whether toll highway PPPs, especially those incorporating safety performance based incentives, are actually safer than conventionally procured roads. To this end we have calibrated negative binomial regression models using information from the Spanish high-capacity road network covering years 2007–2009. The results show that toll highways, especially those with safety performance incentives, are ceteris paribus safer than conventionally procured roads, even though safety is still influenced by variables not manageable by the contractor such as traffic volume.

Enhancing the impact of travel plans for new residential developments: Insights from implementation theory

- Transport Policy---2015---Chris De Gruyter,Geoffrey Rose,Graham Currie

Travel plans are increasingly being required for new and expanded buildings as a condition of planning approval. Their aim is to manage car use and support access by more sustainable transport modes. However, their application to new residential developments has received little research attention to date.

Investigating infrastructure, superstructure, operating and financial efficiency in the management of Turkish seaports using data envelopment analysis

- Transport Policy---2015---Samet Güner

The purpose of this study is to measure the management performance of thirteen Turkish seaports by undertaking the simultaneous investigation of four dimensions of management performance, namely, infrastructure, superstructure, operating and financial efficiencies. Based on their pure technical and scale efficiency scores, short and long term managerial implications were provided. Results show that low labor productivity and high expenses are the major sources of inefficiency of Turkish seaports. Public seaports exhibit better performance in infrastructure efficiency, whereas private seaports are superior in superstructure, operating and financial efficiency. While private seaports suffer from inappropriate scale size, public seaports suffer from managerial incompetency.

Transportation policy and road investments

- Transport Policy---2015---Thor-Erik Sandberg Hanssen,Finn Jørgensen

This paper analyses which factors can explain the planned funding for 83 different stretches of roads in the Norwegian national road network during the ten-year period from 2010 to 2019. Previous studies have focused on the extent to which Norwegian politicians use the results of cost-benefit analyses when they prioritise various road projects. In contrast, we analyse how road characteristics, prior to the planning period (2009 and earlier), influence the amount of money to be spent on the roads. Broadly speaking, the multiple regression analysis shows that the technical characteristics of the roads and their environmental impacts do not have a substantial influence on the funding decisions. The most prominent explanatory factors seem to be the

total traffic on the roads under consideration. Thus, our analysis does not support critics of the allocation of funding to Norwegian roads who claim that regional policy considerations largely decide the allocation of road funding. The opponents' critics, however, gain support from the fact that, due to frequent start-ups and stops in Norwegian road building, no economies of scale seem to exist. Another result worth noting is that roads located in constituencies that, relative to the number of inhabitants, are overrepresented in the Norwegian Parliament receive more funding. This does not necessarily mean that politicians are particularly concerned about the people in these constituencies but rather that they perceive high political returns for investing in these constituencies.

Practice and public–private partnerships in sustainable transport governance: The case of car sharing in Sydney, Australia

- Transport Policy---2015---Robyn Dowling,Jennifer Kent

Over the past two decades car sharing has become a mainstream transportation mode for over a million users worldwide with organisations now operating in more than 1100 cities across 26 countries and on five continents. Car sharing has developed alongside significant intellectual currents exploring the attributes and effectiveness of the diverse strands of transport policy. These debates include the efficacy of behaviour change programmes to shift transport practice, the imprints of neoliberalism on transport policy, and the withdrawal of the state as active agent in shaping policy privatisation. Despite its emergence amid these debates, car sharing has largely escaped their due consideration. This paper brings car sharing and transport policy scholarship into explicit conversation. It suggests that thinking car sharing through the broader lens of transport policy can produce a richer understanding of why car sharing works, and demonstrates that the case of car sharing sheds unique light onto key contemporary debates in transport policy. We present empirical data from an in depth content analysis of car sharing policy in Sydney, Australia. This data is used to explore the ways transport policy can, and does, facilitate successful car sharing. We draw upon two key theoretical frameworks to explain this success–practice theory and public–private partnerships. We conclude with a discussion of the way this unique analysis contributes to ongoing debates about the broader contours of transport governance.

Citizen participation or representative government – Building legitimacy for the Gothenburg congestion tax

- Transport Policy---2015---Erik Hysing

A key dilemma in transport planning involves how to make possible the radical changes needed for long-term sustainability while ensuring political legitimacy and democratic process. Congestion charges are a case in point; despite their being considered an effective policy measure for improving environmental and health problems in cities, it has proved difficult to secure public acceptance for them. This paper analyses the policy process behind the introduction of a congestion tax in the Swedish city of Gothenburg, focusing on strategies for building legitimacy for the tax. The results show that the tax was legitimated primarily through its broad support in the City Council, which had been secured by integrating the tax with infrastructure investments, while strategies for directly involving the citizens in the process, such as public consultation and local referendums, were neglected or actively opposed. The process successfully generated a capacity for decisive political action legitimated through representative government. Over time the decision may gain public acceptance, but the process used might also prove detrimental to the future of the congestion tax and undermine trust in the democratic institutions.

Spatially explicit modeling of parking search as a tool for urban parking facilities and policy assessment

- Transport Policy---2015---Nadav Levy,Marc Render,Itzhak Benenson

The engineering view of a measurable, supply-independent, demand for parking that can be expressed by “minimum parking codes” has been generally rejected during the last two decades and is gradually being replaced by “maximum provision” codes, limited parking development, and demand pricing. To assess new planning practices one has to estimate the drivers' reaction to proposed spatial–temporal parking limitations. The paper applies a high-resolution spatially explicit agent-based model termed “PARKAGENT” as a tool for this assessment. The model is used for evaluation of parking demand in the Diamond Exchange area in Ramat Gan, a city in the Tel Aviv metropolitan area, for estimating the effectiveness of planned parking facilities for different development scenarios in the area and assessing electronic signage system that directs drivers to vacant parking lots. The results strongly indicate the advantages of agent-based modeling over the current dominant engineering approach and show the potential benefits of using an intelligent parking guidance system.

Holiday travel behavior analysis and empirical study under integrated multimodal travel information service

- Transport Policy---2015---Bobin Wang,Chunfu Shao,Juan Li,Jinxian Weng,Xun Ji

Holidays are special periods and give rise to many kinds of non-mandatory trips, such as shopping trips and tourist trips. This study investigates the relationship between Integrated Multimodal Travel Information (IMTI) service and holiday travel behavior characteristics in a trip chain. The Exploratory Factor Analysis (EFA) method is first used to extract the common factors based on the RP–SP fusion data under the pre-trip IMTI and en-route IMTI services, respectively. The Structural Equation Modeling (SEM) method is then applied to examine causal effects and quantitative relationships between the influencing factors and trip chain characteristics based on the EFA results. The results show that pre-trip IMTI has a significant negative effect on the holiday travel behavior. The more pre-trip IMTI is obtained by the traveler, the simpler the trip chain spatiotemporal and structural complexity will be. In addition, although the effect of en-route IMTI is less than pre-trip IMTI, it still plays an important role compared to other factors. Therefore, providing IMTI is a new and good alternative to alleviate holiday traffic congestions.

Increasing the acceptability of a congestion charging scheme

- Transport Policy---2015---José M. Grisolía,Francisco López,Juan de Dios Ortúzar

Congestion charging is currently being considered as an important public policy in an increasing number of cities around the world, but evidence shows the importance of gaining public acceptability prior to its implementation. We analyse which factors should be considered to increase acceptability in the case of the Spanish city of Las Palmas de Gran Canaria. We applied a three-stage methodology: first a qualitative survey using focus groups, second Likert scales and exploratory factor analysis on a sample of 89 individuals, and finally, a stated choice (SC) experiment to a different sample of 206 respondents to value their preferences. The SC experiment was designed as a cordon-price scheme, including system features and considering three different uses for revenues: improving the current bus transport system, creating an underground line and increasing green areas in the city. Our qualitative analysis shows the previous resistance to accept any charging system, the lack of confidence on politicians and stresses the importance given to the use of revenues. On the other hand, values obtained from the SC experiment suggest that that public acceptability relies on the characteristics of the congestion charging scheme. In particular more than one third of the population would be willing to pay a daily fare of €2.22 if revenues from the system were used to increase the size of green areas instead of reinvesting this into the transport system.

Eco-driving: Drivers' understanding of the concept and implications for future interventions

- Transport Policy---2015---Helena Strömberg,I.C. MariAnne Karlsson,Oskar Rexfelt

The aim of the study was to explore dissemination of the concept of eco-driving among Swedish car drivers, with a special focus on the effects of the introduction of eco-driving into the driving school curriculum in 2007. Nine new drivers educated according to this curriculum were compared with nine experienced drivers with regards to their understanding and practise of eco-driving. The results show that a majority of the drivers had heard about 'eco-driving' but that their understanding of the concept differed considerably. Their interpretation can be categorised into three levels: operational, tactical, and strategic eco-driving. Differences were found between experienced and new drivers: new drivers' understanding concerned the operational level, eco-driving as a technique, and had clearly been shaped by the driving education. Experienced drivers' interpretation of eco-driving was broader and included strategic and tactical decisions, such as choice of car, route choice and maintenance. Their understanding was shaped by various sources including experience and media coverage. Each individual driver's interpretation of eco-driving mostly comprised one level in the hierarchy, resulting in lock-in effects reducing their perceived action space. This perceived limited action space clashed with the motivation they felt to act, creating problems. Hence, efforts should be made to enhance the perceived action space.

Organisation does matter – planning for cycling in Stockholm and Copenhagen

- Transport Policy---2015---Till Koglin

This article explores how the organisation of urban and transport planning departments affects the development of a sustainable transport system and the promotion of bicycling. Interviews conducted in Stockholm and Copenhagen showed that the organisation of the departments affects the social relations between the planners and creates power relations that either foster or marginalise cycling within planning processes. In Copenhagen, an integrated planning organisation allows for more knowledge exchange between urban, transport, and bicycle planners and creates an environment of understanding for different professional views on planning. However, this is not the case in Stockholm where cycling is marginalised in planning and in the existing infrastructure. This study concludes that the integrated transport and urban planning organisation in Copenhagen promotes cycling more than the less integrated planning organisation in Stockholm. Furthermore, it is concluded that the different organisations have led to different power relations that shape the outcome of the planning processes.

Analysis of a new public-transport-service concept: Customized bus in China

- Transport Policy---2015---Tao Liu,Ceder, Avishai (Avi)

In recent years, an innovative mode of public transport (PT) service, known as customized bus (CB), has been springing up across China. This service, providing advanced, personalized and flexible demand-responsive PT, is offered to specific clientele, especially commuters. The present work analyzes, for the first time, the evolution of this new PT concept across 30 Chinese cities where CB systems are currently in operation or under construction. Unlike conventional bus transit service, CB users are actively involved in various operational planning activities. CB personalizes PT service by using interactive and integrated information platforms, such as internet website, telephone and smartphone. The analysis comprises three components: first, a comprehensive examination of the background of CB and its temporal and spatial distribution in China; second, an analysis of the operation-planning process, including elements of online demand collection, network route design, timetable development, vehicle scheduling, crew scheduling, real-time control, and fare design and collection: third, a summary of the results of the examination and analysis, presenting pros, cons and recommendations. The successful implementation of CB in China demonstrates that this new PT service

concept can effectively meet the ever-increasing mobility needs of large populations nation-wide. Similarly, the present work can provide a valuable reference for policymakers, academic researchers, PT practitioners and others worldwide.

The impact of open access on intra- and inter-modal rail competition. A national level analysis in Italy

- Transport Policy---2015---Angela Bergantino,Claudia Capozza,Mauro Capurso

During 2012 the Italian passenger market has experienced the entry of a new operator, Nuovo Trasporto Viaggiatori (NTV) on the high speed rail (HSR) market segment, in competition with the incumbent Trenitalia. The Italian market is the first and most extensive case in Europe where two railway companies compete for HSR services on open access basis. In this paper we empirically explore the competitive effects of the newcomer' s entry in the passenger market tackling two issues. First, we study price and capacity effects of the stemming intra-modal competition. Second, we measure the impact of inter-modal competition by HSR on airline pricing behaviour. The results show that the two railway companies engage in strategic pricing, although to a different degree on different routes and that capacity and frequency are strategic variables. We also find that airlines significantly reduce fares when flights are in direct competition with HSR services.

Effects of quotas on Turkish foreign trade: A gravity model

- Transport Policy---2015---Füsun Ülengin,Bora Çekyay,Peral Toktaş Palut,Burç Ülengin,Özgür Kabak,Özay Özaydın,Şule Önsel Ekici

Turkey's role as a world trade participant has grown in recent years, particularly as the country is capitalizing more on its unique geopolitical position. Given the important trade volume and rooted relations between Turkey and the EU, their trade and economic relations should be paid due attention and steps should be taken to further improve these relations. Turkey is the biggest economy in a Customs Union (CU) with EU but not in EU, along with Andorra, Monaco, and San Marino. When it joined the CU in 1996, Turkey has removed all customs duties and equivalent charges as well as quantitative restrictions. However some EU countries imposes quota limits to the Turkish road transporters that may indirectly restricts the trade between Turkey and the related country. In this study, we investigate the effect of road transport quotas on Turkish foreign trade with EU countries. A gravity model that is estimated with panel data from 18 selected EU countries between 2005 and 2012 is used for this purpose. Furthermore, as one of the leading sectors using road transportation for Turkey's export to EU countries, textile sector is analyzed as a case study. The results indicate that quotas have significant effects on Turkish total exports via road transport as well as the Turkish textile exports to EU countries. The estimated amount of the loss of the exports of Turkey to the selected countries in analyzed time period is 10.6 billion $ in Turkey's total exports via road transport, and 5.65 billion $ in Turkey's total textile exports. Therefore, it can be concluded that the quota limitations are against CU regulations because they do not limit not on the road transportation but also the trade between parties.

Accounting for the inaccuracies in demand forecasts and construction cost estimations in transport project evaluation

- Transport Policy---2015---Kim Bang Salling,Steen Leleur

For decades researchers have claimed that particularly demand forecasts and construction cost estimations are assigned with/affected by a large degree of uncertainty. Massively, articles, research documents and reports agree that there exists a tendency towards underestimating the costs and overestimating the demand for transport infrastructure projects. It is therefore claimed that ex-ante evaluations of transport-related projects are often based on inaccurate material, which ultimately can lead to severe socio-economic misperformance. This paper seeks to bridge the gap between the

inaccuracies in demand and cost estimations and hence the evaluation of transport infrastructure projects. Currently, research within this area is scarce and scattered with no common agreement on how to embed and operationalise the huge amount of empirical data that exist within the frame of Optimism Bias. Therefore, a full version of the UNITE-DSS model, which contains an integrated approach to socio-economic analysis, risk-based simulation and database information, will be presented. The procedure is based upon quantitative risk analysis and Monte Carlo simulation and conventional cost-benefit analysis converting deterministic benefit-cost ratios (BCRs) into stochastic interval results. A new data collection (2009–2013) forms the empirical basis for any risk simulation embedded within the so-called UP database (UNITE project database), revealing the inaccuracy of both construction costs and demand forecasts. Accordingly, the UNITE-DSS approach is therefore tested and further explored on a number of fixed case examples to investigate the performance and robustness of the traditional CBA results. Ultimately, a conclusion and perspectives of the further work will be set out.

Cost-Benefit Analysis of policies for the development of electric vehicles in Germany: Methods and results

- Transport Policy---2015---Jérôme Massiani

Policies toward the diffusion of electric vehicles received a lot of attention in the latest years in many developed countries. Yet the real costs and benefits for society as a whole of this technology have received limited attention from economists. In this context, the present paper proposes a thorough cost benefit analysis of policies for the development of electric vehicles in Germany. It also reviews the main existing models of EV diffusion to shed light on the modeling issues underlying the evaluation of EV policies. Elaborating on a comprehensive simulation model, it shows that the potential for EV is fairly limited while there is more room for intermediate technologies like Plug-in Hybrid Vehicles and Range Extenders. The paper concludes that most of the investigated policies have a negative benefit-cost balance. These results are strongly driven by the regulatory framework in which EV diffusion could take place and especially the Car Average Fleet Emission regulation EU 443.

A new look at planning and designing transportation systems: A decision-making model based on cognitive rationality, stakeholder engagement and quantitative methods

- Transport Policy---2015---Ennio Cascetta,Armando Cartenì,Francesca Pagliara,Marcello Montanino

Transportation systems are complex sociotechnical systems and this dual nature is reflected in the literature dealing with their planning, i.e. defining courses of action from both public and private points of view. On the one hand, the social sciences literature makes it clear that most decisions related to transportation are “wicked”, i.e. they cannot be tackled with traditional engineering approaches since they are poorly defined. On the other, transportation systems have a strong technical component affecting most of such decisions, as they have to (or should) comply with compelling technical and economic requirements. The literature on transport engineering and economics deals with transportation planning mostly as a rational process based on the formulation and comparison of alternative options.

Container port competitiveness and connectivity: The Canary Islands main ports case

- Transport Policy---2015---Beatriz Tovar,Rubén Hernández,Héctor Rodríguez-Déniz

The Canary Islands' economy is extremely dependent on sea transport. Since accessibility and connectivity are major determinants of international transport costs, the analysis of their main ports' connectivity is crucial for keeping costs under control. Since different port authorities manage the major ports of the Canary Islands, they could be tempted to compete for transshipment cargoes, instead of working together to

facilitate supply chain integration that would increase their competitive standing.

Intra-household Interactions in tour-based mode choice: The role of social, temporal, spatial and resource constraints

- Transport Policy---2015---Chinh Ho,Corinne Mulley

Under social, temporal, spatial and resource constraints, household members interact and search for ways to fulfil household and individual needs, one of which is travelling together. Understanding the motivation for joint household travel and its effect on an individual' s mode choices is critical to the formulation of transport policies and planning practices for sustainable transport choices. This paper examines individuals' mode choices with joint household travel being explicitly incorporated within a nested logit model using the Sydney Household Travel Survey data and a typology of tours that captures various patterns of household interactions. The results indicate that joint travel is influenced by household resources, social and mobility constraints, activity types, and the land use patterns at both origin and destination. Also, mode choices differ significantly across joint tour patterns with public transport being less likely to be used for joint travel. Scenario analysis shows that individual tours contribute the most while complex joint tours contribute least to modal shifts from car to public transport which results from changes to transport policies and the level of services. Contrary to suggestions in the literature, a joint household (as compared to individual) travel analysis does not necessarily identify a lower modal shift for policy outcomes.

How uncertainty in input and parameters influences transport model:output A four-stage model case-study

- Transport Policy---2015---Stefano Manzo,Otto Anker Nielsen,Carlo Giacomo Prato

If not properly quantified, the uncertainty inherent to transport models makes analyses based on their output highly unreliable. This study investigated uncertainty in four-stage transport models by analysing a Danish case-study: the Næstved model. The model describes the demand of transport in the municipality of Næstved, located in the southern part of Zealand. The municipality has about 80,000 inhabitants and covers an area of around 681km2. The study was implemented by using Monte Carlo simulation and scenario analysis and it focused on how model input and parameter uncertainty affect the base-year model outputs uncertainty. More precisely, this study contributes to the existing literature on the topic by investigating the effects on model outputs uncertainty deriving from the use of (i) different probability distributions in the sampling process, (ii) different assignment algorithms, and (iii) different levels of network congestion. The choice of the probability distributions shows a low impact on the model output uncertainty, quantified in terms of coefficient of variation. Instead, with respect to the choice of different assignment algorithms, the link flow uncertainty, expressed in terms of coefficient of variation, resulting from stochastic user equilibrium and user equilibrium is, respectively, of 0.425 and 0.468. Finally, network congestion does not show a high effect on model output uncertainty at the network level. However, the final uncertainty of links with higher volume/capacity ratio showed a lower dispersion around the base uncertainty value.

From low-cost airlines to low-cost high-speed rail? The French case

- Transport Policy---2015---Marie Delaplace,Frédéric Dobruszkes

This paper explores OUIGO (pronounced 'we go'), the low-cost high-speed rail (HSR) service launched by the French state-owned railways in April 2013. In this exploration, we (1) compare OUIGO with the traditional French HSR and the low-cost airlines (LCAs), and (2) analyse fares proposed by OUIGO and its competitors. We thus analyse the new service in terms of production conditions, communication, marketing, booking, network geography, at-terminal and on-board experience and fares. We find that the railway in-

dustry’ s constraints (including market regulations, technical rigidities and incumbent employment relations) affect the OUIGO business model, which appears as a hybrid between LCAs and traditional French HSR carriers, although fares can be very attractive indeed.

Are traffic violators criminals? Searching for answers in the experiences of European countries

- Transport Policy---2015---José I. Castillo-Manzano,Mercedes Castro-Nuño,Xavier Fageda

The connection between crime and road safety is a relatively recent topic in academic research, although most studies have focused on the link between criminal behavior and traffic offenses, and only a few authors discuss the possible relationship with traffic accident fatalities. Evidence worldwide shows that people who commit other offenses characteristic of antisocial attitudes are more likely to have road traffic accidents and infringe traffic laws. We examine the records of the 28 current member states of the European Union over the 1999–2010 period. Our aim is to test the hypothesis that crime rates (and specifically, motor vehicle-related crimes) can be considered as predictors of fatal road traffic accidents. If they can be, this could be prima facie justification, at least, of the trend in several countries to consider traffic offenses as crimes in their penal codes and to toughen the punishment imposed on those who commit them. The effect of the severity of the legal system applied to traffic offenses is also analyzed. From a geographical point of view, our results reveal that road traffic fatality rates are higher in countries where the behavior of the inhabitants is more aggressive, while the rates are lower in countries with more severe penal systems.

A game of two cities: A toll setting game with experimental results

- Transport Policy---2015---Simon Shepherd,Chandra Balijepalli

In this paper we model the competition between two cities as a game to maximise the welfare considering the impact of demand management strategies in the form of cordon tolls. This research builds on earlier work which studied the competition in a small tolled network meant for private modes of transport which have a choice of route. The earlier work showed that while both cities have an incentive to charge alone, once they begin, they are likely to fall into the ‘Nash Trap’ of a prisoner’s dilemma where the incentive to defect is higher than that to cooperate thus eventually leading to a ‘lose–lose’ situation. The current paper extends the idea of competition between cities by setting up a system dynamic model of two cities which includes modes such as car, bus, train and walking and cycling. This paper innovates by integrating the simulation of land use transport interactions with a class room style experimental game and analyses the gaming strategies from a continuous repeated prisoner’s dilemma involving setting of tolls to maximise the welfare of residents. The aim is to test (a) whether the strategies adopted are as theory predicts and (b) whether the players recognise the benefits of lower tolls when given information about the regulated solution and collaborate or continue to play to win. The results show that players respond to the information and maintain a collaborative solution which may have significant implications for regulation and the development of cities within regional partnerships.

School travel mode choice and the characteristics of the urban built environment: The case of Helsinki, Finland

- Transport Policy---2015---Anna Broberg,Satu Sarjala

As observed in several previous studies, the nature of the urban structure can affect children’s mode of transportation to school. In this paper, we identify and investigate, in the Finnish context, the elements of the urban structure around homes and en route to school that promote children’s ability to walk or cycle to school, using the conceptual domains proposed by Mitra (2013) to frame the work.

Selection behavior of the global container shipping industry for carrier-owned and leased containers

- Transport Policy---2015---Wei-Ming Wu,Tsan-Hwan Lin

In container shipping practices, containers owned by the shipping lines and leasing companies are generally regarded as homogeneous factor inputs and can substitute each other perfectly in providing the shipping service. Based on industry-wide data, this study surprisingly finds that the behavior of container selection for container shipping lines does not follow the pattern of perfect substitution, but rather the pattern of fixed proportions technology, through a constant elasticity of substitution production function. Combined with the observed relationship between the approximately constant leasing rates and the shrinking price premiums for leasing companies over the past two decades, the empirical results suggest that concerns with both the capital cost and strategic means may play key roles in determining the mix of owned and leased containers for the shipping lines. Several strategic concerns including the long-term leasing contract, supplier diversity program, and option contract are discussed and suggested as approaches that can be applied by the shipping lines to arrange their leasing policies with lessors and to moderate the competition of these two parties in expanding their container fleets. These approaches not only can reduce the costs and the associated risks for the shipping lines, but can also alleviate the situation of over-supplied containers in the global container shipping industry.

Course set for a cap? A case study among ship operators on a maritime ETS

- Transport Policy---2015---Simon Koesler,Martin Achtnicht,Jonathan Köhler

International shipping is an important emitter of greenhouse gases. The International Maritime Organization (IMO) is discussing different approaches to reduce maritime CO2 emissions, in particular market-based mechanisms. In this paper, we assess potential implications of a maritime emission trading scheme (ETS) on the organisation and operations of shipping companies, primarily on the basis of a case study involving ship operators. Our results suggest that there is no major reason why a cap-and-trade approach should not work in the shipping sector in practice. A maritime ETS has the potential to engage this sector into cost-efficient emission reduction if designed to account for the special characteristics of the international shipping industry.

The economic impact of greenhouse gas abatement through a meta-analysis: Valuation, consequences and implications in terms of transport policy

- Transport Policy---2015---Silvio Nocera,Stefania Tonin,Federico Cavallaro

To quantify the economic impact of greenhouse gas (GHG) emissions is considered one of the most important challenges in transport engineering towards the goal of sustainability. Current values, which are mostly provided by the use of Impact Assessment Models, can vary up to six orders of magnitude (from $-10.00/tC to $7,243.73/tC). Within this range, the choice of an adequate monetary value is extremely difficult. In this paper, we create a database with nearly 700 different observations coming from 60 studies on the economic valuation of GHG emissions. Subsequently, we use a meta-analysis to investigate the variation in emissions costs in order to significantly reduce the overall uncertainty. The results of the meta-regression analysis are then tested to assess three possible transport policies that can be implemented at 2050 European levels. A specific unitary economic value of GHG emissions is provided for each policy, thus aiding policy-makers to valuate the real economic impact of transport due to global warming.

Simulating the market penetration of cars with alternative fuelpowertrain technologies in Italy

- Transport Policy---2015---Eva Valeri,Romeo Danielis

This paper evaluates the market penetration of cars

with alternative fuelpowertrain technologies in Italy under various scenarios. Seven cars on sale in 2013 are considered: the Ford Fiesta (diesel), the VW Polo (gasoline), the Fiat Punto Evo (bi-fuel – CNG), the Natural Power Alfa Romeo Mito (bi-fuel – LPG), the Toyota Yaris (hybrid – gasoline), the Peugeot iOn (BEV – owned battery), the Renault Zoe (BEV – leased battery). A Mixed Error Component Logit model is estimated based on data collected via a stated preference choice survey administered in 2013 in various Italian cities. The model's parameters are then used to build a Monte Carlo simulation model which allows evaluating, under different scenarios, the market penetration of the seven cars. The main findings are that (a) the subsidies enacted by the Italian government in favour of the low CO2 emitting cars appear to favour mostly the Ford Fiesta (diesel); (b) a three-fold increase in the BEVs range would not change their market share significantly (about 2%); and (c) only a combination of changes such as the introduction of a subsidy equal to €5000, the decrease of the purchase price for BEVs by €5000, the increase in the battery range, and the increase in the conventional fuel price would significantly increase the BEVs' market share, raising it to about 15%.

Roads to nowhere: The accuracy of travel demand forecasts for do-nothing alternatives

- Transport Policy---2015---Morten Skou Nicolaisen,Petter Næss

Impact appraisals of major transport infrastructure projects rely extensively on the accuracy of forecasts for the expected construction costs and aggregate travel time savings. The latter of these further depend on the accuracy of forecasts for the expected travel demand in both the do-something and do-nothing alternatives, in order to assess the impact of implementing new projects compared to doing nothing or postponing the decision. Previous research on the accuracy of travel demand forecasts has focused exclusively on the do-something alternatives, where inaccuracies have been revealed in the form of large imprecision as well as systematic biases. However, little or no attention has been given to the accuracy of demand forecasts for the do-nothing alternatives, which are equally important for impact appraisals. This paper presents the first ex-post evaluation of demand forecast accuracy for do-nothing alternatives, based on an empirical study of 35 road projects in Denmark and England. The results show a tendency for systematic overestimation of travel demand in the do-nothing alternatives, which is in contrast to the systematic underestimation of travel demand observed in previous studies of do-something alternatives. The main implication for planning practice is that the severity of future congestion problems is systematically overestimated. As a consequence, impact appraisals of road construction as a means of congestion relief appear overly beneficial.

Sustainable transportation infrastructure investments and mode share changes: A 20-year background of Boulder, Colorado

- Transport Policy---2015---Alejandro Henao,Daniel Piatkowski,Kara S. Luckey,Krista Nordback,Wesley E. Marshall,Kevin J. Krizek

This case study examines transportation infrastructure investments along with data revealing mode share in order to highlight correlations between investments in sustainable transportation infrastructure ('supply') and patterns of non-automobile mode share ('demand'). The analysis assesses data from Boulder, Colorado, a city that has made substantial efforts to improve its multi-modal transportation infrastructure and services by investing in pedestrian, bicycle, and transit infrastructure and services. We aim to describe connections between supply and demand by measuring two phenomena: the extent of transportation infrastructure investments supporting pedestrian, bicycle, and transit modes made between 1990 and 2009 and the share of these modes during the same 20 years period. Results illustrate an overall increase in transit and bicycle mode share and a decrease in single occupancy vehicle share, with consistent pedestrian share. We conclude that Boulder's investments in improving mode choices through new infrastructure and services supporting non-automobile modes are associated with increasing

share of non-automobile modes. This is despite national trends that indicate an increasing automobile mode share. Regardless of the reasons for the positive trends experienced in Boulder, the presence of robust pedestrian, bicycling, and transit infrastructure has clearly coincided with evolving travel preferences. Boulder therefore serves as an example for other cities desiring to focus on developing policies and infrastructure that expand the availability of non-automobile modes.

Bridging the implementation gap: Combining backcasting and policy analysis to study renewable energy in urban road transport

- Transport Policy---2015---Linda Olsson,Linnea Hjalmarsson,Martina Wikström,Mårten Larsson

This paper combines backcasting and policy analysis to identify the opportunities for and barriers to the increased use of renewable energy and energy-efficient vehicles in an urban road transport system, namely, that of Stockholm, Sweden, in 2030. The combination of methods could bridge the implementation gap between scenario-based research and actual policy implementation and thus increase the chances of research being implemented in practise. In the case study, backcasting identifies a need for diverse fuels and vehicles and for immediate policy action. However, analysis of policy integration demonstrates that such action is unlikely given current policy structures. The fundamental lack of integration between energy and transport policy obstructs measures to increase the use of renewable fuels and more energy-efficient vehicles, which in turn obstructs the reduction of CO2 emissions from transport. The combination of backcasting and policy analysis is demonstrated to improve our understanding of the prerequisites for transitioning to a system based on renewable energy, and could thus be useful in further research.

Ex post appraisal: What lessons can be learnt from EU cohesion funded transport projects?

- Transport Policy---2015---Charlotte Kelly,James Laird,Stefano Costantini,Phil Richards,José Carbajo,John Nellthorp

This paper is concerned with project level outcomes of 10 large transport projects spread over eight countries that had benefited from EU Cohesion and ISPA funding. These are analysed within a cost benefit analysis framework with comparisons being made between the ex ante and ex post cost benefit analyses. The research finds that despite much attention being placed on the issue of optimism bias over the last decade it still remains prevalent. It also finds that there is a clear need to improve the quality and consistency of ex ante analysis particularly in the areas of capital cost estimation, travel demand modelling and risk analysis. Additionally our research identifies the limited role that formal decision making tools such as cost benefit analysis and multi-criteria analysis play in the decision making process of the countries surveyed. The benefit of undertaking ex post cost benefit analysis is maximised when a set of schemes are analysed – thereby allowing patterns in outcomes and weaknesses in ex ante methodologies to be identified. Ex post work is not without its challenges particularly in defining the counterfactual and addressing institutional memory loss.

Is sustainable transport policy sustainable?

- Transport Policy---2015---Jonas Eliasson,Stef Proost

This paper discusses a specific part of sustainable transport policy, namely policies to reduce greenhouse gas emissions from the transport sector. We explain how assessments of such policies will overestimate their effectiveness if market responses are not taken into account. The substantial difference between market price and extraction cost of oil means that consumption reductions will be watered down by price responses causing increased consumption in other places (spatial leakage) and in the future (intertemporal leakage). The difference between market price and extraction cost also has negative implications for the viability of alternative technologies. Leakage effects become larger when consumption reductions are only undertaken by a subset of countries: we review some theoretical evidence

why strong binding international climate agreements are so difficult to reach and to enforce. All this may require rethinking climate policies for the transport sector: What policies remain cost effective for reducing greenhouse gas emissions?

Probability distribution of walking trips and effects of restricting free pedestrian movement on walking distance

- Transport Policy---2015---Alejandro Tirachini

This paper presents an analytic framework to measure the spatial segregation caused by reducing or forbidding the free movement of pedestrians, due to the existence of a highway or other type of transport facility with barriers that prevent pedestrians from crossing it. First, using empirical data from Berlin, London, Sydney and Santiago, it is shown that the proportion of walking as a function of travel distance approximately follows an exponential distribution. Then, probabilities of walking and expected walking distances are calculated under two alternative configurations –free vs constrained pedestrian crossing. Assuming an exponential distribution, we find that average walking distance increases by L/2 plus any extra walking distance due to the crossing itself (e.g., stairs, accessways to pedestrian overpasses), when pedestrian crossing is forced to be made every L metres. The model is applied in Santiago, on a road where a normal avenue was replaced by a segregated highway with pedestrian overpasses in specific locations to allow crossing. We show that the segregated facility decreases the probability of walking to places where walking distance has increased, worsening car dependency even for short trips. The greatest inconvenience is for people living directly adjacent to the highway, whose walking distance to cross the road is tripled on average. This is an estimation of the barrier effect produced by this type of segregated transport infrastructure.

Emerging travel trends, high-speed rail, and the public reinvention of U.S. transportation

- Transport Policy---2015---Camille Kamga

By examining emerging travel trends and the resurgence of rail transport in the United States, this paper suggests that deploying high-speed rail (HSR) in the U.S. could help accelerate a transportation paradigm shift that is already underway, increase density, improve the service and sustainability of transportation, and accelerate economic activity. This shift is especially notable among young Americans who are driving less, buying fewer cars, and settling in urban areas where they can walk, bike, and use public transport. Meanwhile, baby boomers, though driving more than previous generations did at the same age, are joining this urbanizing trend and, as they grow older, seeking mobility alternatives to car dependence. Other trends, such as the transformation of society by mobile communication and digital technology, are also affecting change and forcing planners to re-think the current imbalance of the U.S. transport system. Using the success revealed by passenger rail services in the Northeast Corridor, this paper examines how high-speed rail and its station hubs could enhance urbanization and help to rebalance the three main passenger modes—road, air, and rail—so that each flourishes within its most sustainable niche. In these ways, the benefits of HSR extend beyond rail service itself to include this mode's ability to reinvent the transportation system in ways that better serve the needs of a changing society while urgently addressing livability and sustainability.

Analysis of impacts of alternative policies aimed at increasing US energy independence and reducing GHG emissions

- Transport Policy---2015---O'Rear, Eric G.,Kemal Sarica,Wallace Tyner

The primary objectives of recent energy initiatives have been: (1) lowering greenhouse gas (GHG) emissions; and (2) increasing US energy security by reducing oil imports for the purposes of making the US less vulnerable to the actions of other countries. The concern is that relying on sometimes adversarial, sometimes unstable countries for a quarter of our oil carries certain risks. For that reason, reducing the external oil dependence has been of interest to policy makers. This paper

examines the impacts and costs of transportation-based policies on light-duty vehicle fleet energy usage and emissions. Using the 2010 elastic version of the US Environmental Protection Agency's Market Allocation (MARKAL) model, recent increases in US Corporate Average Fuel Economy (CAFE) Standards are compared to what some economists suggest would be a much more "efficient" alternative-asystem-wide oil tax internalizing a number of environmental externalities. We discover that our series of oil taxes produce larger and more cost-effective reductions in economy-wide emissions than CAFE. The same cannot be said in regards to net oil imports. Stricter fuel economy regulations result in much larger cutbacks in imports than the oil tax. In fact, we found that in 2040 import demands are roughly 250 million BOE (barrels of oil equivalent) higher with our oil tax regime than they are with CAFE. The additional import reductions achieved with stricter CAFE Standards do come, however, at a much larger cost to society. A great deal of these additional economic costs stems from greater usage of more energy-efficient automobiles and the higher initial capital costs associated with their adoption. In our supplementary analysis, we find that even if the costs of these types of vehicles are lowered by as much as 75%, oil taxes would still be able to maintain their competitive edge over CAFE standards in regards to cost-effectiveness.

The decade of the big push to roads in Poland: Impact on improvement in accessibility and territorial cohesion from a policy perspective

- Transport Policy---2015---Piotr Rosik,Marcin Stępniak,Tomasz Komornicki

Accessibility improvement and territorial cohesion are general policy goals that are widely accepted, irrespective of the level of decision-making. The evaluation of changes in accessibility, its spatial distribution and the impact on territorial cohesion is of exceptional importance in the new member states. We propose ex-post evaluation of changes in the road potential accessibility of Polish municipalities in the first decade of Polish EU membership. The paper juxtaposes European and national transport and spatial policies and follows up with an empirical analysis carried out at different geographical levels, including the international (European), national and regional. Particular attention is paid to assessment of the impact of projects supported by EU funds, which play a crucial role in the improvement of accessibility, both at the national and international level. However, the positive effect of new roads on territorial cohesion is visible only at the international level, while at the national level regional accessibility disparities remain largely untouched after a decade of the 'big push' to roads in Poland.

A comparative evaluation of mobility conditions in selected cities of the five Brazilian regions

- Transport Policy---2015---Antônio Nélson Rodrigues da Silva,Mario Angelo Nunes de Azevedo Filho,Márcia Helena Macêdo,José Aparecido Sorratini,Ary Ferreira da Silva,Josiane Palma Lima,Ana Maria Guerra Serafico Pinheiro

This study evaluates and compares the mobility conditions of cities of the five Brazilian macroregions based on the outcomes of the Index of Sustainable Urban Mobility (I_SUM). The Index, applied in Belém, Curitiba, Goiânia, Juazeiro do Norte, Uberlândia and Itajubá, has a hierarchical structure formed by nine Domains, 37 Themes and 87 Indicators. The study involved two phases. In the first, the existence of data required for the application of the index in the cities was investigated, considering two criteria: data availability and data quality. Next, an extensive data collection procedure was conducted and the index values were calculated. The availability of the mobility information needed for the construction of the Index was used to explore which were the domains with missing information in each city or how the information was collected in the different cities. The mobility conditions in the selected cities were also compared so that the aspects that might drive some of them towards sustainable mobility could be identified. In general, the cities located in the wealthier part of the country performed better. The city sizes also seem to have affected their performance. The differences regarding the context are

also among the highlighted aspects, given the marked regional dissimilarities among the cities that affect the availability and quality of the data.

Regulatory airport classification in the US: The role of international markets

- Transport Policy---2015---Pere Suau-Sanchez,Augusto Voltes-Dorta,Héctor Rodríguez-Déniz

In a context of debate over the future of the US Federal Aviation Administration's (FAA) funding model, this paper revisits the current system of airport classification used for the allocation of public funding for capacity developments. Previous papers have already addressed the limitations of the FAA's uni-dimensional method, and proposed new approaches that take into account the two dimensions of "hubbing" activity, i.e., traffic generation and connectivity. However, these studies are biased by the lack of detailed demand data on international connections. Using an MIDT dataset comprising a sample of domestic and international markets served by US airports during the first quarter of 2013, this paper aims at providing a full picture on the pitfalls of the existing FAA method, as well as addressing the impact of international connectivity in characterising the airports' hubbing profiles. Hierarchical clustering is used to provide alternative criteria for hub classification within the context of US National Plan of Integrated Airport Systems (NPIAS). This new typology of primary US airports can help to optimize AIP funding by allowing for further differentiation in the FAA allocation criteria.

Integrating social equity into urban transportation planning: A critical evaluation of equity objectives and measures in transportation plans in North America

- Transport Policy---2015---Kevin Manaugh,Madhav G. Badami,Ahmed M. El-Geneidy

Urban transport policies are characterized by a wide range of impacts, and trade-offs and conflicts among these impacts. The task of integrating and reconciling these impacts poses challenges, because they are incommensurable, and they affect different groups differentially. Further, impacts such as those related to social equity are hard to define and measure. In this paper we address two inter-related questions: How is social equity conceptualized, operationalized, and prioritized relative to environmental and other objectives; and how might social equity be more effectively integrated in urban transportation plans in North America? We critically analyze how social equity is incorporated into transportation plans in 18 large North American metropolitan areas, in terms of the quality of the related objectives, how meaningfully their achievement is assessed through the choice of performance measures or indicators, and their prioritization relative to other objectives. We observe that social equity goals and objectives are in many cases not translated into clearly specified objectives, and appropriate measures for assessing their achievement in a meaningful, disaggregated manner are often lacking. At the same time, there are good examples of social equity objectives and measures in several plans. In general, there is a stronger focus on the local environment (and congestion reduction) than on social equity in the plans. We end the paper with a discussion related to considerations for generating objectives and measures for better integrating social equity into urban transportation plans.

Reviewing the use of Multi-Criteria Decision Analysis for the evaluation of transport projects: Time for a multi-actor approach

- Transport Policy---2015---Cathy Macharis,Annalia Bernardini

In this paper we give an overview of the use of Multi-Criteria Decision Analysis (MCDA) for transport project appraisal. The aim of this review is to provide an outline of the increasing use of MCDA methods in the evaluation of transport projects. We investigate for which kind of transport decisions the MCDA methods are applied. The review consists of identifying the transport related subjects, the inter-

connected arising decision problems and the kind of representative MCDA method(s) used for transport project evaluations. This review allowed deriving a general frame for the evaluation of transport projects. One of the conclusions resulted in the importance of integrating stakeholders in the decision process not yet very common in the transport projects that were reviewed. The Multi-Actor Multi-Criteria Analysis (MAMCA) approach is suggested as a direction for further research. The MAMCA methodology has already proven its usefulness in several transport related decision problems enabling to involve the stakeholders explicitly in the decision process.

High Speed Rail and the tourism market: Evidence from the Madrid case study

- Transport Policy---2015---Francesca Pagliara,Andrea La Pietra,Juan Gomez,José Manuel Vassallo

Marketing decisions and strategic planning of tourism provisions require improving the knowledge of factors affecting tourism demand, as well as making better forecasts of tourism flows in the short and long-term. In this respect, approaching how holidaymakers select their holiday destinations and investigating which factors determine their choices emerge as a key challenge. The aim of this paper is to analyze the role of High Speed Rail systems on destination choice, specifically on urban tourism destinations. To that end, a quantitative analysis is carried out through logistic regression models aimed at analyzing how different explanatory variables affect tourists' choice of a destination. A Revealed Preference survey was conducted in June 2013 in Madrid, where tourists were interviewed close to the most attractive tourist sites. Preliminary results show that the Spanish High Speed Rail system seems to have a significant effect on the tourists' choice to visit other cities close to Madrid, but the choice of Madrid as a tourist destination is not influenced by the presence of High Speed Rail. Indeed other factors play a significant role.

Reasons for contract changes in implementing Dutch transportation infrastructure projects: An empirical exploration

- Transport Policy---2015---Stefan Verweij,Ingmar van Meerkerk,Iris A. Korthagen

An important contributor to cost overruns of infrastructure projects is contract changes after the construction contract has been concluded. Using mainly descriptive statistics and non-parametric tests, real project data were analyzed from forty-five Dutch transportation infrastructure projects with a total construction contract value of over € 8.5 billion. First it was explored if we could find evidence for the presumption that contractors bid low on contracts to recover the loss of bid profit by claiming contract change costs in the project implementation. We conclude that we could not find evidence for the opportunistic behavior of contractors. Second, the different sizes and reasons for the contract changes were explored. We conclude that: scope changes are the most significant reason for contract changes, followed by technical necessities; smaller projects tend to have higher relative contract change costs; and contract changes due to omissions in the contract are more present in smaller projects than in larger projects. The results of the analysis suggest among other things that policymakers and planners should pay more attention to flexible contracting, and to the contract management of smaller projects.

Promoting active transportation modes in school trips

- Transport Policy---2015---Alireza Ermagun,Amir Samimi

Urban and transportation planners have put a special focus on students' health and fitness in the past decade, however they struggle to find effective policies to promote walking and biking for school trips. Commuting to school is an opportunity to embed a regular physical activity in students' daily routines and prevent many health issues that are stimulated by physical inactivity during childhood. A three level nested logit model is introduced to explain the motives behind school trip

modal selection. Four choice situations, namely walking, driving, school busing, and taking public transit are considered. This study, particularly, underscored the significance of model misspecification in terms of policy outcomes, since multinomial logit models are typically adopted in the literature and have strong and, in many cases, unrealistic assumptions. Elasticity analysis of the MNL model showed an indirect elasticity of vehicle ownership of 0.13 for non-automobile modes, while NL model provides different elasticities of 0.12, 0.20 and 0.08, respectively for public, school bus, and walk modes. This misspecification results in over estimating the reduction in the share of students who walk to school when vehicle ownership increases. Moreover, a wide range of policy-sensitive variables along with their effect magnitude was discussed and compared with the previous studies. The results showed that one percent increase in the probability of walking to school is expected for every 0.04 percent increase in auto travel time, 0.07 percent increase in the normalized-to-income cost of driving, 0.08 percent decrease in vehicle ownership, 0.03 percent increase in distance to public transit, or 2.37 percent decrease in commute distance. Safety was also found to be very influential on active commuting, such that addressing the safety concern of parents is expected to increase propensity of active commuting to school by around 60 percent.

Main drivers for local tax incentives to promote electric vehicles: The Spanish case

- Transport Policy---2014---Antonio Sánchez-Braza,José M. Cansino,Enrique Lerma

Cities are one of the main agents behind the introduction of electric vehicles. In Spain, cities could establish up to a 75% deduction on vehicle tax based on environmental issues. This paper analyzes those variables affecting the establishment of such a measure using the Probit model on a sample of 395 Spanish municipalities. The results show that the urban population, its dispersion, and the municipalities' environmental commitment positively affect the establishment of such incentives, while the rural nature of the population and unemployment do exactly the opposite.

The acceptability of road pricing: Evidence from two studies in Vienna and four other European cities

- Transport Policy---2014---Maria Dieplinger,Elmar Fürst

Road pricing is an effective means of influencing car usage. Based on recent literature and empirical research, an established model was applied to five European cities. Not surprisingly, there is low acceptability for coercive measures like road pricing in general, but a closer look reveals a more differentiated picture. The impact of several factors on eventual acceptability was analysed. Consequently, critical factors can be identified in order to develop more effective strategies. Moreover, the role of trials is discussed. Acceptability is higher, if the necessity for a measure has well been communicated and if personal benefits can be expected. The results indicate that the underlying model can be regarded as a very valid measurement tool for acceptability of coercive traffic demand management measures. The paper also has implications for designing and successfully implementing urban road pricing schemes.

The motivation underlying adolescents□ intended time-frame for driving licensure and car ownership: A socio-ecological approach

- Transport Policy---2014---Sigrun Birna Sigurdardottir,Sigal Kaplan,Mette Møller

This study focuses on the adolescents intended timeframe for obtaining a driving license and purchasing a car, as the delay of these decisions will likely affect the amount of travel and transport externalities. Semi-structured interviews with 50 Danish adolescents were analyzed by means of deductive–inductive thematic narrative analysis based on the socio-ecological approach. The results show three groups in line with the market-diffusion model: intended early car users, intended early license holders and later car users, and intended late license holders and car users. The first

group are car enthusiasts who associate cars with high instrumental, affective, symbolic, and relational values, have car-oriented social networks, and imagine a car-oriented lifestyle. The second group are car pragmatists, who associate cars with high instrumental and relational values, perceive car expenses as a barrier, and imagine a car-oriented lifestyle only in the long-term. The third group are car skeptics, who have low interest in cars and imagine a cycling-oriented future. Policy implications concern (i) promoting shared-responsibility among individuals, public bodies, communities and policy makers towards a sustainable future, (ii) applying a policy-package comprising complementary policy measures to target the three identified groups, (iii) relying on social networks for knowledge propagation and success of policy measures and educational campaigns, and (iv) promoting a tangible future vision based on sustainable modes.

The cycling boom in large German cities—Empirical evidence for successful cycling campaigns

- Transport Policy---2014---Martin Lanzendorf,Annika Busch-Geertsema

Historically, the promotion of cycling has been neglected in most German cities with more than 500,000 inhabitants. In the last 15 years, however, some cities discovered the advantages of increasing the cycling share for both life quality and a more sustainable transport system in their cities. This paper focuses on four case studies from the German cities of Munich, Hamburg, Berlin and Frankfurt, and investigates both the development of cycling policies and the changing use of the bicycle as mode of daily transport between 2002 and 2008 in these cities. By analysing policy documents, web sources and national travel data, we show (1) that the often claimed increase of cycling usage in Munich, Frankfurt and Berlin is supported, and (2) identify the implementation and strengthening of policies to promote cycling by the local government as crucial for these successes. These findings are supported by our fourth case study, Hamburg, where we were not able to identify an increased bicycle usage in this time period, where cycling promoting policies were adapted by the local government only in 2008 and, thus, effects can only be expected after 2008. Our findings support that, although local cycling policies are not the only factor for successfully increasing cycling usage, they play a crucial role in the process of increasing cycling use in cities. Both, cycling infrastructure improvements and communication campaigns, initiated, supported and executed by the local government, are key factors for increasing bicycle use in cities.

Solving Hazmat Routing Problem in chaotic damage severity network under emergency environment

- Transport Policy---2014---Abbas Mahmoudabadi,Seyed Mohammad Seyedhosseini

Risk is considered as an important issue in hazardous materials routing problems, in particular once a certain part of the road network has been affected by natural disasters. It could even be a more serious concern when vital hazmat substances, are required to be transported to the affected area under emergency environment while there is no clear information available on damage severities of affected roads.

How are comfort and safety perceived by inland waterway transport passengers?

- Transport Policy---2014---Luis Márquez,Víctor Cantillo,Julián Arellana

The geographical conditions of Colombia limit connectivity among regions, making communication between different areas of the country difficult. Although Colombia has a major waterway system that could facilitate regional communication, much of the territory is functionally disjointed, which is why the government and private operators seek to promote inland waterway transport and improve their safety.

Comparative analysis of long-term road fatality targets for individual states in the US—An application of experience curve models

- Transport Policy---2014---Yu Sang Chang

Both the Federal government and individual state governments in the US establish long-term road fatality targets to plan and evaluate the effectiveness of their respective safety programs. The purpose of this paper is to develop a simple fatality projection model to project future fatality rates and number of fatalities through 2020 and 2030 for individual states. And then, long-term fatality target value established by ten selected states will be compared to our projected values to assess realism of these targets.

Public attitudes to and perceptions of high speed rail in the UK

- Transport Policy---2014---Joan Harvey,Neil Thorpe,Matthew Caygill,Anil Namdeo

With the planned expansion of high speed rail (HSR) in the UK, demand for longer-distance travel is expected to increase significantly over the coming decades. This paper presents a study into attitudes and perceptions of long distance travel in the UK, particularly in relation to HSR. A questionnaire was developed to investigate attitudes to travelling long distances and to HSR, importance of journey characteristics and current travel behaviours. A factor analysis of 46 attitude items yielded six factors: travel security, improvement to road and air, prestige of HSR, comfort, negative aspects of HSR and the usefulness of travel time. Analyses showed significant demographic and travel characteristic differences across the factors. There was also evidence of a more negative impact and lower prestige for people living closer to proposed HSR routes. Willingness to pay for travel time saved was related to a number of journey characteristics but the utility of time was also important. The findings are considered in light of theories of attitude change, attitudes to travel and sustainability and the implications for the future development of HSR policy, particularly in terms of balancing increased fares with utility of travel time.

The relationship between young people□s transit use and their perceptions of equity concepts in transit service provision

- Transport Policy---2014---Sigal Kaplan,João de Abreu e Silva,Floridea Di Ciommo

This study investigates the effect of price and travel mode fairness and spatial equity in transit provision on the perceived transit service quality, willingness to pay, and habitual frequency of use. Based on the theory of planned behavior, we developed a web-based questionnaire for revealed preferences data collection. The survey was administered among young people in Copenhagen and Lisbon to explore the transit perceptions and use under different economic and transit provision conditions. The survey yielded 499 questionnaires, analyzed by means of structural equation models. Results show that higher perceived fairness relates positively to higher perceived quality of transit service and higher perceived ease of paying for transit use. Higher perceived spatial equity in service provision is associated with higher perceived service quality. Higher perceived service quality relates to higher perceived ease of payment, which links to higher frequency of transit use.

Two-phase model for multi-criteria project ranking: Serbian Railways case study

- Transport Policy---2014---Dragomir Mandic,Predrag Jovanovic,Mirjana Bugarinovic

An original two-phase model for ranking railway projects from different railway subsystems is presented. The model was developed for the purpose of ranking 75 Serbian Railways projects. The advantage of this model over existing one-phase models is that it allows for one to obtain not only a unique ranking list of all of the projects but also ranking lists for individual project clusters. The second essential advantage is that the application of this model eliminates the shortcoming of some of the high-ranked projects on the unique ranking list not being high-ranked on the cluster ranking list. Due to the frequency of situations

in which projects contain a dualism of interests (e.g., local-global, individual-general, regional-national and national-European), based on the proposed model, a universal model for a two-phase ranking of projects was developed. The algorithm of the new model is presented herein.

Valuation of travel time savings for intercity travel: The Madrid-Barcelona corridor

- Transport Policy---2014---Concepción Román,Juan Carlos Martín,Raquel Espino,Elisabetta Cherchi,Juan de Dios Ortúzar,Luis Ignacio Rizzi,Rosa González,Francisco Javier Amador

We derive values of travel time savings (VOT) for the Madrid–Barcelona corridor, linking the two largest cities in Spain, based on the estimation of discrete choice models among the main public transport services in the corridor: air transport, high speed rail (HSR) and bus. The new HSR alternative (which started to operate in February 2008) competes directly with one of the densest airline domestic markets in the world, and its introduction produced substantial improvements in level of service, achieving reductions in travel time of more than 50% over the conventional train.

On timetable assumptions in railway investment appraisal

- Transport Policy---2014---Jonas Eliasson,Maria Börjesson

The benefits captured in an appraisal of a railway investment are determined by what timetables the analyst assumes in the scenarios with and without the investment. Without an explicit, objective and verifiable principle for which timetables to assume, the appraisal outcome is virtually arbitrary. This means that appraisals of railway investments cannot be compared to each other, and opens the door for strategic behaviour by stakeholders conducting seemingly objective cost-benefit analysis. We explain and illustrate the nature and extent of the problem, discuss possible timetable construction principles, and show that current practice is likely to exaggerate appraisal benefits.

BRT TOD: Leveraging transit oriented development with bus rapid transit investments

- Transport Policy---2014---Robert Cervero,Danielle Dai

Bus rapid transit (BRT) systems have gained prominence worldwide as a cost-effective alternative to urban rail investments. However, some question the city-shaping potential of BRT, in part due to a belief it delivers fewer regional accessibility benefits than rail, but also to the social stigma some assign to bus-based forms of mass mobility. Notwithstanding the successes of cities like Curitiba and Ottawa at integrating BRT and land development (Cervero, 1998. The Transit Metropolis: A Global Inquiry, Island Press, Washington, D.C.), doubt remains over BRT' s ability to promote less car-dependent, more sustainable patterns of urban growth in rapidly motorizing and suburbanizing cities.

Governing structures for airport regions: Learning from the rise and fall of the 'Bestuursforum' in the Schiphol airport region

- Transport Policy---2014---Michel van Wijk,Ellen van Bueren,Marco te Brömmelstroet

The spatial and economic impact of airport hubs on their regions has grown in the last decades. As a result, regional planners have started to integrate the governance of airport regions into their core work. The spatial developments around Schiphol Airport have been governed by a joint initiative of local actors for several decades. In this in-depth case study, we use the multi-level perspective from transition studies to draw lessons on the governance of airport regions. Our findings uncovered the rise (1980s–1990s) and the fall (2000s–2010s) of a strong governance structure: the Governance Forum Schiphol (Bestuursforum Schiphol). At its height it was able to navigate through a complex playing field of overlapping and competing governance structures. Its initial strength, the establishment of a

real estate development company which enabled the implementation of its regional planning vision, also turned out to be its weakness. In the first decades of its existence, this connection with real estate development made it a central arena to which other emerging governance arrangements, addressing other issues, could connect. In the long run, it prevented the Governance Forum to adjust to changes at the landscape level and other governance arrangements emerged addressing similar issues. Currently, the platform is to be disassembled. The paper draws lessons for and raises questions on the future development of government structures for airport regions.

Why do young adults choose different transport modes? A focus group study

- Transport Policy---2014---Dorien Simons,Peter Clarys,Ilse De Bourdeaudhuij,Bas de Geus,Corneel Vandelanotte,Benedicte Deforche

Active transport might be well suited to counteract the decrease in physical activity and the increase in weight gain in students and working young adults (18–25 years). To promote active transport in this neglected age group, knowledge of factors influencing all transport modes is needed. Focus groups were used to explore factors influencing transport choice of studying and working young adults, for short distance travel to various destinations. Nineteen students (mean age of 21±1.1 years) and 17 working young adults (mean age of 23±1.5 years) were recruited. Three focus groups were conducted with students and three with working young adults. Content analysis was performed using NVivo 9 software (QSR International). Grounded theory was used to derive categories and subcategories. Young adults talked about several factors that influence transport choice, which could be categorized in three themes: Personal factors, social factors and physical environmental factors. Some factors were reported as very important for choosing between transport modes, such as autonomy, travel time, financial cost and vehicle ownership; some as less important, such as the built environment and perceived safety and some as not important at all, such as ecology and health. Most factors were discussed by both students and working young adults, but some differences were found between the two groups, mainly based on income and living situation. When promoting active transport in young adults, health benefits or ecological benefits should not be emphasized. Focus should be put on cycling instead of walking, on flexibility, speed, good social support and low costs. Also, more bicycle storage and workplace facilities should be provided. It should be avoided that young adults own a private car and the public transport system should be optimized to fit their needs.

The trade-offs between population density and households□ transportation-housing costs

- Transport Policy---2014---Matthew Palm,Brian Gregor,Haizhong Wang,B. Starr McMullen

As metropolitan area governments and others promote density-promoting “smart growth” policies, finer analysis is needed to quantify the impact of such policies on households transportation and housing costs. Existing research suggests that households in urban areas trade-off between housing costs and transportation costs, but does not explore how policies to increase urban densities might explicitly impact this balance. Furthermore, the research does not adequately distinguish between the effect of urban area density and the effects of other factors associated with urban area density (e.g metropolitan area size and household incomes) on housing costs. This paper uses the 2000 Census Public Use Micro Sample (PUMS) person and household data from 23 of the nation s most densely populated states to identify the impact of increased population density on three housing cost measures: household rents, housing unit values, and monthly mortgage payments. Log linear models were estimated for each housing cost measure using least-squares regression. Dependent variables included household, housing unit, and geographic area characteristics, including population density. The models were found to be very similar to one another in terms of the statistical significance and values of estimated model parameters. Population density (measured at the PUMS area level) was found

to be statistically significant at the 0.01 level for all housing cost measures. Although significant, the parameter estimates show that the elasticity of housing cost with respect to population density is low, ranging from 0.041 to 0.05. This research also explores the relationship between housing costs and accessibility. Results show that households living in areas closer to jobs (as indicated by shorter average commute times) and households utilizing fixed route transit systems have marginally higher housing costs.

Port infrastructure investment and regional economic growth in China: Panel evidence in port regions and provinces

- Transport Policy---2014---Lili Song,Marina van Geenhuizen

China s seaports belong to the largest in the world. The question is to what extent port infrastructure investment in China also contributes to growth of the regional economies involved, through mainly direct and indirect relations. We estimate the output elasticity of port infrastructure through production function, applying panel data analysis for the period of 1999–2010, and calculate the model at the level of four port regions as well as the port province level. The results indicate clear positive effects of port infrastructure investment in all regions, however, the strength varies considerably among the four regions, with the Yangtze River Delta region (Shanghai) at the strongest level, followed by the Bohai Rim region (Tianjin), the Southeast region (Guangzhou) and the Central region, where the influence is the weakest. The analysis indicates that differences are related to the character of the port (land or sea), stage of economic development of the region, international network connectivity, and the spillover effects from adjacent regions. Overall, the weakest relation tends to be with landside transport infrastructure density. The paper closes with some policy implications.

User perspective of age-friendly transportation: A case study of Taipei City

- Transport Policy---2014---Tzay-An Shiau,Wen-Kuan Huang

User perspective of age-friendly transportation provides a solid base for initiating and evaluating improvement strategies. This study surveyed a sample of 610 older people in Taipei City. The respondents rated the degree of importance of 18 indicators, and their degree of satisfaction with 35 items, which were derived from these 18 indicators relating to age-friendly transportation. Rough Sets Theory (RST) and Importance-Performance Analysis (IPA) were used as qualitative and quantitative data mining approaches. Useful and simple decision rules regarding the perspective of age-friendly transportation can be obtained using RST. These decision rules involve policy implications. The application of IPA further facilitated the focuses of improvement strategies. Subsequently, the Technique for Order of Preference by Similarity to Ideal Solution (TOPSIS) was used to evaluate improvement strategies. The results showed that the focuses and the priority ranking of the strategy scenarios were (1) training for bus drivers; (2) enhancing the universal design of transport stops and stations; (3) enhancing the quality of transit information and providing more pedestrian scrambles; (4) education for drivers and enforcement of driving rules; and (5) providing more age-friendly vehicles. Two out of five strategy scenarios are related to driver behavior. We strongly recommend that the future policy focus be on requiring people to be competent and courteous drivers.

Road pricing: How people perceive a hypothetical introduction. The case of Lyon

- Transport Policy---2014---Cristina Pronello,Valentina Rappazzo

Following Singapore (1975), some metropolitan areas introduced pricing schemes to make car users aware of the real costs of their trip. This research looks at citizens reactions to the hypothetical introduction of a road pricing scheme in Lyon (France). People s

perceptions were investigated through a sample of 61 persons selected according to a stratified sampling plan. A web-questionnaire was administered to the participants, and eight focus groups were then organised, each including about 7–8 persons. The focus groups allowed us to investigate the participants opinions, emotions, and reactions to the hypothetical introduction of different road pricing schemes in the urban area.

Household transport consumption inequalities and redistributive effects of taxes: A repeated cross-sectional evaluation for France, Denmark and Cyprus

- Transport Policy---2014---Akli Berri,Stéphanie Vincent Lyk-Jensen,Ismir Mulalic,Theodoros Zachariadis

We evaluate household transport consumption inequalities in France, Denmark and Cyprus, investigate their temporal dynamics, and estimate the redistributive effects of taxes on different commodity categories. Using household-level data from repeated cross-sections of expenditure surveys spanning long periods, the paper applies a decomposition of the Gini index by expenditure component. The results highlight the effect of the social diffusion of the car. The relative contribution of vehicle use items (e.g. fuels, maintenance and repair, parking, and registration) to total expenditure inequality has decreased over time, thus reflecting the increasingly widespread use of cars. Moreover, fuel taxes have become regressive, while the progressive character of taxes on the remaining car use commodities has weakened with time. Taxes on transport goods and services as a whole are progressive. However, this result is principally due to the progressivity of taxes on car purchases, a progressivity stronger by far in Denmark where these taxes are so high that car purchase costs can be afforded only by those with high incomes. These findings underline the necessity of taking into account equity issues when designing policies to attenuate the environmental impact of cars. Increasing car use costs, notably fuel prices, through an increase of uniform taxes would be particularly inequitable.

On the (im-)possibility of deriving transport policy implications from hybrid choice models

- Transport Policy---2014---Caspar Chorus,Maarten Kroesen

This paper focuses on hybrid choice models of the type increasingly being used by travel demand modelers, which include latent perception and attitude related variables. We argue that, contrary to current practice, these models do not support the derivation of policies that aim to change travel behavior by means of changing the value of a latent variable. An example of such a policy is a marketing campaign which aims to influence the latent variable ‘perceived quality of public transport’, and as a consequence mode choice behavior. We argue that this lack of support is due to the combination of two factors: (i) the latent variable is usually to a non-trivial extent endogenous to the travel choice, precluding inference of causality; and (ii) the data are almost without exception cross-sectional as far as the latent variable is concerned, and as such do not allow for claims concerning changes in the variable at the individual level. When data for the latent variables are cross-sectional, and to the extent that endogeneity of the latent variables cannot be ruled out, these variables should best not be used as targets for travel demand management policies—although they may still be used as input for scenario studies that involve changes in the population over time.

Regularity-driven bus operation: Principles, implementation and business models

- Transport Policy---2014---Oded Cats

Service reliability is a key determinant of public transport performance. In the context of high-frequency urban lines, irregular service results with long waiting times, bunched vehicles, long delays, uneven passenger loads, poor capacity utilization and higher operational costs. Field experiments were conducted in Stockholm, Sweden, in order to test the feasibility and implications of a regularity-driven operation scheme designed to mitigate bus bunching and facilitated by a real-time control strategy. This paper investigates alternative service

indicators and business models that could best support the long-term implementation of operation geared towards better regularity performance. A paradigm shift towards regularity-based service evidently requires the consideration of a series of measures along the service chain as it involves a paradigm shift in production planning, operations, control center and performance monitoring.

Passenger travel CO2 emissions in US urbanized areas: Multi-sourced data, impacts of influencing factors, and policy implications

- Transport Policy---2014---Rabi G. Mishalani,Prem K. Goel,Andrew J. Landgraf,Ashley M. Westra,Dunke Zhou

Policies that encourage reduced vehicle-miles traveled and the use of more efficient transportation modes are typically considered as means to reduce greenhouse gas (GHG) emissions. In support of motivating, developing, and evaluating such policies, the impacts various transportation infrastructure and use, population density, and policy variables have on passenger travel related carbon dioxide (CO2) – the primary GHG – emissions are assessed and resulting policy implications are discussed. A methodology for integrating data from multiple sources in a consistent manner is developed and implemented, producing a rich dataset consisting of 146 of the largest urbanized areas in the US. The magnitudes of the impacts that changes in certain variables have on CO2 emissions in select urbanized areas are quantified. The results indicate that the variable used as a proxy for the presence of policies aimed at addressing environmental concerns and travelers' attitudes and behaviors towards such concerns influences the impacts changes in transportation characteristics and population density have on CO2 emissions. Depending on these effects, the impacts of changes in average private vehicle occupancy and freeway lane-miles per capita are found to be the largest. In addition, changes in average travel time have a substantial impact on CO2 emissions. While the explanatory effect of transit share is found to be statistically significant, the magnitudes of the impacts of changes in this variable are less appreciable in comparison to those of the above variables, which is understandable in light of the fairly low values of transit share and transit service utilization across most US urbanized areas. Furthermore, the impacts of changes in population density are the smallest among all the variables that are found to have statistically significant explanatory effects. However, this finding does not undermine the role land-use policies could play as increased density could have a direct or an indirect effect on reduced travel times and increased transit use, which in turn contribute to reduced CO2 emissions. In addition to quantifying the impacts, several policy implications stemming from the findings are identified and discussed. Notably, the relative magnitudes of the impacts corresponding to the different variables are found to vary appreciably across urbanized areas, implying that policies aimed at reducing CO2 emissions should focus on different sets of variables depending on the overall characteristics of the specific urbanized area and any existing policies aimed at reducing CO2 emissions.

Estimating road management equipment inventory needs and associated purchase costs

- Transport Policy---2014---Choong Heon Yang,Amelia C. Regan,In Su Kim

This paper presents a method for estimating road management equipment inventory needs and associated purchase costs. The primary feature of this method is to consider historical operations records by road management equipment type and weights by work type based on subjective preferences of the public agencies. The Analytical Hierarchy Process (AHP) is employed as the main tool to reflect the relative importance of a day-to-day road management activity. In order to examine the appropriateness of our method, we performed a case study with 18 regional transportation offices in South Korea. The estimated cost of equipment purchases across these offices was approximately 41 million US dollars based on the 2011 year (when apply average unit cost by equipment), while the actual equipment purchase costs during the same one-year period were about 44 million US dollars. The main

reason for the differences of estimates across offices is due to unit cost by equipment, road conditions, relative importance of management tasks, and omission of unused equipment in inventories and use of labor. We also developed estimates using the maximum unit costs by equipment, in order to provide an upper bound to the authorities. Using those values we estimated the annual cost at approximately 60 million dollars. The estimates developed can provide useful information to road authorities when they establish annual plans for road management.

Urban freight transport and policy changes: Improving decision makers' awareness via an agent-specific approach

- Transport Policy---2014---Valerio Gatta,Edoardo Marcucci

This paper derives policy implications from agent-specific data with respect to the implementation of policy changes in the case of urban freight transport. In particular, the research, based on the case of Rome's Limited Traffic Zone, discusses alternative policy scenarios. After describing attribute definition and selection, questionnaire administration, data collection and treatment, willingness to pay estimates are calculated.

Model of users□ expectations of drivers of sightseeing buses: confirmatory factor analysis

- Transport Policy---2014---Vatanavongs Ratanavaraha,Sajjakaj Jomnonkwao

Annually, more than 13 million students in Thailand ride sightseeing buses in making field trips. Resulting bus accidents may be attributed to the shortcomings of the bus drivers. This study investigates the users expectations of drivers of sightseeing buses to advise tour bus businesses on how to improve travel safety in response to user needs. Two bus user groups (teachers and parents) in urban and rural areas were surveyed for their expectations of sightseeing bus drivers in terms of age, experience, education, driving license, driving skill pertaining to the route, training, and no drinking or smoking. Confirmatory factor analysis showed that all seven indicators affect the expectations of users in rural zones; albeit only five indicators were fitted with urban model by discarding experience and driving license indicators. Urban users gave the highest priority to 'no drinking or smoking'; while 'training' was of most concern to rural users. Additionally, multi-group analysis found that the variable structures of the users expectations of sightseeing bus drivers are homologous for urban and rural groups with some variables having dissimilar significance depending on the geographical conditions of each area. It has been found that most accidents around the world were caused by driver negligence similar to those found in Thailand. So, these results and the potential interest of this work can also be useful to readers outside Thailand.

Not invented here: Transferability of congestion charges effects

- Transport Policy---2014---Maria Börjesson,Karin Brundell-Freij,Jonas Eliasson

The purpose of this paper is to explore to what extent the effects of congestion charges rely on specific features of a city and its transport system. We use Stockholm, and its current congestion charging scheme, as a case study by making various modifications in the transport system influencing the availability and attractiveness of public transport, bypasses and bottleneck capacities. We use a transport model to forecast the effects of the Stockholm charges given each transport system modification. Our main conclusion is that although the social benefit of a given charging system is considerably and non-linearly dependent on initial congestion levels, traffic effects and adaptations costs are surprisingly stable across transport system modifications. Specifically, the level of public transport provision has only small effects on baseline congestion, and therefore on the total benefit of the charges. Contrary to expectation, the charges' effect on traffic volumes remains virtually unchanged regardless of the changes in public transport supply. All results are compared to and consistent with the one-market standard model. We interpret our results with respect to common arguments against the transferability of experiences from cities having

introduced congestion charges.

The price of energy efficiency in the Spanish car market

- Transport Policy---2014---Ibon Galarraga,Ana Ramos,Josu Lucas,Xavier Labandeira

Due to climate change, energy dependence and other energy-related issues, most developed countries are attempting to reduce fossil-fuel use in the transport sector. Accordingly, there are several instruments that have been in place for many years, such as mandatory design standards, taxes on fuels, car purchase and ownership, and energy efficiency labels. Yet it is still not clear whether consumers value energy efficiency as a characteristic of vehicles. In this paper we use the European labelling system for light vehicles, which classifies automobiles according to their relative fuel consumption levels, as a novel, alternative indicator for energy efficiency. Moreover, we use a unique database that incorporates official commercial prices along with prices obtained through 'mystery shopping' at a selection of Spanish car retailers. We apply the hedonic price method to this database to estimate the price functions for vehicles and thereby obtain the marginal price of vehicles rated highly in terms of energy efficiency. Our results show that vehicles labelled A and B are sold at prices 3 to 5.9 percent higher than those with similar characteristics but lower energy-efficiency labels.

A multiattribute customer satisfaction evaluation approach for rail transit network: A real case study for Istanbul, Turkey

- Transport Policy---2014---Erkan Celik,Nezir Aydin,Alev Taskin Gumus

Rail transit is one of the most important public transportation types, especially in big and crowded cities. Therefore, getting a high customer satisfaction level is an essential task for municipalities and governments. For this purpose, a survey is conducted to question the attributes related to rail transit network (metros, trams, light rail and funicular) in Istanbul. In this study, we present a novel framework which integrates statistical analysis, SERVQUAL, interval type-2 fuzzy sets and VIKOR to evaluate customer satisfaction level for the rail transit network of Istanbul. Level of crowdedness and density in the train, air-conditioning system of trains' interior, noise level and vibration during the journey, and phone services are determined as the attributes need improvements. On the other hand, different improvement strategies are suggested for the rail transit network. The proposed approach provides directions for the future investments and can be generalized and applied to complex decision making problems encounter inexact, indefinite and subjective data or uncertain information.

The influence of the scenario and assessment method on the choice of road alignment variants

- Transport Policy---2014---Wladyslaw Gardziejczyk,Piotr Zabicki

An efficient road network plays a key role in the economic development of almost any country. Road construction, apart from its many benefits, has also a negative impact on the natural environment causing its deterioration or division, introduces changes in area management, or may be the cause of social conflict. The decision to choose the most beneficial road alignment variant should take into account all of these aspects. It is therefore a multicriteria issue, based on transport, economic, social and environmental criteria. This article presents the influence of the assessment method of variants, criteria and their weights, as well as preference scenarios of road alignment with the example of the section of the S61 expressway, which is a part of the first Trans-European Transport Network (TEN-T). Four road alignment variants were analysed using the AHP, SAW and TOPSIS methods, with different sets of criteria weights and various preference scenarios. It has been shown, that the used variant assessment method, the criteria and their weights all have a significant influence on the results of the analysis and there is need for more uniform rules in reference to the methodology of conducting multicriteria analyses in designing road alignment.

Paving the way for Philippine tourism via interagency collaboration on road networks

- Transport Policy---2014---Jocelyn Mirabueno,Emmanuel Yujuico

Promoting tourism and improving roads are generic objectives for developing countries. Despite their relationship—tourists often reach destinations via roads—both are seldom considered together while evaluating options in improving the accessibility of tourist destinations. Since government agencies for tourism and infrastructure are usually separate, coordination difficulties arise. This article analyzes how the Philippines is attempting to surmount obstacles to beneficial collaboration linking tourism with road infrastructure by addressing rent-seeking, bureaucratic turf, and incentives to better align the activities of government agencies with tourism-led development. It enhances the literature by focusing on these governance challenges impeding the joint consideration of transport and tourism in developing countries. Additionally, it highlights the catalytic role played by a civil society organization. After providing a case to illustrate this collaboration in practice, the authors consider how the framework developed may be extended by the Philippine tourism ministry in working with other agencies overseeing complementary objectives to ensure seamless intermodal transport in this archipelagic nation.

Effect of shipping aid policies on the competitive advantage of national flagged fleets: Comparison of Taiwan, Korea and Japan

- Transport Policy---2014---Yi-Chih Yang

The purpose of this paper is to perform a comparative analysis of the competitive advantages of the national fleets of Taiwan, Korea, and Japan, and explore the effect of shipping aid policies on a national fleet s competitive advantage, employing gray relational analysis (GRA). We found that the factors best able to assess the competitive advantage of a national merchant fleet include number of vessels, gross tonnage and deadweight tonnage of the fleet, number of seamen, and cargo volume transported by the fleet. We further discovered that Korean national merchant fleet has the greatest competitive advantage, followed by the fleets of Taiwan and Japan in that order, and found that aggressive shipping aid policies are a more effective way to ensure good performance than passive shipping aid policies.

Comparing urban form correlations of the travel patterns of older and younger adults

- Transport Policy---2014---Maria J. Figueroa,Thomas A. Sick Nielsen,Anu Siren

Using disaggregated data from the Danish National Travel Survey conducted between 2006–2011, this study compares the travel patterns of older (65–84 years of age) and younger (18–64 years of age) adults regarding land use, socio-economic conditions and urban structures. The results highlight significant differences between travel patterns and their urban form correlates for the older and younger adult populations. Spatial variables such as density and regional accessibility have different and potentially reverse associations with travel among older adults. The car use of older adults is not substituted by other modes in high-density settings, as is the case for younger adults. Older adults do not respond to high regional accessibility by reducing distance traveled, but travel longer and are also more likely to continue using a car in high-access conditions. Spatial structural conditions have the potential to reinforce the need to use private cars among older adults as they attempt to maintain their independent travel and mobility. Older persons are a growing demographic group and thus, the implications of this paper for planning and policies targeting modal shift are significant. How population aging may contribute to car travel saturation or to peak travel requires further investigation.

Transit-oriented smart growth can reduce life-cycle environmental impacts and household costs in Los Angeles

- Transport Policy---2014---Matthew J. Nahlik,Mikhail V. Chester

The environmental and economic assessment of neighborhood-scale transit-oriented urban form changes should include initial construction impacts through long-term use to fully understand the benefits and costs of smart growth policies. The long-term impacts of moving people closer to transit require the coupling of behavioral forecasting with environmental assessment. Using new light rail and bus rapid transit in Los Angeles, California as a case study, a life-cycle environmental and economic assessment is developed to assess the potential range of impacts resulting from mixed-use infill development. An integrated transportation and land use life-cycle assessment framework is developed to estimate energy consumption, air emissions, and economic (public, developer, and user) costs. Residential and commercial buildings, automobile travel, and transit operation changes are included and a 60-year forecast is developed that compares transit-oriented growth against growth in areas without close access to high-capacity transit service. The results show that commercial developments create the greatest potential for impact reductions followed by residential commute shifts to transit, both of which may be effected by access to high-capacity transit, reduced parking requirements, and developer incentives. Greenhouse gas emission reductions up to 470Gg CO2-equivalents per year can be achieved with potential costs savings for TOD users. The potential for respiratory impacts (PM10-equivalents) and smog formation can be reduced by 28–35%. The shift from business-as-usual growth to transit-oriented development can decrease user costs by $3100 per household per year over the building lifetime, despite higher rental costs within the mixed-use development.

Evaluation of the hybrid model of public bicycle-sharing operation and private bicycle parking management

- Transport Policy---2014---Hiroki Nakamura,Naoya Abe

The increasing uptake of public bicycle-sharing programs (PBSPs) worldwide bespeaks their perceived positive contribution to sustainable mobility. However, scholarly literature that examines the different PBSP operation models and their appropriateness to specific settings has remained limited. This paper redresses this gap by addressing three key questions: (1) What types of PBSP operation models have been implemented so far? (2) How can we evaluate each type of operation model? (3) Using specific case contexts, what alternative operation models are available to enable the sustainable management of PBSPs? Our results revealed significant variability in the number of available bicycle docking stations in different cities programs; the number of docking stations can range from single figures to over 1000. For instance, some Japanese cities display high proportions of private bicycle use but accommodate only small-scale PBSPs. Although models for PBSPs of all sizes are thought to result in certain social benefits, larger projects tend to be more profitable than smaller ones. However, the application of the hybrid model of PBSP operation and private bicycle parking management raises the profitability of small-scale models, rendering them more appropriate for implementation with a number of positive outcomes.

A critical review and assessment of Eco-Driving policy & technology: Benefits & limitations

- Transport Policy---2014---Md. Saniul Alam,Aonghus McNabola

Eco-Driving has received significant attention in literature and among policy makers for its claimed benefits in reducing CO2 emissions and fuel consumption. Many investigations of Eco-Driving policy have reported potential reductions in fuel consumption and CO2 emissions ranging from 5% to 40% across various jurisdictions and initiatives. This paper comprises a review and assessment of Eco-Driving policy and its claimed benefits. The possible negative impacts of Eco-Driving, often neglected in previous research, are also highlighted. These include policy limitations which may result in increases in accident risk, and CO2 emissions at traffic network level. In addition, the limitations of certain Eco-Driving technology are also

highlighted. The results of this review and assessment reveal that Eco-Driving Policy has the potential to reduce CO2 emission and fuel consumption in certain circumstances, but in congested city centre traffic many conflicting views exist in the literature, resulting in some doubt over the effectiveness of the policy in such circumstances.

Passenger car flows across the Canada–US border: The effect of 9/11

- Transport Policy---2014---William P. Anderson,Hanna F. Maoh,Charles M. Burke

This paper examines trends in passenger vehicle flows across the Canada–US border over the period from 1972 to 2011. Graphical presentation illustrates a strong declining trend in same day trips over the period from 2001 to 2011, which may be associated with the enhanced security regime at the border in the aftermath of the terrorist attacks of September 11, 2001. However other factors, including a strengthening Canadian dollar and slow economic growth after 2008 may also contribute to this trend. Regression analysis is used to identify factors affecting cross-border flows in both directions for both single day and multi-day trips. A parallel analysis is done for the flows to and from the Province of Ontario only. Results indicate that even after controlling for exchange rates and economic performance, a significant negative impact of 9/11 can be detected. A counterfactual exercise suggests that a quite dramatic reduction in vehicle crossings in both directions may be attributed to 9/11.

Exploring characteristics and motives of long distance commuter cyclists

- Transport Policy---2014---Karsten Bruun Hansen,Thomas Alexander Sick Nielsen

Longer distance cycling is a commuting mode that contributes to sustainability and public health objectives, but little is known about current long distance cyclist s motives. The paper explores longer distance commuter cyclists, their characteristics, practice and motives. Longer distance, commuter cyclists (>5km from home to work) have more mobility options, higher incomes, and a longer education than other commuter cyclists. The main motive for longer distance cycling is physical exercise, followed by reduced costs and time used for traveling. The long distance commuter cyclists surveyed are very positive about their commute - pointing to positive experiences, better mood, and stress relief as experiences related to their cycle trip to work. Policy support should devote attention to unlocking the potential that may be embedded in individuals combining their exercise and travel time, budgets to promote active travel to work as well as the role of psychological benefits as a factor in promoting and sustaining cycling practices.

Impact of cycle rickshaw trolley (CRT) as non-motorised freight transport in Delhi

- Transport Policy---2014---S.L.N. Sarma Sadhu,Geetam Tiwari,Himani Jain

Cycle rickshaw trolley (CRT) is a widely used non-motorised mode of intra-city freight transport in Delhi. While a number of studies are available for non-motorised passenger rickshaws, role of CRT in urban goods movement has not been studied adequately. This paper presents findings from a survey of 2000 CRT drivers in Delhi in 2011. The paper highlights the contribution of CRT in city goods movement, savings in fuel and emissions and benefits to CRT drivers. If CRT s are replaced by motorised vehicles, CO2 emissions from vehicular traffic will increase by over 3% and hydrocarbon emissions will increase by over 8% and six to seven hundred thousand people will have to find alternate employment. The findings have a direct impact on various urban freight policies and welfare policies for the poor.

Carbon reduction and travel behaviour: Discourses, disputes and contradictions in governance

- Transport Policy---2014---Greg Marsden,Caroline Mullen,Ian Bache,Ian Bartle,Matt Flinders

Prospects for mitigating climate change require decarbonisation of the energy sector over relatively short time periods, coupled with significant changes to the way we consume energy. This is particularly true in the transport sector given the current levels of transport-related greenhouse gas emissions, the heavy dependence on fossil fuels, and the uncertainty surrounding transition pathways to ultra-low carbon vehicles. There are policy responses aiming to reduce carbon emissions by changing travel behaviour, but prominent approaches share a common theme of seeking to change behaviour by focusing on the individual and their choices. These are the object of critics who maintain that effective change requires collective action at the social, economic and cultural levels. This paper questions whether decision-makers are relying on these choice-based approaches to change travel behaviour and, if so, how effective they expect them to be. We address this through analysis of over 50 interviews with policy stakeholders in England and Scotland. We find dominant policy approaches do focus on individual choices, but significantly it is not because decision-makers have faith in their effectiveness. These approaches persist in policy on carbon reduction for two reasons. One is appeal to a politically powerful, but incoherent, discourse of individualism. The second is that decision-makers do not want significant behavioural change. There is an imperative of economic growth and a firm belief that a strong economy is linked to higher traffic levels, and that to reduce the demand for travel is to risk economic damage. We argue that these beliefs about the relation between travel demand and prosperity are narrowly defined and contestable for empirical and normative reasons. If there is to be a significant change in the approach to intervening in travel demand there is an urgency to engage in the politics of behaviour change – a meta-level behaviour change challenge.

Learning heuristic or political rhetoric? Sustainable mobility and the functions of 'best practice'

- Transport Policy---2014---James Macmillen,Dominic Stead

In recent years, the notion of 'best practice' has become accepted into the standard lexicon of transport policy. Best (or 'good') practice approaches to the development, implementation, and evaluation of transport interventions regularly appear at all scales of policy-making, and seem to enjoy explicit and implicit support from a diverse array of political actors. Critical reflection on this trend has chiefly focussed on the spatial limits to policy transfer, highlighting the salience of institutional heterogeneity as a limitation to policy convergence. Drawing on a series of in-depth interviews with actors involved in UK walking and cycling policy, this paper explores two fundamental questions relating to best practices as they are directly 'produced' and 'consumed': firstly, how the notion of best practice is encountered and understood by policy actors and, secondly, why policy actors employ the notion in the course of their professional work. Despite its intuitive appeal, we argue that the notion of best practice in this context is characterised by substantial conceptual ambiguity and diverse functionality. Five distinct reasons why policy actors employ the term best practice emerge from the analysis. These we term heuristic learning, discourse manipulation, self-promotion, affiliative justification and strategic articulation.

Car availability explained by the structural relationships between lifestyles, residential location, and underlying residential and travel attitudes

- Transport Policy---2014---Veronique Van Acker,Patricia Mokhtarian,Frank Witlox

The majority of land use-travel behaviour studies only considers the direct influence of spatial characteristics on daily travel behaviour. However, this framework should be expanded. A first step is to explore the complex interdependencies of long-term lifestyle decisions, medium-term decisions about residential location and car ownership, and the underlying residential and travel attitudes. Travel behaviour should be considered within a hierarchy of decisions while considering the motivational background of these decisions. Using data from an Internet survey completed by +1800 re-

spondents in Flanders, Belgium, this paper defines car ownership somewhat more broadly as car availability. Results of a structural equation model indicate a significant direct effect of the residential neighbourhood on car availability. However, effects are small compared to the influence of other variables such as stage of life and travel (mode) attitude, the latter referring to travel-related selfselection. Moreover, one should keep in mind that residential attitudes remain important in the initial selection of the residential neighbourhood and its spatial characteristics, indicating the need to control for residential self-selection.

The usefulness of pollution examinations of on-road vehicles—The case of Jerusalem

- Transport Policy---2014---Gila Albert,Yaniv Glanzer

This paper focuses on the usefulness of pollution examinations of on-road vehicles as a tool for vehicle emission control. The case described was carried out in Jerusalem, the capital of Israel, between the years 2005 and 2010. A total of 43,293 on-road vehicles, which represented approximately 5% of the vehicle fleet at that time, were tested: diesel engine vehicles (21,861) were checked for their PM emission levels and petrol engine vehicles (21,432) were checked for their CO emission levels. The results show that these examinations can indicate special problems and, based on re-sampled vehicles data, lead to benefits such as a reduction in motor emissions over time. More specifically, the share of high-emitting vehicles (i.e. vehicles that do not meet specific emission standards), especially petrol engine vehicles, is declining over the years. However, we observe a worrisome trend for high-emitting vehicles, as the average value of PM emission from diesel engine vehicles, and particularly the average value of CO emission from petrol engine vehicles, has increased over the years. In addition, a significant gap was found in the level of pollution between high-emitting vehicles and appropriate vehicles, especially for petrol engine vehicles. Monetary evaluation of externalities indicates that annually the excessive cost of PM and CO resulting from high-emitting vehicles is 9 million NIS ($1=NIS 3.846). The pollution examinations were found to be economically justified; therefore, they should serve as an efficient means of vehicle emission control.

Mobility characteristics of the elderly and their associated level of satisfaction with transport services in Osogbo, Southwestern Nigeria

- Transport Policy---2014---Moses Olaniran Olawole,Oluwole Aloba

Older people are perceived to face different problems while commuting. Studies on mobility of the elderly and associated constraints are, in Nigeria, recent but scanty. Hence, this paper explores elderly mobility characteristics, commuting patterns, quality of transport services and problems associated with the use of public transport services. Questionnaires were administered to 250 elderly aged 60 years and above using a purposive sampling technique. Findings showed that 58.4% of the sampled elderly lack personal means of transportation. The study revealed that an elderly generates about 2.88 trips per day. Trip destinations within a distance of 2km of respondents residence accounted for 65.60% trips generated. Daily frequency accounted for 38.56% of the visits to four trip destinations (work, social, religion and market). Walking accounts for 36.89% of travel mode of the elderly. Transport constraints identified include high transport fare, lack of bus stops, poor nature of roads, traffic congestion, poor attitude of commercial transport operators and the absence of state owned transport services. There is also a low level of satisfaction with transport services with significant variation in satisfaction with transport service among the different age groups. The paper suggests that government should include issues of elderly mobility and safety in the nation s transport policy in addition to the provision of affordable public transport services for the elderly.

Models for anticipating non-motorized travel choices, and the role of the built environment

- Transport Policy---2014---Mobashwir Khan,Kara M. Kockelman,Xiaoxia Xiong

This paper uses detailed travel data from the Seattle metropolitan area to evaluate the effects of built-environment variables on the use of non-motorized (bike+walk) travel modes. Several model specifications are used to understand and explain non-motorized travel behavior in terms of household, person and built-environment (BE) variables. Marginal effects of covariates for models of vehicle ownership levels, intrazonal trip-making, destination and mode choices, non-motorized trip counts per household, and miles traveled (both motorized and non-motorized) are presented. Mode and destination choice models were estimated separately for interzonal and intrazonal trips and for each of three different trip purposes, to recognize the distinct behaviors at play when making shorter versus longer trips and serving different activities.

The socioeconomic impact of limiting heights of heavy vehicles—The case of Norway

- Transport Policy---2014---James Odeck,Arild Engebretsen

All undertakings in the transport sector should be subject to some form of cost-benefit analysis (CBA) as part of an informed decision-making process. CBA is used in this paper to advise the Norwegian government on the impact of limiting the height of heavy vehicles to 4.0m, as suggested in European Union s Directive 96/53/EC. Currently, Norway does not limit the height of vehicles. We use the vehicle height measurements taken from the Norwegian road network and calculate the costs and benefits that would result if the directive were implemented. The results reveal, in maximum, that (i) limiting vehicle height to 4.0m would increase the distance travelled by Norwegian heavy vehicles by approximately 1.66%; (ii) annual road haulage costs would increase by approximately 1.2 billion NOK; (iii) the annual costs of CO2 emissions would increase by approximately 20 million NOK, and the annual costs of NOx emissions would increase by 14 million NOK; and (iv) the annual cost of road accidents would increase by 10 million NOK. The results show that the regulation, if implemented, would cause Norway to experience socioeconomic loss of approximately 24.6 billion NOK over 25 years in maximum. Furthermore a sensitivity analysis with respect to expected increase in vehicle kilometers travelled indicates that the conclusions derived are robust. This paper thus advises the government not to implement the regulation. The government has listened to the advice provided in this paper and decided not to support the proposal limiting vehicle height because it would cause adverse effects for haulers and for the economy in general. Hence, we urge the continued use of CBA to aid decision making in the transport sector.

Systematic construction risk, cost estimation mechanism and unit price movements

- Transport Policy---2014---Dejan Makovšek

Researchers have already proven significant systematic cost over-runs measured from the decision to build estimate even in the most developed countries of the world. The reference class forecasting was introduced to counter this bias. However, the precise workings or cost over-run determinants are however still under-researched. We selected the case of the National Highway Construction Program in Slovenia and projects, completed between 1995 and 2007. The purpose was to determine the precise cost performance through time and analyze the cost estimating mechanism to see whether and how it influences the cost performance. The details of the cost estimating practice have been studied and compared with the existing practice in the USA and elsewhere. A representative sample of 36 projects could be constructed, valued at USD 2.7 billion (2006 prices) with a total length of some 235km. Almost half of the cost performance variance could be explained by the cost estimation mechanism (cost-based estimation with historic bid database). In different variants, this approach appears to be dominant in the most developed countries of the World due to its relative simplicity. We find, that due to the behavior of bidders in the tendering process, the same mechanism also implies that some systematic cost over-run will likely occur, even if no other causes were present. This adds a new perspective to the suggestions of Flyvbjerg and others, who suggested that the dominant (but not

exclusive) cause for the persistence of systematic cost is strategic misinterpretation. The findings suggest that project sponsors should perform a supporting analysis on how price changes on the construction market feed in to the cost performance to further support the reference class forecasting approach. The findings also suggests, that in case of strong cost performance shifts, longer periods need to be included in the analysis, before one can conclude, that the improvement or worsening is not temporary and is not the inherent result of the cost estimating mechanism.

The infrastructure planning support system: Analyzing the impact of climate change on road infrastructure and development

- Transport Policy---2014---Amy Schweikert,Paul Chinowsky,Kyle Kwiatkowski,Xavier Espinet

This paper details the Infrastructure Planning Support System (IPSS), a software tool that incorporates five areas of analysis, including climate change, environment, and social impact, to provide a holistic, longer-term approach to the management and planning of road infrastructure. The system combines quantitative and qualitative analysis methods to develop an estimated fiscal cost, in addition to estimates of GHG emissions, transportation time and cost savings, and a prioritization metric focusing on social impact of road construction.

Changes in access to public transportation for cycle–transit users in response to service reductions

- Transport Policy---2014---Bradley J. Flamm,Kay M. Sutula,Mahbubur R. Meenar

North American transit agencies have made large investments since the late 1990s in the coordination of bicycling and public transit services. A key goal in doing so has been to increase transit ridership by extending the geographic area from which riders can easily and quickly reach transit stops and stations. While it is widely hypothesized that being able to travel on transit vehicles with bicycles allows riders to access transit stops and stations from a larger geographic area, the empirical evidence of this is scanty. Information available for Northeast Ohio, where the Greater Cleveland Regional Transit Authority (GCRTA) operates rail, bus and demand response transit, presents an opportunity to address an important aspect of this issue. The availability of detailed long-term bicycle-on-bus boardings (BoBBs) data and the implementation of a series of service reductions in 2008, 2009 and 2010 offer an opportunity to ask the question: Do significant changes in geographic access to transit services result in significant changes to the numbers of cycle–transit users accessing transit buses? The evidence from GCRTA s service area provides some support for this conclusion, with the rates of utilization of bus bicycle racks increasing significantly over time and in slightly higher numbers for routes that saw the largest reductions in bus transit service.

The impact on the US economy of changes in wait times at ports of entry

- Transport Policy---2014---Bryan Roberts,Adam Rose,Nathaniel Heatwole,Dan Wei,Misak Avetisyan,Oswin Chan,Isaac Maya

Inspections of people and vehicles at US border crossings are vital to homeland security and preventing unauthorized movement of people and freight into the US interior. However, these inspections incur various costs, including imposing delays on legitimate traffic and increasing expenditures to operate the crossings. In this study, we quantify the economic impacts of delays related to movement of passenger and commercial vehicles across 17 major land border crossings and international air travelers at 4 major US airports. We estimate the value of time spent in these delays, and how this changes if one inspection officer is added to each crossing s staff. We quantify how the transportation cost for shipping goods by truck into the US changes if wait time falls, and use the GTAP CGE model to estimate the change in macroeconomic activity in the US, Canada, and Mexico caused by the decrease in transportation cost. We also determine how many new cross-border passenger-vehicle trips re-

sult from a fall in wait time, and quantify the increase in economic activity in the US and its border regions associated with these new trips. Our results indicate that changes in US Customs and Border Protection (CBP) staffing would have significantly positive impacts on US GDP, trade balances, and employment, and would also significantly reduce the opportunity cost of waiting by passengers and truck drivers. These results should prove useful to those making decisions on border inspection resources, analysts researching trade facilitation issues, and the general public and its representative organizations who incur the costs but also the benefits of inspections.

Multi entity perspective freight demand modeling technique: Varying objectives and outcomes

- Transport Policy---2014---Sabyasachee Mishra,Hiroyuki Iseki,Rolf Moeckel

The importance of freight transportation modeling and forecasting to better address planning issues is well recognized by policy makers. Compared to advancement in travel demand modeling for passenger travel, however, current freight demand modeling methods are not yet in the adequate levels to assess increasingly complex and important planning and policy issues. Three most important players in freight demand modeling are (a) shippers, (b) planners, and (c) policy (decision) makers who have different objectives. Past research is limited in proposing a unified methodology to address the objective of each player and to assess performance of transportation networks under conditions to achieve such objectives.

Why do regulated jitney services often fail? Evidence from the New York City group ride vehicle project

- Transport Policy---2014---David A. King,Eric Goldwyn

Many US cities have unsuccessfully experimented with jitney projects to improve transit service, reduce costs, and adapt to shifting demographics. The impetus for this research was to take advantage of a natural policy experiment, the New York City Taxi & Limousine Commission s (TLC) Group Ride Vehicle (GRV) Pilot Project, to evaluate why jitneys often fail when regulated to supplement conventional transit. The Commission developed the pilot project in response to service cuts on dozens of New York Metropolitan Transportation Authority (MTA) bus routes throughout the city. These cuts, coupled with higher transit fares, dramatically limited transit access for many city residents. Shortly after the service reductions went into effect in June 2010, the Commission announced the pilot project to bring commuter vans (commuter vans are the licensed jitneys in New York City) to five service areas that lost regular bus service. They expected the project to improve access for New Yorkers and create opportunity for jitney drivers and operators. The pilot project targeted service areas in Brooklyn and Queens, and the Commission received commitments from five existing commuter van operators to participate in the project. The project was controversial for multiple reasons, including the City s willingness to privatize formerly public transit service and the imposition of two fares for Group Ride Vehicle riders traveling into Manhattan. The first Group Ride Vehicle began service in September 2010, and despite optimism from operators and the TLC, the program was unofficially discontinued after only a few months.

A comparison of innovative financing and general fiscal investment strategies for second-class highways: Perspectives for building a sustainable financing strategy

- Transport Policy---2014---Zhentian Sun,Xuhong Li,Yuanchang Xie

A long-term sustainable financing strategy is critical for highway development and maintenance; however, the effects of two major financing strategies—general fiscal investment, strategy (GFIS) and innovative financing strategy (IFS)—are still unclear to transportation decision, and policymakers. Based on the current financing practices for the second-class highways in China, (equivalent to U.S. or state highways in the

United States connecting major cities in a state), this paper developed an integrated method to assess the long-term sustainability of IFS and GFIS in terms of the following widely accepted criteria: adequacy, stability, efficiency, equity, ease of implementation, and political acceptability. These criteria were further classified into quantifiable efficiency criteria (QEC) and non-quantifiable social-institutional criteria (NQSIC) categories. In this research, time-series analysis and telephone-interview methods were used for accessing QEC and NQSIC, respectively. It was found that the IFS in general has more advantage in providing sufficient, stable, and effective funds than the GFIS, and it is considered more favorable and acceptable than GFIS by both provincial and local governments. The results of this research can help decision makers at various levels in China to develop sustainable and effective funding strategies for the second-class highways. In addition, this study provides an international perspective for solving the second-class-highway financing issues and is a useful reference to researchers and policymakers in other countries.

Economic benefits of urban rail projects that improve travel-time reliability: Evidence from Tokyo, Japan

- Transport Policy---2014---Hironori Kato,Yuichiro Kaneko,Yoshihiko Soyama

This paper presents a case study that evaluates the economic benefits that stem from urban rail projects to improve travel-time reliability. It first examines the departure-time choices of urban rail passengers who face unreliable rail services and analyzes these choices empirically by using data on the reactions of passengers that use the Tokyu Den-en-toshi Line in Japan. A model of commuters choices is then formulated by using the scheduling approach where their preference toward travel-time reliability is reflected in their departure-time choices. The presented model assumes that an individual maximizes his or her utility on a workday by allocating time to activities and by determining the start time of each activity. It is also assumed that the individual s utility function consists of the following four subutility functions: morning in-home leisure time, rail travel time, the difference between arrival time at the workplace and preferred arrival time at the workplace, and the difference between arrival time at the workplace and the official work start time. To consider variability in travel time, an error component is introduced into the subutility function of rail travel time, for which two types of probability functions are examined: exponential function and censored-normal distribution. The results show that the model with the censored-normal distribution can successfully describe the empirical data. The consumer benefits that stem from improvements in travel-time reliability are then estimated by using the departure-time choice model for these four cases. Finally, the applicability of the proposed method is discussed, particularly in the context of the urban rail network in the Tokyo Metropolitan Area.

Does high-speed rail generate spillovers on local budgets?

- Transport Policy---2014---Aday Hernández,Juan Jiménez González

High-Speed Rail (HSR) infrastructure is costly and requires high investment during the construction and operation periods, which is mainly financed with public funds. This economic effort is seldom set off, which leads to subsidies with the money collected from public debt growth or tax pressure increases. The question that immediately emerges is whether the entrance of this new infrastructure generates economic spillovers at the local level and, consequently, improves local public budgets. To solve this question we use local data on economic activity, municipalities characteristics and local financial data in Spain for the past decade (2001–2010). Our estimations by difference-in-difference analysis and using spatial data yield a general conclusion: when HSR comes to town, both local revenues and the local fiscal gap improve by mean 10% and 16%, respectively. These improvements primarily affect municipalities located within 5km of an HSR station.

Public funding of airport incentives in the United States: The efficacy of the Small Community Air Service Development Grant program

- Transport Policy---2014---Michael D. Wittman

As U.S. airlines began to restrict available domestic capacity at smaller airports in 2008 as a result of higher fuel prices and an economic downturn, these airports have increasingly started to rely on incentive packages composed of revenue guarantees, waived or reduced airport use fees, marketing support, or direct subsidies to attract new service. There are two main federal programs that provide funding for such incentives for small U.S. airports: the Essential Air Service (EAS) program and the Small Community Air Service Development Grant (SCASDG) program. While the EAS program has received considerable academic attention, there has been no comprehensive analysis of the success of SCASDG recipients in attracting and retaining their targeted air service.

The trend towards convergence in road accident fatality rates in Europe: The contributions of non-economic variables

- Transport Policy---2014---José I. Castillo-Manzano,Mercedes Castro-Nuño,Diego J. Pedregal

This article examines the trends in road traffic fatality rates in a sample of European States over the 1970–2010 period. Taking into account that previous research seems to find that the Europeanization process has had a favorable impact on national road safety performance, our main contribution is to test whether the same mechanism might lead to the convergence of Member States as a whole as a possible outcome. Based on typical convergence methodology for Economic Growth Theory, our findings reveal evidence of the full convergence of road fatality rates across a sample of EU countries during said time period. Compared to the uncertain results obtained by the literature on macroeconomic convergence, we do not find support for the convergence of sub-groups of countries, but a one-speed-convergence for all EU countries. This fact shows that convergence is achievable in certain EU areas even beyond economic convergence through successful efforts made jointly at national and community levels.

Public transport investment and local regeneration: A comparison of London□s Jubilee Line Extension and the Madrid Metrosur

- Transport Policy---2014---Lucia Mejia-Dorantes,Karen Lucas

Despite a long-standing tradition within transport studies research, capturing and assessing the long-term impacts of major transport investment projects is still problematic. This is partly due to the relative paucity of empirical data, as well as the considerable research effort involved in undertaking appropriate data collection for detailed longitudinal evaluations. Past studies suggest that economic impacts can vary significantly depending on the type of interventions, the locations and geographical areas served, pre-existing market conditions and other policy and planning factors. However, another issue for evaluation is the extent to which the different studies that are available are comparable in terms of their methodologies, which makes the synthesis of research findings across different case studies extremely difficult.

Ridership and effectiveness of bikesharing: The effects of urban features and system characteristics on daily use and turnover rate of public bikes in China

- Transport Policy---2014---Jinbao Zhao,Wei Deng,Yan Song

As a pinnacle of green transportation with transit attributes, bikesharing has become particularly popular since the mid-2000s. Two crucial questions for the success of bikesharing adoption are how many riders can bikesharing attract, and what influences its effectiveness. To shed light on answers to these questions, this paper models the impacts of urban features and system characteristics on bikesharing daily use and

turnover rate, using data constructed on 69 bikesharing systems in China. Prior to modeling, we provide an overview of bikesharing adoption in China, describing why they have been adopted, how they have matured, and how they have expanded. Results from data regression and comparison indicate that bikesharing ridership and turnover rate tend to increase with urban population, government expenditure, the number of bikesharing members and docking stations, whilst the number of public bikes shows significant but adverse signs in impacting bikesharing ridership and turnover rate. Data comparison shows that, to pursue an ideal bikesharing turnover rate in most Chinese cities, the bike-member (supply-demand) ratio should be better controlled within 0.2. Moreover, this study suggests that personal credit cards (allowing bikesharing members to pay "personal credit" rather than money if they do not return public bikes within the free use hours) and universal cards (integrating bikesharing systems into other urban transit systems through the use of a rechargeable smart card that can cover a range of payments and trips) can significantly raise bikesharing daily use and turnover rate. We recommend that bikesharing operators and transit agencies take the supply-demand thresholds and the adoption of personal credit cards and universal cards into consideration in the future bikesharing operation and development policy.

Policy approaches to public transport at airports —Some diverging evidence from the UK and Australia

- Transport Policy---2014---Stephen Ison,Rico Merkert,Corinne Mulley

The growth of aeronautical and non-aeronautical activities at airports not only creates capacity constraints but also has a substantial impact on the airport's environmental footprint. This paper discusses the different approaches to ground access at airports in the UK and Australia. In the intensifying debate on how to address transport congestion and the related environmental degradation (i.e. CO2 emissions), public ground transport can be seen as a potential cornerstone in an airport's effort to address the issue. It is hence unsurprising that a key element of the UK airport approach has been to promote a shift from the private car to more sustainable transport options for both passengers and employees. Surprisingly, Australia appears (despite its relative poor environmental performance) to focus much more on the expected growth of aviation activity and measures that will aid in addressing the resulting road congestion. In contrast to UK airports, Australian airports do not use environmental targets or educational measures in their ground access plans. Our findings and the lessons learned from the UK approach suggest that more sustainable ground transport strategies could aid Australian airports in reducing their transport congestion and resulting carbon footprint.

Mixed-methods analysis of political parties□ manifesto discourse on rail transport policy: Westminster, Scottish, Welsh and Northern Irish elections 1945–2011

- Transport Policy---2014---Paul Chaney

This study addresses a key lacuna by exploring the role of electoral politics in shaping public policy on rail transport in (quasi-)federal systems of governance. Attention centres on issue-salience and policy framing in party manifestos in state-wide and regional elections. The findings reveal a significant rise in issue-salience in parties Westminster election programmes; with right- and left-of-centre parties increasingly advocating mixed economy approaches to rail transport as part of the wider rise of 'valence politics'. The analysis also reveals how devolution may lead to the territorialisation of rail transport policy. In contrast to parties Westminster programmes, regional manifesto discourse evidences a general rejection of neo-liberalism and stronger support for state control and/or not-for-profit rail operators. Overall, the findings underline the formative nexus between political representation and public policy – and show how, in the wake of state decentralisation, policy framing is contingent on 'regional' socio-economic factors and party politics, including state-building by civic nationalist parties.

Needs and priorities of road safety stakeholders for evidence-based policy making

- Transport Policy---2014---Eleonora Papadimitriou,George Yannis

The objective of this research is the analysis of needs and priorities of road safety stakeholders for evidence-based policy making, on the basis of a broad consultation of road safety stakeholders at international level. Needs and priorities concern both the data to be collected or made available and the tools to be developed or made available to support science-based policy-making. An on-line survey was addressed to more than 3000 stakeholders, mostly from European countries, in which participants were asked to assess the importance (high, medium or low priority) of more than 50 items reflecting data and resources for all stages of road safety policy making—from fact-finding and diagnosis, to programme development, to implementation and monitoring/evaluation. A principal component analysis technique was applied, and 6 components of data and tools were identified, concerning implementation of measures, statistical models, costs and safety impacts of measures, road infrastructure and accident analysis, common definitions and underreporting, and crash causation. Then, cluster analysis was carried out for profiling the stakeholders, revealing 4 groups of stakeholders with similar needs and priorities in road safety data and tools: a "low priorities" group, a "need data and models group", a group mainly interested on "implementation" and an "in-depth analysis" group. Further analysis of the cluster characteristics suggested that the 4 clusters are adequately – and often similarly – represented in all groups of countries, and in all types of organization (e.g. national administrations, universities, interest groups, road safety organizations etc.). It is also found that national/regional administrations and research institutes/universities reported practically the same needs in data and tools, not confirming the common belief that these two types of stakeholders have different needs. Finally, the "policy-makers" group within the stakeholders was found to put particular emphasis on implementation issues.

Potential for the reduction of greenhouse gas emissions through the use of mobility services

- Transport Policy---2014---Sylvie Grischkat,Marcel Hunecke,Susanne Böhler,Sonja Haustein

This study evaluates potential for the reduction of greenhouse gas emissions in the passenger transport sector achievable through the use of mobility services. Beside car-sharing and -pooling, six services targeted at improving and encouraging the use of urban public transportation were considered.

An empirical analysis of three econometric frameworks for evaluating economic impacts of transportation infrastructure expenditures across countries

- Transport Policy---2014---Bismark R.D.K. Agbelie

Transportation infrastructure expenditures can lead to greater productivity and increases in economic output due to the reduction in transportation costs, improvements in access to markets and raw materials, reduction in travel times, congestion reductions, and many other benefits. These benefits can potentially allow countries to improve their comparative economic advantages. To better understand the impact of transportation infrastructure expenditures on national economies, the present paper undertakes an aggregate study of the relationship between transportation infrastructure expenditure and gross domestic product from economies in 40 countries. Three econometric frameworks (ordinary least squares, random-effects and random-parameters models) were used to investigate the impacts of transportation infrastructure expenditure across countries using data from 1992 to 2010. The random-parameters model was observed to adequately account for possible unobserved heterogeneity across countries. As expected, the estimation results showed considerable variability across countries, with the impact of transportation infrastructure expenditure varying greatly as a function of the country's existing transportation infrastructure and the reliance of specific economic sectors on transportation in each nation.

Comparative environmental assessment of Athens urban buses—Diesel, CNG and biofuel powered

- Transport Policy---2014---E.A. Nanaki,C.J. Koroneos,G.A. Xydis,D. Rovas

Greenhouse gases (GHGs) emitted by road transport vehicles as a direct result of fossil fuel combustion and other environmental pollutants released throughout the life cycle of petroleum based fuels, encourage a shift towards alternative transport fuels. Within this frame, an environmental assessment was performed so as to evaluate the environmental implications of alternative fuels (natural gas and biofuels) penetration in the city buses of the city of Athens. The results are evaluated in terms of CO2, CO, HC, PM and NOx emissions. The findings show that CO2 emissions are significantly reduced in CNG buses compared to diesel powered buses. CO2 emissions can also be reduced by 7.85% in B10 blends and 78.45% in B100 blends, compared to diesel. The environmental assessment can be considered as a basis so as to investigate the viability of replacement of petroleum- based diesel with natural gas and biofuels in city transport buses. Concepts for sustainable bus transportation can be incorporated using the methodology defined in this study, in order to promote a sustainable transportation system and mitigate the climate change.

Measuring energy efficiency of the public passenger road transport vehicles in Nigeria

- Transport Policy---2014---Izuchukwu Francis Okafor,Godwin Ogechi Unachukwu,Anthony Okay Odukwe

Road transport sector in Nigeria is one of the greatest areas of challenge for energy efficiency due to increasing energy consumption in this sector. This work measured the energy efficiency of the sample vehicles commonly used for public passenger transport in Nigeria powered by petrol engines and diesel engines, for a period of four months. The sample vehicles operate from Onitsha in Anambra State, Nigeria, to different parts of the country. The average energy efficiency of the sample vehicles powered by petrol engines was measured to be 0.474MJ/seat-km, while that powered by diesel engines was measured to be 0.269MJ/seat-km. This work also developed models for estimating the energy efficiency of the sample vehicles using statistical regression techniques performed on SPSS version 15.0. The goodness of fit of the model for the vehicles powered by petrol engines gave 88.6%, while that of the vehicles powered by diesel engines gave 83.6%. The models were quite simplified and do not require complex data, which could lead to underestimating vehicle fuel consumption.

The influence of attitudes on Transit-Oriented Development: An explorative analysis

- Transport Policy---2014---Jonas De Vos,Veronique Van Acker,Frank Witlox

Transit-Oriented Development (TOD), where compact, mixed-use neighbourhoods are being realized around existing or new public transit stops, is a promising tool to restrict urban sprawl and stimulate sustainable travel modes. However, TODs are not always as easy to implement at every location. In high-density city centres a TOD is relatively easy to implement, since density and diversity are already high and most residents have a positive stance toward car alternatives due to self-selection processes. In more low-density suburbs, however, the situation is more difficult. There is not only the problem of adapting the built environment, but also the problem that most initial residents have a preference for car use, since they chose their neighbourhood based on the physical characteristics of the initial neighbourhood. In this viewpoint we will look at how travel-related attitudes and residential self-selection can affect the success rate of TODs in three different situations. It seems that taking into account attitudes is especially important for the realization of TODs in low-density neighbourhoods.

Economic impact of port sectors on South African economy: An input–output analysis

- Transport Policy---2014---Young-Tae Chang,Sung-Ho Shin,Paul Tae-Woo Lee

The port sectors in a country play an important role in its economy. This paper presents an input–output analysis on how the port sectors impact a concerned economy using the South African case. Moreover, this paper reports how a rectangular Supply and Use Table system of national accounts can be converted to a traditional square symmetric matrix type system. A range of models, such as demand-driven, supply-driven and price models, were derived for the estimation. From these models, the production effect together with the forward and backward linkage effects, price change effects and employment effects were estimated to determine the impact of port sectors. The overall forward linkage effect of the port sector was 0.97 and the backward one was 0.48, indicating that the port sector does not appear to use other sectors much in producing its activities whereas the port sector is used relatively more by other industries owing to its relatively high forward linkage effect. The overall impact effect of the port sector per unit shortage on all other products was found to be 1.1705. Therefore, one unit shortage in the port sector would have incurred a 17% loss to the entire economy in 2002. Leontief s price model was used for the scenario that what would occur if the price of port sector s cost was increased by various ranges from 5%, 10% and 30% to 50% and 100%.

Modeling the effects of competition on seaport terminal awarding

- Transport Policy---2014---Tsz Leung Yip,John Jianhua Liu,Xiaowen Fu,Jiejian Feng

In the maritime transport industry, a terminal concession often specifies the competition conditions during the concession period. This study proposes a game model with which the effects of competition for seaport terminal awards can be studied. The modeling results suggest that (a) a terminal operator always prefers to control more terminals in the region; (b) if all terminal operators expand their operations to every port, they will be worse off due to an increase of inter- and intra-port competitions, a situation similar to the prisoners dilemma; and (c) when a port authority has significant market power, it prefers to introduce inter- and intra-port competition, rather than allowing one operator to monopolize all terminals. (d) multiple equilibria may be observed in concession awarding depending on market characteristics associated to a particular market. Anecdotal observations consistent with these modeling results are presented and discussed.

Flag choice and Port State Control inspections—Empirical evidence using a simultaneous model

- Transport Policy---2014---Lixian Fan,Meifeng Luo,Jinbo Yin

Flag choice and Port State Control (PSC) inspection are two of the most important and mutually dependent aspects of shipping policy. Estimating the effects that various outside factors have on both the flagging out decision and the PSC inspection rate can help with determining appropriate policies for improving maritime safety. However, studying the impact of one on the other without taking into account their endogenous effect could result in biased estimations. This paper integrates a binary logit model for flagging out decisions, and a linear model for explaining the PSC inspection rate, in a Three-stage Least Square framework, by combining actual ship registration data from the Lloyd s ship register with the corresponding PSC inspection records from Paris MOU, Tokyo MOU, and India MOU. The empirical results show that PSC inspections actually increase the possibility of flag-out, not only because of the high inspection rate, but also through the variables used in setting the inspection priority, such as ship age. Estimation biases are also identified if endogeneity is neglected, such as the contribution of ship type, ship size, and PSC inspection rate to the flag-out behavior, as well as the importance of flying a foreign flag on the PSC inspection priority.

Choosing optimal bunkering ports for liner shipping companies: A hybrid Fuzzy-Delphi–TOPSIS approach

- Transport Policy---2014---Ying Wang,Gi-Tae Yeo,Adolf K.Y. Ng

With sustained high bunker prices, new methods for

choosing optimal bunkering ports to save on total operating costs have appeared in research involving liner shipping companies. Generally speaking, the bunkering port selection problem is solved by utilizing ship planning software. However, this can only work optimally when ship arrivals can be forecasted rather accurately, and its primary limitation is that it ignores unforeseen circumstances in actual operations. There are as yet no fixed rules for bunkering port selection. To address this, the paper develops a benchmarking framework that evaluates bunkering ports' performances with in regular liner routes in order to choose optimal ones. Bunkering port selection is typically a multi-criteria group decision problem, and in many practical situations, decision makers cannot form proper judgments using incomplete and uncertain information in an environment with exact and crisp values; thus, fuzzy numbers are proposed in this paper. A hybrid Fuzzy-Delphi–TOPSIS based methodology that divides the benchmarking into three stages is employed to support the entire framework. Additionally, a sensitivity analysis is performed. The proposed framework can enable decision makers to better understand the complex relationships of the relevant key performance factors and assist managers in comprehending the present strengths and weaknesses of their strategies.

A cross-country study of competitiveness of the shipping industry

- Transport Policy---2014---Choong Bae Lee,Junbin Wan,Wenming Shi,Kevin Li

For the last 50 years, international trade has been increased in both volume and speed, which has in turn brought about ever-increasing competition among major maritime nations and required a corresponding shipping policy. This study is to identify and weight the factors influencing a country's shipping competitiveness and shipping policy. According to the results of questionnaires and Delphi method, 24 factors have been chosen from a practical perspective while weights of factors are determined by the application of analytic hierarchy process (AHP) from a theoretical perspective. Then, on the basis of factors and their weights, a shipping competitiveness index (SCI) is constructed to quantitatively measure and rank the main maritime countries. In addition, the results of cluster analysis, based on each country's present and potential competitiveness, provide some implications and policy suggestion for each group of nations with similar background and development conditions.

Productivity changes in Chinese Container Terminals 2006–2011

- Transport Policy---2014---Bingliang Song,Yuanyuan Cui

In the past decades, nearly all the Chinese coastal provinces and municipalities invested heavily in the construction of seaports and implemented various favourable policies to improve the ports operations. How effectively have these efforts worked? This paper uses Malmquist productivity index to determine and analyse productivity change and its decomposition in Chinese coastal container terminals during 2006–2011. We find that the average growth in sample terminals productivity is 5.4% during that period. By decomposing the Malmquist index, we identify the major source of productivity growth to be technological progress, rather than an improvement in technical efficiency, and the major source of technical efficiency growth to be scale efficiency. We also find that the productivity of terminals in the Yangtze Delta is the highest while the one of terminals in the southeast coastal area is the lowest.

Car use in the leisure lives of adolescents. Does household structure matter?

- Transport Policy---2014---Kristin Ystmark Bjerkan,Marianne Elvsaas Nordtømme

Travel is becoming an increasingly essential part of adolescents leisure. As a large part of organized leisure activities takes place beyond the local neighborhood, access to transport becomes a prerequisite for participation. This article investigates transport mode choices in the leisure lives of Norwegian adolescents and the potential influence of household structures. The

study finds that car use is less prominent in the leisure activities of adolescents from single-parent households, and that living in households with unemployed parents reduces the probability of leisure travels by car.

Predictors of driving among families living within 2km from school: Exploring the role of the built environment

- Transport Policy---2014---Michelle Stone,Kristian Larsen,Guy E.J. Faulkner,Ron N. Buliung,Kelly P. Arbour-Nicitopoulos,Jennifer Lay

Rates of active school travel have declined over time in line with decreasing levels of physical activity among children. Understanding why some children are driven to school when walking is an option is important for future intervention. The purpose of this study was to evaluate demographic characteristics, parent/family level factors, attitudinal and psychosocial factors, route features, access to vehicles, and environmental factors which appear to influence the decision to drive children who live within a walkable distance from school in the Greater Toronto and Hamilton Area (GTHA), Canada. Computer-aided telephone interviews were conducted in 2009 with 1001 parents of children attending elementary school in the GTHA, Canada s largest urbanized region. Hierarchical logistic regression analyses were conducted to examine the household demographics, parent/family factors, attitudinal and psychosocial factors, route features, access to vehicles, and environmental factors (qualities of urban design) that predict driving among households less than 2km away from school (n=529). In the GTHA, attitudes and psychosocial factors have a stronger role to play than the built environment in influencing driving behavior within close proximity to school. The introduction of built environment characteristics in the final regression model only explained an additional 4% of the variance in driving to school. To promote AST among drivers living within a walkable distance from school, non-infrastructure programs that provide adult supervision, such as Walking School Bus Schemes, may be a more powerful strategy to alleviate safety concerns while potentially reducing the parental time costs of escorting the child, than capital projects targeting changes to the built environment.

Transit and job accessibility: an empirical study of access to competitive clusters and regional growth strategies for enhancing transit accessibility

- Transport Policy---2014---Nebiyou Tilahun,Yingling Fan

This study looks at questions of regional transit job accessibility in an urban area making significant changes to its transit system. The study area is the Minneapolis–St. Paul (MSP) metropolitan region, which also has several initiatives to build/expand different competitive economic clusters—export-oriented, interconnected firms in the region. We analyze current transit accessibility to the existing clusters in the region and find significant sector to sector differences that highlight both the poor level of transit access to some economic sectors and the need of automobile ownership to be able to reliably access these jobs. Further, given changes that are being made to the transit system, we conduct scenario analyses and ask which population and employment growth patterns the region should follow to maximize transit accessibility for its residents. The results suggest that a strategy which focuses growth along transitways, particularly the growth of jobs along transitway corridors, will achieve the best regional transit accessibility gains. The research helps to bridge the separate bodies of literature on competitive clusters and transit, tests alternative land use scenarios to enhance accessibility, and investigates the importance of transit for jobs in regional competitive clusters.

PMS development in local public transport: Comparing Milan and Amsterdam

- Transport Policy---2014---Deborah Agostino,Bauke Steenhuisen,Michela Arnaboldi,Hans de Bruijn

This study focuses on the process of Performance Measurement System (PMS) development in the local public transportation sector. This development refers to

the trajectory from design to redesign and from the initial use of the PMS to new ways of use. The design, use and development of PMS have been investigated for two different cities in two different European countries. In each case, the PMS design and its use are shaped by a different process. Both cities implemented the same guidelines enacted at the European level but with a different local PMS development. Insights are shared on the process of PMS development. Notions as masculine and feminine culture and their relevance for governance structure are used to explain differences in PMS development. The main finding is that PMS follows structure. A multi-layer, multi-actor structured world forces the PMS into dialogue-based development.

Testing the housing and transportation affordability index in a developing world context: A sustainability comparison of central and suburban districts in Qom, Iran

- Transport Policy---2014---Ali A. Isalou,Todd Litman,Behzad Shahmoradi

Housing affordability is an important policy goal. However, housing is not truly affordable if located in an inaccessible area with high transportation costs. Increasing the supply of affordable housing in accessible locations helps achieve multiple planning objectives: it reduces transportation costs, improves economic opportunity for disadvantaged groups, reduces accident risks, conserves energy and reduces pollution emissions. In recent years researchers have developed analysis methods for measuring total housing and transportation costs for different locations within cities, called a Housing and Transportation (H+T) Affordability Index. This study applies this type of analysis in Qom City, Iran. The results indicate that suburban-area households spend more than 57% of their monthly income on housing and transport, significantly more than the 45% spent by households in the central district. This is consistent with research results in other urban areas. This illustrates the feasibility of applying housing and transportation affordability analysis in developing country cities to help identify truly affordable and sustainable development.

Neighborhood environment and health behavior in Los Angeles area

- Transport Policy---2014---Hsi-Hwa Hu,Joongkoo Cho,Guoxiong Huang,Frank Wen,Simon Choi,Margaret Shih,Amy S. Lightstone

The objective of this research is to analyze the relationship between neighborhood characteristics and obesity among adults. Using data from 7200 adult respondents in the 2007 Los Angeles County Health Survey, a binary logistic regression model is tested to examine whether land use patterns and the built environment characteristics of residential neighborhoods are associated with one’ s probability of being obese. The result has shown that living in a neighborhood with higher household density, closeness to rail stations, and better bus services are associated with a lesser likelihood to be obese, which implies that people in a well-designed transit-oriented neighborhood tend to use active transportation modes to reach their daily activities and access transit services. Increased use of active transportation gives people an opportunity to engage in a moderate-level of exercise, so as to reduce their weight and enhance their health condition. This paper contributes an approach to analyze and estimate the health impact of an integrated land use-transportation plan. The model estimated in the paper can be used to analyze public health issues as a result of different land use policies, built environment improvements, and future demographic change.

Hours of service regulations in the United States and the 2013 rule change

- Transport Policy---2014---Asvin Goel

This paper studies the revised hours of service regulations for truck drivers in the United States which entered into force in July 2013. It provides a detailed model of the new regulation and presents and a new simulation-based method to assess the impact of the rule change on operational costs and road safety. Unlike previous methodologies, the proposed methodology for assessing the impact of hours of service regulations takes into account that, by optimizing routes and

schedules, carriers can minimize the economic impact of stricter regulations. Simulation experiments are conducted indicating that the monetized safety benefit of reducing the daily driving time limits is on the same order of magnitude as the increase in operational costs.

Assessing the equity impact of the European Union Emission Trading Scheme on an African airline

- Transport Policy---2014---Chikage Miyoshi

The European Union Emission Trading Scheme (EU ETS) included aviation activity in 2012, with free emissions allowances being allocated to each airline. The EU ETS is a market-based measure, which the European Union has introduced for aiming at reducing emissions and meeting the targets specified under the Kyoto Protocol. One of the largest issues is equity. The first multinational emission trading scheme resulted in many regulatory issues and objections by a number of countries and airlines concerning its legality under the Chicago Convention. In addition, under the Kyoto Protocol, ratified countries have different responsibilities and roles based on whether they are Annex I or non-Annex I countries. Hence, this paper attempted to investigate the equity issues by measuring the impact of the EU ETS on an African airline compared to airlines in an Annex I country. The results of case study indicate that there are some differences in terms of equity between Annex I and non-Annex I carriers and their passengers. The instrument is proven to be cost-effective; however, the economic rationality arguments seem to be weak with respect to the volatility in individual behaviour and the vulnerability of non-Annex I carriers which is caused by competition with Annex-I carriers. A transparent distribution of revenue from the EU ETS could be one way of moderating the equity gap between carriers and passengers.

Trade-offs between environmental regulation and market competition: Airlines, emission trading systems and entry deterrence

- Transport Policy---2014---Cristina Barbot,Ofelia Betancor,M. Pilar Socorro,M. Fernanda Viecens

The emission trading system (ETS) is being applied worldwide in different economic sectors as an environmental regulatory tool to induce reductions of CO2 emissions. In Europe the system has been applied since 2005 to energy intensive installations and, since January the 1st 2012, to airlines with flights arriving and departing from Community airports. Regulators should consider not only the efficiency of the ETS in reaching an environmental goal, but also its implications for market competition. In this work, we develop a theoretical model that analyses the European ETS s main features as devised for airlines, focusing on its effects on potential competition and entry deterrence. Contrary to other economic activities under an ETS, potential competition is usual in most airline markets. Our results indicate that the share of capped allowances allocated initially for free to air operators may be a key element in deterring or allowing entry into the market. This result may be against the European principle of promoting competition and may represent a step backwards in the construction of a single European air transport market.

Bi-level decisions of vacant taxi drivers traveling towards taxi stands in customer-search: Modeling methodology and policy implications

- Transport Policy---2014---R.C.P. Wong,W.Y. Szeto,S.C. Wong

This study adopts the sequential logit approach to modeling bi-level decisions of vacant taxi drivers in customer-search. The first level decision is about whether the drivers will travel to one of the nearest taxi stands after dropping off their customers and the second level decision is on whether the drivers will join the queue at the nearest taxi stand once they have arrived there. A stated preference survey was conducted to interview 258 urban taxi drivers about their choices of the two level decisions. The statistical test shows that search districts, travel distance from the customer s drop-off location to the designated taxi stand, the congestion level on the way of cruising, as well as the preference for traveling towards taxi stands are found to be the significant factors of the first

level decision. This study also confirms that the queue lengths of both taxis and passengers at taxi stands, the expected customer-search distance after leaving taxi stands, and the preference of vacant taxi drivers for staying at taxi stands are found to be significantly influence the second level decision. The likelihood ratio tests for market segmentation analysis demonstrate the variations in preferences of taxi drivers operated in different taxi shifts and service areas. Some policy implications on introducing more taxi stands and improving the utilization rates of taxi stands are also discussed. We believe that the proposed sequential logit modeling approach, findings, and discussions are useful for developing micro-simulation models in terms of evaluating the performance of road traffic networks with taxi services and for developing simulation-based optimization models to answer policy questions related to taxi services.

Environmental efficiency analysis of port cities: Slacks-based measure data envelopment analysis approach

- Transport Policy---2014---Taehwee Lee,Gi-Tae Yeo,Vinh V. Thai

Because ports have been rapidly expanding, port cities have been exposed to air pollution. Air pollution in port cities that has resulted from the intense expansion of ports has become a pressing concern. Although several studies have discussed the relationship between port and city functions and a few studies have attempted to consider ports environmental performance using the data envelopment analysis (DEA) approach, none have examined emerging port city issues like their environmental influence in great detail. To address these gaps, a slacks-based data envelopment analysis (SBM-DEA) model was used in this paper to assess the environmental efficiency of port cities. The labor population in respective port cities was selected as the input variable, and gross regional domestic product (GRDP) and container throughput were used as the desirable output variables. As the undesirable output variables, nitrogen oxide (NOx), sulfur oxide (SO2), and carbon dioxide (CO2) emissions were selected in the model. The results showed that Singapore, Busan, Rotterdam, Kaohsiung, Antwerp, and New York are the most environmentally efficient port cities, while Tianjin is the least environmentally efficient. The social and opportunity costs for air pollutants emissions in low efficient port cities were calculated as well.

A comparative analysis of the effects of economic policy instruments in promoting environmentally sustainable transport

- Transport Policy---2014---Rune Elvik,Farideh Ramjerdi

This paper presents a comparative analysis of the effects of economic policy instruments in promoting environmentally sustainable transport. Promoting environmentally sustainable transport is defined as follows: (1) Reducing the volume of motorised travel; (2) Transferring travel to modes generating less external effects, and (3) Modifying road user behaviour in a way that will reduce external effects of transport. External effects include accidents, congestion, traffic noise and emissions to air. Four economic policy instruments are compared: (1) Prices of motor fuel; (2) Congestion charges; (3) Toll schemes; (4) Reward systems giving incentives to reduce driving or change driver behaviour. The effects of these policy instruments are stated in terms of elasticities. All four economic policy instruments have negative elasticities, which means that they do promote environmentally sustainable transport. Long-term elasticities tend to be larger than short term elasticities. The long-term elasticities of reward systems are unknown.

Detecting and improving public-transit connectivity with case studies of two world sport events

- Transport Policy---2014---Ceder, Avishai (Avi),Supun Perera

Improving public-transit (PT) connectivity is one of the most vital tasks in transit-operations planning. A poor connection can cause some passengers to stop using the transit service. Service-design criteria always contain

postulates to improve routing and scheduling coordination (intra- and inter-agency transfer centers/points and synchronized/timed transfers). However, ostensibly the lack of well-defined connectivity measures precludes the weighing and quantifying of the result of any coordination effort, and thus makes it difficult for the decision makers to draw any firm conclusion. This work provides an initial methodological framework, concepts and tools for detecting weak segments in inter-route and inter-modal chains (paths) for possible revisions/changes. The approach used is based on a description of PT connectivity network involved with attributes and passenger flows. Formulations are developed to detect weak segments of the PT network, and the max-flow algorithm is utilized to find out the locations of the bottlenecks within this network. Two case studies are presented of two major cities undergoing two major sporting events; the city of London in the United Kingdom hosting the XXX Olympic Games in 2012 and the city of Auckland in New Zealand that hosted the 7th Rugby World Cup (RWC) in 2011. These cities are used to offer a comparison of the bottlenecks in their PT networks. The results indicate that in the City of London, the PT lines of Tube (Bakerloo), Rail (London Euston) and Bus (Route 18) leading to the Wembley Stadium Station are the bottlenecks and in the City of Auckland, the bottlenecks are the PT lines of Bus (Routes 212–249) and Rail (Western Line) leading to the Eden Park Stadium. It is evident that improving the capacity and accessibility of these lines will increase the maximum flow (throughput) to their respective sport stadiums. Overall, the PT connectivity measures help to detect the weakest arc, path or node in comparison with other identified arcs, paths, or nodes within the PT network. These tools can assist decision makers in planning for future PT improvements.

Public engagement in strategic transportation planning: An analytic hierarchy process based approach

- Transport Policy---2014---Stefano de Luca

The aim of this paper is to investigate whether and how multiple-criteria decision analysis, based on the analytic hierarchy process (AHP) approach, may support the participatory process of the public in the whole transportation planning process, especially in strategic planning and at the initial stages during which planning options are drawn up and the public are rarely involved. The AHP makes it possible to consider the multiple objectives of decision makers and allows public engagement to be deliberative, participatory, dynamic and flexible, which is independent of planning options. The method was specified and calibrated starting from a specific stated preferences survey, and its parameters were calibrated with respect to two scenarios: without any transport options and with real transport options. Different criteria (accessibility, travel safety, comfort, environment, landscape), subcriteria and corresponding indicators (qualitative, quantitative and dichotomous) were considered, and reciprocal weights were calibrated. Finally, a real planning scenario was implemented. Calibration results gave interesting insights into the public desires and expectations, made it possible to rank the different chosen criteria and sub-criteria and to understand the biases between preferences stated with or without transport options. The method can be easily updated and can be easily transferred to any case study.

A macro-environment approach to civil aviation strategic planning

- Transport Policy---2014---Nadine Itani,O Connell, John F.,Keith Mason

Air transport is considered a cyclical industry sensitive to the macro-environment in which it operates. As aviation policy makers and regulators strategically plan for their future, they need to consider the systematic and synergistic effects of common factors which comprise the operating environment of the industry s organisations. Thus, during the process of aviation systems planning governments should perceive the generic conditions which exist in the economy as a whole as equally important to air transport exclusive conditions. This paper highlights the significant impact of the national macro-environment factors on a country s

air transport sector and it suggests including these elements within the context of civil aviation strategic planning. Country level data is collected on seventeen input variables versus four output variables on a sample of 52 countries. Structural Equation Modelling (SEM) is used to identify the descriptors with significant impact on air transport output, namely: passenger traffic, aviation total contribution to GDP, aviation total contribution to employment and air connectivity levels. The identified significant drivers are found to create an enabling environment that determines the capacity of an economy and society to benefit from the air transport system s productivity. The results call upon aviation policy makers and regulators to assess the national macro-environment forces during the situation analysis part of the strategic planning process. The identified operating environment conditions act as a framework for providing clear policy orientations and for facilitating the identification of areas where policy intervention could improve air transport sector s performance. A well-defined aviation strategy allows aviation policy makers to identify and address nation wide strategic issues and provides aviation industry s stake holders with guidelines to help maintain and enhance their competitive position in both domestic and global markets.

The impact of high-speed rail and low-cost carriers on European air passenger traffic

- Transport Policy---2014---Regina R. Clewlow,Joseph M. Sussman,Hamsa Balakrishnan

The expansion of high-speed passenger rail service is often argued as a potentially effective, lower-carbon substitute for intercity air travel. Previous studies on the impact of high-speed rail on air travel in Europe and Asia have primarily examined the impact of travel time and price on market share for a specific city pair (or a handful of city pairs). There has been little focus on the extent to which high-speed rail (HSR) has reduced total short-haul air travel demand (versus market share), or on the potential impacts of high-speed rail on system-wide air travel demand. This paper presents an empirical, econometric analysis of air travel demand in Europe, utilizing an expanded data set to explore: (1) the impact of rail travel times, population density, and market characteristics on air traffic; and (2) the impact of high-speed rail and low-cost-carriers on system-wide air traffic. Although improvements in rail travel times have resulted in reductions in short-haul air travel, variations in city and airport characteristics significantly influence the substitution between air and rail. This paper also finds that HSR substitution has resulted in a modest reduction in system-wide air travel demand, whereas the expansion of low-cost carriers has led to a significant increase in total European air traffic. As concerns about the climate impacts of transportation grow, these results have significant implications for future transport and energy policy.

Evaluating the public perception of a feebate policy in California through the estimation and cross-validation of an ordinal regression model

- Transport Policy---2014---Elliot Martin,Susan Shaheen,Timothy Lipman,Madonna Camel

Understanding the key factors influencing policy perception can be critical for informing the design of public policies. Feebates is a unique public policy that is meant to influence vehicle purchases. It presents buyers with a rebate for purchasing low-emission vehicles and a fee for purchasing high-emission vehicles. Because feebates directly impacts the consumer, understanding the dynamics of public perception, support, and opposition is important. This study explores the public perception of a potential feebate policy within California, and evaluates the robustness of an ordinal regression model to predict policy sentiment. The authors conducted a series of 12 focus groups throughout the State, which were followed by a computer-assisted telephone interview (CATI) survey of 3072 California residents in Fall 2009. The survey results were used to gain insights into consumer response to the policy, while focus groups gauged participant understanding of the feebate concept and overall response in preparation for the statewide survey. The survey data was weighted to match key demographics of the population and probed respondents on sentiments towards

climate change, foreign oil dependence, policy fairness as well as overall perceptions of the policy. The results suggested that roughly three quarters (~76%) of the population would have supported a feebate policy, while one-in-five (~22%) would have opposed it. To evaluate how key factors simultaneously influence policy support/opposition, the authors estimated an ordinal regression model on policy support, which could correctly re-predict 89.4% of the sample s policy support or opposition. To assess the model s robustness, it was validated through re-estimation with 10,000 randomly drawn subsamples. Models estimated using these subsamples were then applied to predict policy perception for the remaining hold-out sample. The model performed very well, as hold-out sample opinions were predicted at an average accuracy of 89.1%, with little variance in performance. The authors conclude with a discussion of the implications of these results on public support for feebates and comment on the use of ordinal regression to predict policy opinion.

The safety challenge of increased cycling

- Transport Policy---2014---Jack Short,Brian Caulfield

Many countries have recently set out policy frameworks to support the growth of cycling. However, increased cycling can mean more collisions, injuries and even fatalities. This paper discusses the role of safety in cycling policy in the particular case of Ireland, which is one of the countries that has a government-endorsed policy to increase cycling. It examines available information on cycling, including police-reported accident data over the last fifteen years and more recent hospital accident data. Comparisons are made for injuries between the two sources and data matching and capture–recapture methods used to estimate injuries. The deficiencies in data are analysed and suggestions for improvements made. It is argued that gaps in available data have led to accident risks being poorly understood. The paper discusses how a convergence in cycling and safety policy can be achieved and suggests additional measures including a cycling safety target, increased communication on cycling safety, lower urban speeds and compulsory wearing of helmets for children.

From better understandings to proactive actions: Housing location and commuting mode choices among university students

- Transport Policy---2014---Jiangping Zhou

Reducing car dependence has become an important public policy issue. This manuscript examines the issue by focusing on university students, who have not been well studied in existing literature. It proposes a confirmatory framework for studies on university students commuting mode and housing choice and their determinants. It also conducts a case study based on this framework to get more insights. This case study shows or re-confirms that when compared to the employees from the same university, university students are more likely to share a residence in exchange for rent affordability, bus proximity and short commute. They are also more likely to jointly determine their housing and mode choices. Transit pass subsidies significantly influence university students' alternative transportation use. Female students or graduate students are less likely to use alternative transportation. Undergraduate students have a shorter commute and use alternative transportation more. The above provide new implications for integrated housing–transportation planning and group-sensitive policies to increase alternative transportation usage among university students.

The impact of demand uncertainty on port infrastructure costs: Useful information for regulators?

- Transport Policy---2014---Beatriz Tovar,Alan Wall

Recent changes to regulation legislation permit Spanish ports more autonomy and a degree of control over pricing policy. This implies a shift in emphasis away from investments in new infrastructure and towards focusing on demand and taking full advantage of existing assets. The degree to which ports can modify tariffs depends, among other things, on forecasts of traffic, debt levels, objective annual profitability and reasonable yields on assets. Insofar as demand uncertainty affects ports

costs, this will affect ports ability to meet efficiency and profitability targets. We analyze the effects of demand uncertainty of port costs using a panel data set of 26 Spanish port authorities observed over the period 1993–2007. Estimating a cost function using panel data techniques, we find a significant effect of demand on costs. Non-containerized general cargo was the service whose demand variability most affected port costs. We quantify the effects of demand variability on costs using a simple counterfactual exercise. On the basis of our results we find that if ports in Spain faced the same relative demand variability as the port with the lowest relative demand variability, as measured by coefficients of variation of demand, costs would be an average of 2–3% lower depending on the specification of demand. Different demand variabilities among ports should therefore be taken into consideration by regulators for pricing policy and when imposing minimum profit requirements on ports.

An inquiry into the cost structure of state transport undertakings in India

- Transport Policy---2014---Sanjay Singh

This paper examines the cost structure particularly cost elasticities, returns to scale, marginal cost of production, technological progress, demand for factor of production, and factor substitution in publicly owned State Transport Undertakings (STUs) in India. To examine these issues, a translog cost function is estimated jointly with factor share equations subject to required coefficient restrictions by using the method of 'Zellner' s iterative' technique using the annual data of 11 STUs from 2000–01 to 2010–11. We find that the cost function is fully separable between time (technology) and its other arguments; therefore, technological progress experienced by STUs is (Hicks) neutral and returns to scale depends on output alone. Further analysis reveals that the average cost curve for STUs is U-shaped and it is increasing for the mean firm; consequently, large and medium size STUs are operating on diseconomies of scale whereas relatively small size STUs are experiencing economies of scale. We also examined the technological progress that STUs have enjoyed over time. It is found that the technological progress is same across STUs, though diminishing over time. STUs' cost savings due to technological progress has reduced from 2.1% of the total cost in 2000–01 to 1.3% of the total cost in 2010–11. Finally, we analyzed price elasticities of input demand and elasticity of substitution. It is found that all input demands are price inelastic and cross-price effect is not very strong. Since all own-partial elasticities of substitution are negative, hence, as required, the postulates of the cost minimizing factor demand theory are satisfied.

Using mobility management to reduce private car use: Results from a natural field experiment in Norway

- Transport Policy---2014---Silje H. Tørnblad,Steffen Kallbekken,Kristine Korneliussen,Torben Mideksa

Implementing economically efficient transport policies, in particular implementing price based instruments, is a politically challenging issue. Efficient and politically feasible policy alternatives could therefore make a very valuable contribution to solving transport challenges. Mobility management might be one such policy. We argue that a major weakness of earlier studies is that they only test bundles of different policy elements, and do not attempt to analyse how the elements work in isolation or how they interact to produce the large effects reported. Furthermore, there is often a lack of an appropriate control group against which to compare the treatment effects. We conduct a natural field experiment to test the effectiveness of tailored information, both in isolation, and in combination with free public transit passes, in encouraging commuters to shift from private cars to public transport. In our controlled experiment we find no significant treatment effects.

Tactical design of high-demand bus transfers

- Transport Policy---2014---Cristian Guevara,Gonzalo A. Donoso

We use micro-simulation to assess five tactical designs seeking variance reduction of a high-demand transfer stop that resembles a representative case of Transantiago, the public transportation system of Santiago de Chile. We explore: demand splitting, route differentiation, offline holding, online holding, and prepayment; all of which are applied locally at the transfer stop, and affecting only the feeders. We analyze the impacts over operators and users, both at the transfer stop and downstream, finding that online holding has the best performance overall. These findings were robust to various changes in the simulation assumptions. The paper finishes discussing implications of these results for public policy design, and possible extensions of this research.

The valuation of shipment time variability in Greater Mekong Subregion

- Transport Policy---2014---Tomoya Kawasaki,Shinya Hanaoka,Long Xuan Nguyen

The value of shipment time variability is estimated using the stated preference data from shippers engaging in cross-border transport in Greater Mekong Subregion. Respondents are asked to choose between two alternatives which differ in terms of shipment time, cost, shipment time variability and departure time. In the study route, two bottlenecks (border and seaport) violate stability of shipment time. These two shipment time distributions are convoluted by Monte Carlo method. The results show that the value of schedule delay late is 5.6 times larger than normal travel time savings.

Restricting driving for better traffic and clearer skies: Did it work in Beijing?

- Transport Policy---2014---Cong Sun,Siqi Zheng,Rui Wang

Driving restrictions have been implemented in several cities across the world. However, limited by data gaps and the weaknesses of the prevailing research method, few studies have quantified driving restrictions' effects on traffic and researchers disagree about the air quality effects of driving restrictions. We take advantage of the Chinese cultural resentment toward the number four and use the unequal stringency of alternative restricted plate numbers as repeated exogenous treatments to identify the marginal effects of driving restrictions. For the first time in similar studies, we introduce data measuring traffic condition to help explain the mechanism of driving restrictions' traffic and air quality effects. We find that more stringent driving restrictions had a positive impact on city-wide traffic speed, but little effect on the concentration of inhalable particulates. Given Beijing's extremely congested roads, we consider it most plausible that due to the non-monotonic network-level traffic speed—volume relationship, a marginal reduction in the number of usable vehicles may result in fewer delays, but little or even negative impact on air quality. This implies that positive traffic and environmental effects of a policy may not go hand in hand.

An analysis of the competition that impinges on the Milan–Rome intercity passenger transport link

- Transport Policy---2014---Paolo Mancuso

This paper presents a simulation based on the discrete choice model, and a limited set of data to analyse the passenger market on the Milan–Rome intercity transport link. Considered in the analysis are market shares of both incumbents and new entrants, as well as consumer surplus and environmental costs. The link, which is the second largest intra-European connection, has been characterized by a low degree of competition in both rail and air transport services. The entry of new rail and air operators in 2012, however, will likely reshape market characteristics. The current paper argues the following: (i) most of the benefit in consumer surplus will stem from the introduction of competition in high speed rail; (ii) increased connections will result in increased environmental costs, which will partially offset the larger consumer surplus; and (iii) a reduction in the difference between airline and rail companies involving the costs of infrastructure access and security could lead to more fair forms of competition between

airline and rail companies, but it generates a worst environment state.

Methodology for the prioritization of environmental sensor station installation (case study of South Korea)

- Transport Policy---2014---Choong Heon Yang,Amelia C. Regan

A road weather information system is increasingly recognized as a critical proactive tool for winter maintenance because of recent unexpectedly heavy snowfalls and continuously colder temperatures in Korea. Therefore, effective operation of this system is a high priority. Environmental sensor stations are important components in such systems. However, resources do not permit the installation of an unlimited number of these sensor stations so some method of site prioritization must be implemented. To date however, no explicit method has been adopted. Therefore, this study proposes a decision support methodology to enable the prioritization of installation of new environmental sensor stations and then demonstrates the effectiveness of the methodology by applying it to road sections in South Korea which are especially vulnerable to snow. The primary feature of this methodology is that it provides a rational ranking for prioritizing these installations. This method can readily be applied to other geographic locations.

Predicting new forms of activity/mobility patterns enabled by shared-mobility services through a needs-based stated-response method: Case study of grocery shopping

- Transport Policy---2014---Scott Le Vine,Orestes Adamou,John Polak

One-way carsharing systems are increasingly-prevalent in urban areas, though little is known about their impacts on activity-travel behavior, particularly their effects on usage of motorized and non-motorized travel. Such systems require privileged access to publicly-controlled street space, and in order to prepare suitably for negotiations regarding the price and terms of such access, transport planners require techniques to analyze their usage and impacts.

The relative effectiveness of signal related pedestrian countermeasures at urban intersections—Lessons from a New York City case study

- Transport Policy---2014---Li Chen,Cynthia Chen,Reid Ewing

Walking, the simplest form of transportation has many benefits for pedestrians and the society. Yet, pedestrians are a vulnerable group of people and safety concerns are a significant barrier in one's decision to walk. Multiple signal related pedestrian countermeasures have been proposed to promote pedestrian safety. Although the safety impacts of individual strategies have been investigated, their relative effectiveness is little known. Furthermore, those effective in reducing pedestrian crashes may be at odds with motorist safety.

The role of socio-economic and environmental characteristics in school-commuting behavior: A comparative study of Jewish and Arab children in Israel

- Transport Policy---2014---Wafa Elias,Rachel Katoshevski-Cavari

School travel contributes to most of today's envisaged transport problems. However the literature dealing with school travel is limited. Hence, a study of school-travel patterns can generate many important insights that may impact transport-system policy and management. This paper focuses on school-commuting patterns and related perceptions of schoolchildren's parents among the Jewish and Arab populations of Israel. The study aims at understanding the commuting behavior of these children, ages 9–15. It examines the relationship between gender and socio-economic characteristics in the commuting behavior of Jewish and Arab schoolchildren. The basic hypothesis is that there are differences in school commuting patterns because of various differences between these two groups.

Graph-theoretic evaluation support tool for fixed-route transport development in metropolitan areas

- Transport Policy---2014---Theodore Tsekeris,Anastasia-Zoi Souliotou

This paper presents a graph-theoretic analysis for supporting the evaluation of alternative fixed-route public transport development plans in metropolitan areas. Several indicators grounded on the theory of graphs and network science are suggested and calculated for evaluating prospective developments of the fixed-route transport system in the Athens metropolitan area, which includes the metro, tram and suburban railway. The comparative static analyses of past and scheduled line extensions and planned line constructions generally show the tendency of the system towards small-world networking with scale-free characteristics, which implies increasing scale economies and reliance on a few large transfer stations. The results suggest that policy-makers can choose the option of constructing a semi-circumferential line in the middle (compared to the end) of the system development process, in order to trade investment cost for increased levels of service and robustness.

Logistics and economic development: Experience from China

- Transport Policy---2014---Hooi Hooi Lean,Wei Huang,Junjie Hong

Based on the most updated available data on Chinese logistics and economy, we use the dynamic structural model to test the relationship between logistics development and economic growth in both the short and long run from a total output, demand and disaggregate output perspective. The joint short and long-run causality test shows that economic growth Granger-causes logistics output, implying that economic development causes more demand for logistics services and hence leads to logistics development. Land transport infrastructure Granger-causes the economic growth with a feedback effect. Another interesting finding is that railway transport unidirectionally Granger-causes the development of roadway and waterway transport, implying that the railway plays a key role in the transport network in China thus far. However, this trend may not continue in the future as the administrative functions of the Ministry of Railway were merged into Ministry of Communications in early 2013. The policy implications are given at the end of the paper.

Mexico City's suburban land use and transit connection: The effects of the Line B Metro expansion

- Transport Policy---2014---Erick Guerra

Over the past half century, government agencies in Mexico City have invested heavily in high-capacity public transit, particularly the 225-km Metro system. Nearly all of this investment has been in central locations of the metropolis. Only recently has service coverage been extended into the periphery, which has accounted for the majority of postwar metropolitan population growth. The Metro's Line B, which opened in phases in 1999 and 2000, significantly expanded Metro coverage into the densely populated and fast-growing suburban municipality of Ecatepec. Comparing travel behavior and land use measures at six geographic scales, including the investment's immediate catchment area, across two time periods—six years before and seven years after the investment opened—this paper investigates the effects of one of the first and only suburban high-capacity transit investments in Mexico City. While the investment sparked a significant increase in local Metro use, most of this increase came from people relying on informal transit, rather than cars. This shift reduced average transit expenditures and travel times for local residents. However, it also increased government subsidies for the Metro and had no apparent effect on road speeds. In terms of land use, the investment increased density around the stations but appears to have had little to no effect on downtown commercial development, where it might have been expected to have a significant influence. In short, the effects of Line B demonstrate much of the promise and problem with expanding high capacity transit service into the suburbs. Ridership is likely to be high, but so too

will be the costs and subsidies, while the effects on car ownership and urban form are likely to be modest.

The potential of social media in delivering transport policy goals

- Transport Policy---2014---Ayelet Gal-Tzur,Susan M. Grant-Muller,Tsvi Kuflik,Einat Minkov,Silvio Nocera,Itay Shoor

Information flow plays a central role in the development of transport policy, transport planning and the effective operation of the transport system. The recent upsurge in web enabled and pervasive technologies offer the opportunity of a new route for dynamic information flow that captures the views, needs and experiences of the travelling public in a timely and direct fashion through social media text posts. To date there is little published research, however, on how to realize this opportunity for the sector by capturing and analysing the text data.

Assessing knowledge and awareness of the sustainable urban freight transport among Swedish local authority policy planners

- Transport Policy---2014---Maria Eleonor Lindholm,Magnus Blinge

Sustainable freight distribution is of growing interest for many local authorities in urban areas. Numerous policy measures on urban freight transport have been taken throughout Europe during the last decade. This paper presents the results of a study on the state of urban freight transport policies and planning among Swedish local authorities. Results are compared with existing research in the European context in order to find possible links between the freight transport awareness and the successes or failures of measures addressing urban freight transport issues. A questionnaire sent to all Swedish municipalities was combined with a literature study, to map the state of policy and planning within the freight transport as well as the knowledge and awareness of the area. The importance of adequate knowledge and personnel resources in municipalities as well as communication, information dissemination and knowledge exchange is discussed. The empirical data confirm the lack of coordination, sufficient resources and effective knowledge transfer among stakeholders in urban freight transport.

Beyond ‘predict and provide’: UK transport, the growth paradigm and climate change

- Transport Policy---2014---Murray Goulden,Tim Ryley,Robert Dingwall

Thirty years ago, Adams (1981) depicted a future UK where everyone was a millionaire lorry driver, simply by extrapolating from contemporary official transport growth assumptions. These assumptions underpinned the ‘predict and provide’ approach which then characterised transport planning. Twenty years later, the New Deal for Transport White Paper (1998) abandoned ‘predict and provide’ as unsustainable. This paper argues that the same growth assumptions that Adams took to their logical (absurd) conclusion have re-emerged to define both transport and the drivers of transport demand. While non-aviation transport is supposed to be carbon-neutral by 2050, the implied reductions in emissions rely on an absolute decoupling of transport demand and its drivers for which there is no evidence in current planning. Targets rely on optimistic, narrowly framed technology forecasts and behaviour change assumptions which appear highly unlikely in the present socio-political climate. Moreover, such is the cost of mitigating these tensions between economic growth and other concerns, it is argued that the targeted outcomes of current policy are as undesirable as they are unlikely. The paper concludes by calling for a transport policy which considers mobility in an integrated, holistic fashion, rather than merely as a dimension of economic growth.

Financing new metros—The Beijing metro financing sustainability study

- Transport Policy---2014---Zheng Chang

China invested intensively in metro system to accommodate its urbanization since 2000. This research seeks to

understand how local governments finance these investments and whether the current financing strategies are likely sustainable for many years to come. This study discusses the nature of metro financing mechanism and uses Beijing s metro system as a case to examine the financing sustainability. By calculation, Beijing government faces immediate financial challenges in 2012 and 2013 as the metro expenses are around 10% of government s revenue. The financing sustainability is largely influenced by the local land leasing revenue. If property values collapse, financial sustainability could be a serious problem in the future.

Implication of pedestrians□ stated preference of certain attributes of crosswalks

- Transport Policy---2014---David A. Mfinanga

Pedestrians in Tanzania face many problems when crossing roads, including safety and convenience, which discourage the use of this important mode of transport. This study was aimed at determining pedestrians preferences of environmental and infrastructural attributes of crosswalks in order to improve the utility of the facilities and mode by promoting elements preferred by the majority of pedestrians. The survey involved interviewing pedestrians and the results indicated that the majority prefer to cross on level ground and medians, with females and younger pedestrians more willing to use non-level crossings. The most preferred viable options for controlling vehicles speed and the crosswalk were humps on either side of the crossing and the use of signals (especially on higher class roads), respectively. The majority considered safety to be the most desirable improvement with females and those on utilitarian trips most in support. Also, pedestrians preference of attributes in relation to different road classes highly agrees with current design principles. It was found that gender, age of pedestrian, purpose of trip and road class affect pedestrian preference and if considered in the planning and design of crossing facilities, they can result in improved safety, convenience and use of this Non-Motorised Transport (NMT) mode.

Daily mobility patterns of an urban population and their relationship to overweight and obesity

- Transport Policy---2014---Marta Olabarria,Katherine Pérez,Elena Santamariña-Rubio,Ana M Novoa

General mobility is a daily behaviour that could result in a positive contribution to overall physical activity through walking for transportation or a negative contribution resulting in sedentarism caused by driving. The objective of this study is to examine the relationship between mobility and overweight/obesity in an urban context, while considering physical activity in leisure time, socioeconomic and lifestyle characteristics, and individual health status.

The analysis of transit-oriented development (TOD) in Washington, D.C. and Baltimore metropolitan areas

- Transport Policy---2014---Arefeh Nasri,Lei Zhang

Transit-oriented development (TOD) is mainly focused on providing transit service along with high density and mixed-use development to encourage transit ridership. The Maryland Department of Transportation defines TOD as “a place of relatively higher density that includes a mixture of residential, employment, shopping and civic uses and types located within an easy walk of a bus or rail transit center” (Transit-Oriented Development Task Force, Maryland Department of Transportation, 2000). TOD is a fast-growing development strategy and is becoming more popular among city planners, land developers, and government officials for its potential to increase transit ridership and reduce VMT by shortening trips. However, there has not been enough research done on how successful TODs are in providing sustainable transportation modes, which will eventually result in less energy consumption, environmental pollution, and traffic congestion in urban areas. The present study tries to understand how travel behavior is different for TOD residents in the two metropolitan areas of Washington, D.C. and Baltimore. This is done specifically by examining the changes in vehicle miles traveled (VMT) in order to

analyze the effectiveness of TODs on encouraging driving less and switching to transit, walking, biking, and other sustainable modes of transportation.

'No bicycle lanes!' Shouted the cyclists. A controversial bicycle project in Curitiba, Brazil

- Transport Policy---2014---Fábio Duarte,Mario Procopiuck,Kelli Fujioka

After many years without any substantial improvement in bicycle infrastructure in Curitiba, a 4-km Leisure Bicycle Lane was implemented in the central area of the city in 2011. The project was one of several that City Hall hurriedly implemented following pressure from bike activists. On the Sunday the project was launched, more than three thousand cyclists are estimated to have used the bicycle lane; of these, 300 cycled alongside the lane, outside it, against it. They made the front pages of newspapers, disrupted the sociotechnical framework of bicycle policy in the city and put bicycles on the political agenda of the municipal elections. This paper discusses why, in a city renowned worldwide for its public transportation system and for having more than a 100km of bicycle lanes, a bicycle project failed after being sabotaged by cyclists and was definitively abandoned in February 2013. Based on interviews with key actors, including public officials, journalists, and bicycle activists, this paper concludes that the failed bicycle lane unveils the profound and urgent social and political dimensions embedded in what had been presented by municipal authorities as a neutral technical solution.

Road freight transport decoupling: A comparative analysis between the United Kingdom and Spain

- Transport Policy---2014---Ana Alises,Jose Manuel Vassallo,Andrés Felipe Guzmán

Economic growth has traditionally been linked to road freight transport demand, leading to a steady rise in social and environmental impacts. Concern about this problem has caused the EU to promote a decoupling strategy aimed at boosting sustainable development in European countries by improving the efficiency of transport systems without curbing economic growth. Over the last few years empirical evidence in some countries such as the United Kingdom has shown an increase in GDP while the volume of road freight traffic has remained stable or even decreased. This paper compares recent decoupling trends by analyzing the evolution of road tonne-kms/GDP relationship in the United Kingdom and Spain from 1999 to 2007. This comparison seeks to identify the main differences and key drivers of decoupling in both countries. We first provide an overview of the divergences between both economic structures and levels of road transport intensity. Then we conduct a decomposition analysis in order to identify the variables that explain the evolution of truck traffic per unit of GDP in each country. The results show that the increasing share of services in GDP has substantially contributed to decreasing road transport demand in both cases. Changes in road transport intensity due to improvements in logistic and supply chain management have been more successful in the UK than in Spain.

Work-related road safety: Case study of British Telecommunications (BT)

- Transport Policy---2014---David Wallington,Will Murray,Phil Darby,Robert Raeside,Stephen Ison

Safety is a key issue for transport policy globally. Work-related travel has a significant impact on both road and occupational safety. Implementing a long term, sustainable work-related road safety program is a complex process requiring careful management decision making. Despite an increasing interest in research, policy and practice, there remain few published studies of organisations that have effectively managed their travel risks. The aim of this paper is to review and evaluate the outcomes of a driver risk assessment, monitoring and improvement program undertaken by British Telecommunications throughout its UK operations. The material presented is based on a detailed case study of the policies, procedures and performance monitoring implemented to manage the road safety risks of approximately 95,000 workers over more than 10 years. From

a review of processes and outcomes, a good practice data-led systems-based approach is identified, focusing on occupational health and safety principles, the Haddon Matrix, risk assessment and evaluation. The case, which has seen a halving of the company s collision rate and costs, provides access to large insurance claims and other data sets over a long term period. A number of potential lessons for researchers, policy makers and practitioners are identified relating to issues such as data, management, tools, frameworks and further opportunities to focus on improving both road and worker safety.

Explanatory and prediction power of two macro models. An application to van-involved accidents in Spain

- Transport Policy---2014---Bahar Dadashova,Blanca Ramírez Arenas,José McWilliams Mira,Francisco Izquierdo Aparicio

The figures representing road safety in Spain have substantially improved during the last decade. However, the severity indicators concerning vans have not improved as favorably as those of other types of vehicles, such as passenger cars and heavy freight transport vehicles. This study is intended to analyze the main factors explaining van accident behavior and to get a further insight into dynamic macro models for road accidents. For this purpose we are using four time series related to the frequency and severity of van accidents on Spanish roads and two types of methodologies applied in the study of traffic accidents: linear regression with Box–Cox transformed variables and autoregressive errors (DRAG), and an unobserved components model (UCM). The four response time series modeled are the number of fatal accidents, the number of accidents with seriously injured victims, the number of fatalities and the number of seriously injured victims. Since the choice of the appropriate macro model for the analysis of road traffic accidents is not a trivial matter, we are considering multiple factors such as goodness of fit and interpretation, as well as the prediction accuracy in order to choose the best model. Overall, the final results make sense and agree with the literature as far as the elasticities and coefficient signs are concerned. It was found that the DRAG-type model yields slightly better predictions for all four models compared to UCM. With these macroeconomic models, the effect of some influential factors (fleet, drivers, exposure variables, economic factors, as well as legislative actions) can be addressed. Estimating the effect of the vigilance and surveillance actions can help safety authorities in their policy evaluation and in the allocation of resources.

Policies for synchronization in the transport–land-use system

- Transport Policy---2014---Bert van Wee,Wendy Bohte,Eric Molin,Theo Arentze,Feixiong Liao

This paper presents an overview of options for synchronization in the transport and land-use system. We distinguish between synchronizing (a) transport networks, (b) activity locations, (c) transport networks and activity locations, and (d) ICT-based decoupling of activities from time and/or locations. Synchronizations in both time and space apply to these four forms of synchronizing, resulting in eight synchronization options. These eight synchronization options were then linked to different categories of policy options: (a) regulation, (b) pricing, (c) land use planning (d) infrastructure planning, (e) specific public transport policies, (f) marketing and communication, and (g) time related policies. We explain the relevance of these policy options for synchronization. Next we apply our structured overview to a case study, the redevelopment of the Rotterdam Soccer stadion of Feyenoord. Finally we discuss the relevance of Cost-Benefit Analysis and Multi-Criteria-Analysis for the evaluation of policy options, concluding that CBA is the preferred method of evaluation in most but not all cases.

Willingness to pay price for tolls and on-board units for short-distance freeway users who normally avoid toll boots

- Transport Policy---2014---Rong-Chang Jou,Guei-Lang Huang

This study explored the willingness to pay price for

tolls and on-board units (OBUs) for short-distance freeway users who did not pass through toll stations and further explored the willingness to pay price for different user groups. Those users would be legally obliged to bear the brunt of freeway costs instead of avoiding the payment of any out-of-pocket costs. As expected, the implementation of ETC has not been successful because of the travel patterns of freeway users. The spike model was adopted in this study to minimise estimation errors caused by users who were unwilling to pay. The estimation results revealed that compared with other user groups, short-distance freeway users who did not pass through toll stations were less willing to pay for an OBU. In addition, the willingness to pay price for tolls increased with travel distance. In addition, this study demonstrated that short-distance freeway users who did not pass through toll stations evinced low levels of willingness to pay due to various factors, such as "low freeway usage rate", "trips that occurred during off-peak hours", and "short travel time".

Understanding the travel experience and its impact on attitudes, emotions and loyalty towards the transportation provider–A quantitative study with mid-distance bus trips

- Transport Policy---2014---Rui Carreira,Lia Patrício,Renato Natal Jorge,Chris Magee

Enhancing the travel experience has become a crucial consideration for transportation companies to promote differentiation and customer loyalty. Therefore, transport planners, providers and manufacturers in general are becoming aware of the significance of understanding the passenger experience better, in order to improve transit policies, management and vehicles. The holistic perspective of the travel experience is conceptualized as involving: (1) a thorough set of passenger internal responses (e.g. cognitive and emotional) that are driven by experience factors, some of which are (2) aspects that are not in complete control of the transportation provider, such as waiting areas or the social environment, during (3) all the moments before, throughout and after the trip. Although transportation research has studied the different aspects of transportation quality, empirical studies with such a broad approach to the travel experience and its impact on loyalty are still scarce.

A survey of Demand Responsive Transport in Great Britain

- Transport Policy---2014---Lisa Davison,Marcus Enoch,Tim Ryley,Mohammed Quddus,Chao Wang

Ever since the 1970s, Demand Responsive Transport (DRT) has been promoted as a transport solution in circumstances where more traditional services are not economically viable, although so far a range of barriers has prevented its widespread adoption. More recently, new developments in operational and vehicle technology, coupled with significant cuts to public transport subsidy budgets, promote a willingness to explore 'institutionally challenging' options such as integrating transport provision across a range of different sectors. This has once more pushed the DRT concept forward as a possible option for saving money whilst retaining opportunities for accessibility.

The effect of road pricing on traffic composition: Evidence from a natural experiment in Milan, Italy

- Transport Policy---2014---Marco Percoco

This paper aims to estimate the effect of road pricing on the composition of traffic. By considering the case of Milan, where a charge to enter the city centre was introduced in 2008, and by relying on an unexpected and temporary suspension of the tax, we analyse the effect of the policy on flows of vehicles classified by type of engine. We have found that a road pricing scheme shifted users from Euro 0–3 vehicles (i.e., those vehicles particularly polluting according to the European Emission Standards classification and produced before 2000–2001) to liquefied petroleum gas, bi-fuel and hybrid vehicles. However, the environmental benefits of the policy were limited by a substantial increase in the usage of motorbikes. This evidence calls for a consideration of the behavioural reactions of road

users when making ex ante evaluations of the social profitability of road pricing schemes.

Using cost benefit analysis as a learning process: identifying interventions for improving communication and trust

- Transport Policy---2014---Els Beukers,Luca Bertolini,Marco Te Brömmelstroet

Integrated transportation plans require assessment approaches that can adequately support their multi-dimensional, context-specific needs. The suitability of cost benefit analysis (CBA) for answering this need has been studied in recent research: an analysis of participant perceptions in the Netherlands showed several problematic process issues when assessing integrated transportation plans with CBA (Beukers et al., 2012). CBA was perceived by the participants as a final test, in contrast to the desired outcome of using CBA as a learning tool to optimize the plans. Furthermore, the two main groups of participants (plan owners and evaluators) appeared to hold different and sometimes clashing rationales. This clash was expressed through lack of communication and mutual trust.

National transportation planning: Lessons from the U.S. Interstate Highways

- Transport Policy---2014---Marlon Boarnet

As developing countries rapidly adopt the automobile, questions of how they should build transportation institutions and policies loom large. This paper interprets from the U.S. experience with national highway construction, drawing several lessons that are pertinent both in developing and developed countries. In the U.S., the 1956 Interstate Highway Act codified a national road building program with centralized, federal leadership, financed by fuel taxes and hence designed to serve motorists, with little appreciation for the resulting impacts on cities and metropolitan areas. The U.S. experience illustrates that national transportation planning is best conceived as two systems – one inter-metropolitan and one intra-metropolitan – and that the institutions, goals, methods, and financing instruments for those two systems should differ. The U.S. institutions and policies were well suited to building a national, inter-metropolitan ground transport system, but are ill suited to the era of maintenance, externality management, and urban transportation that followed.

Efficiency and productivity changes for Peruvian and Chilean ports terminals: A parametric distance functions approach

- Transport Policy---2014---Víctor Chang,Beatriz Tovar

The aim of this paper is to assess and compare the efficiency and performance of Peruvian and Chilean ports terminals. In order to do so we estimate total factor productivity (TFP) growth by applying Stochastic Frontier Analysis (SFA). A distance function was used on a sample of 14 ports terminals observed over the period 2004–2010 to evaluate their efficiency levels and to decompose productivity into technical efficiency, scale efficiency and technical change. We also decompose technical change – also known as technical progress or technological change – into several components. We find that the terminals improved their technical efficiency during the period of analysis, with Chilean terminals being more efficient than the Peruvians. This was influenced mainly by increased agility in the process of reforms implemented in Chile compared to Peru, which has allowed greater investment in infrastructure and technology in recent years. On average, TFP in the Chilean terminals declined while in Peruvian terminals it increased. The component “change in pure technical efficiency" and “scale changes “ contributed positively to improvements in productivity in both countries, but the technological change component decreased. The latter result is related to the international financial crisis of 2008, which had a larger impact on the terminals of Chile, and is similar to results reported by other authors when analyzing TFP evolution in a period which included an international crisis. Moreover, the decomposition of the technological change shows that it was biased toward the capital input. These results have regulatory and economic implications, which are

outlined.

Multi-entity perspective transportation infrastructure investment decision making

- Transport Policy---2013---Sabyasachee Mishra,Snehamay Khasnabis,Subrat Swain

Investment in new large transportation infrastructure is capital-intensive and irreversible in nature. Private sector participation in infrastructure investment has gained popularity in recent times because of scarcity of resources at the public sector, and because of the ability of the private sector to build, operate, maintain such facilities, and share future uncertainties. In such cases, there are multiple entities each with different objectives in the project. Traditional techniques used to determine feasibility of such projects and do not consider two critical elements. These are the need (1) to identify major entities involved in these projects and their individual objectives, and (2) the importance of analyzing measures of effectiveness of each entity in a multi-objective context. A framework is proposed to address these issues along with a set of relaxation policies to reflect the nature and level of participation by the entities.

Evaluating the impact of bus network planning changes in Sydney, Australia

- Transport Policy---2013---Corinne Mulley,Chinh Ho

The paper analyses the impact of the bus reform package implemented in Sydney, Australia from 2005 onwards, focusing on the impact of bus network planning changes. The network planning changes included the concentration of services into corridors, more direct services, and greater network connectivity. Bus supply and patronage data are analysed for the 15 metropolitan bus contract regions in Sydney to test whether network planning changes increased patronage and whether the trade-offs in service planning had greater benefits than losses. Results show that changes in bus boardings are mainly driven by changes in km supplied, and that there are significant differences between the contract regions operated by State Transit Authority and private operators. The network reviews have a significant impact on boardings in several contract regions over and above the additional km supplied. The paper provides input into the policy evaluation surrounding the impact of network planning on supply and demand in the metropolitan area of Sydney.

International comparison of the relationship between urban structure and the service level of urban public transportation—A comprehensive analysis in local cities in Japan, France and Germany

- Transport Policy---2013---Ryoji Matsunaka,Tetsuharu Oba,Dai Nakagawa,Motoya Nagao,Justin Nawrocki

It is said that one of the most important keys to realizing a compact city is to develop very convenient urban public transportation and attractive pedestrian spaces, which bring liveliness to the city center. However, existing data is incomplete and not clear enough to clarify the relationship between the development of very convenient urban public transportation systems and compact urban structure.

Analysis of influence of fuel price on individual activity-travel time expenditure

- Transport Policy---2013---Dujuan Yang,Harry Timmermans

Fluctuation in fuel prices may lead to adaptations in people′ s activity-travel behavior. Compared to other triggers of behavioral change, the impact of fuel prices has received only scant attention in the literature, especially with respect to short-run change in activity-travel behavior. To gain insight into this issue, travel diaries of a representative sample of individuals in the Netherlands who use the car for daily travel were analyzed. Seemingly unrelated regression analysis was used to examine the effects of fuel price on people′ s travel time expenditures for different kinds of activities, differentiating between weekdays and weekends. The results indicate that fuel price is negatively correlated

with travel time expenditures by car, and that this relationship differs between weekdays and weekends. When faced with increasing fuel prices, people seem to prefer reducing travel time expenditure by car for compulsory trips more than for leisure trips.

What drives range preferences in electric vehicle users?

- Transport Policy---2013---Thomas Franke,Josef F. Krems

While research has shown that limited-range electric vehicles (EVs) satisfy the range needs of a sizeable share of the driving population, car buyers seem to prefer vehicles with high available range. The objective of the present research was to advance understanding of the factors that influence the range preferences of potential EV customers who had the opportunity to test an EV. Data from 79 participants who had driven an EV for 3 months was assessed in a field study setting. Range preferences of those users were found to be substantially higher than their average range needs. Regression analyses indicated that higher average range needs, higher range of the driver′ s familiar combustion vehicle (CV), and greater experienced range anxiety were related to higher range preferences. Furthermore, we found that range preferences decreased over the first 3 months of EV use. Finally, indicators of average range needs were more strongly associated with range preferences as EV experience increased. Thus, only customers with EV experience seem to rely on accurate estimates of their range needs when constructing their range preferences. Implications for strategies aimed at enhancing customer appraisal of limited range mobility and determining optimal EV range are discussed.

Road transport externalities in Mexico: Estimates and international comparisons

- Transport Policy---2013---Jordi Cravioto,Eiji Yamasue,Hideyuki Okumura,Keiichi N. Ishihara

In Mexico, as in many developing countries, no monetary estimates of road transport externalities exist. The abundant empirical evidence from the developed world appears to show such research reaching maturity. Yet, several barriers to deriving basic estimates among developing countries persist. In this study, we addressed such difficulties for the Mexican context, and by pooling the available data and using well-established methods, we calculated six categories of estimates. The results showed that road transport externalities amount to at least 59.42 (44.8–73.97) billion US dollars per year or 6.24% (4.71–7.77%) of GDP. By component, accidents represented the largest share (28%), followed by congestion (22%), greenhouse gases (21%), air pollution (13%), infrastructure (7%), and noise (9%). By vehicle type, cars had the highest costs per pkm, and buses had the highest costs per vkm. The costs of road transport externalities in Mexico ranked between those of developed and developing regions, but we found some notable differences when comparing the impacts per pkm of the four largest externalities. We discuss such differences and the policy implications of our findings. We also provide suggestions for future research.

Taste heterogeneity and latent preferences in the choice behaviour of freight transport operators

- Transport Policy---2013---Angela Bergantino,Michel Bierlaire,Mario Catalano,Marco Migliore,Salvatore Amoroso

In this paper we show that individual attitudes of road carriers and their latent preferences toward specific freight service attributes do play a role in determining their mode choices. Specifically, we contribute to the empirical literature on freight agents' mode choice by exploring the role of the "perceived importance" of the most relevant service dimensions in determining the attractiveness of two alternatives to "all-road" transport: logistics terminals and road–sea intermodal services. This is carried out through a revealed/stated preference experiment and a mixture of logit framework. Our results support the hypothesis that operators' attitudes towards time, punctuality and risk of loss/damage can significantly enhance the explanatory power of the choice model, thus providing useful information for policy-makers to improve the

regional freight mobility system. The "all road" option is preferred by hauliers concerned with the risk of loss/damage but it is, instead, disregarded by those assigning great relevance to punctuality. We also found substantial heterogeneity among respondents: larger firms tend to assign a lower value to time but a higher importance to the risk of loss/damage, especially if shipments are not frequent. In addition, the relevance of service reliability is higher the reliability greater the load size. Finally, we find that the nature of the transported goods significantly influences the choices of operators: when consigning perishables, hauliers tend to prefer the flexibility of a road-related mode. Any policy aiming at fostering the growth of intermodal transport and logistics and to remove obstacles to implementing rationalisation policies in the field of freight transport should take account of these elements.

Evolution of outbound charter operations in Japan post-deregulation

- Transport Policy---2013---Chuntao Wu,Yoshitsugu Hayashi

Since 2007, Japan has deregulated charter operations to promote outbound tourism. This study investigated changes since deregulation in the spatial patterns of charter departure airports and traffic volume to major destinations. Furthermore, this study analyzed the effects of new entrant airlines on charter network evolution. For the purposes of this paper, charter supply data has been analyzed and case studies of a short-haul route from Japan to Korea, a medium-haul route to Pacific resorts, and a long-haul route to Europe have been conducted. The results suggest that deregulation has resulted in a concentration of charter departures at airports located in the Tokyo metropolitan area, and has had a variety of effects on charter traffic to major destinations. In particular, during the process of deregulation, the role of airlines has been shifted from carriers offering charter services under the requirement of tour operators to a market leader which controls the charter flows.

Evaluating sustainable transport strategies for the counties of Taiwan based on their degree of urbanization

- Transport Policy---2013---Tzay-An Shiau

The purpose of this study was to evaluate sustainable transport strategies for the 23 counties of Taiwan. The 23 counties were grouped into four clusters based on their degree of urbanization. Subsequently, a hybrid approach based on the Analytic Hierarchy Process (AHP) and the Dempster–Shafer theory (DST) was used to deal with incomplete information in prioritizing the strategies. The results showed that the focuses of decision makers in each county were different. For the counties in Cluster 1 (highly urbanized counties), the three top-ranked strategies were: improving the accessibility of non-motorized modes, improving Demand Response Transportation System (DRTS) services, and improving accessibility for elderly and handicapped persons. For the counties in Cluster 2 (rapidly developing counties), and Cluster 3 (developing counties with distinct urban and rural patterns), the three top-ranked strategies were: improving transit services, improving the accessibility of non-motorized modes, and improving DRTS services. For the counties in Cluster 4 (under developed counties), the focuses of decision makers were significantly different from the focuses of decision makers in other counties. The three top-ranked strategies were: promoting the use of electric motorcycles, improving DRTS services, and improving the accessibility of non-motorized modes. The analytical results of this study justified the application of the principle: tailor measures to suit local circumstances.

Parking practices and policies under rapid motorization: The case of China

- Transport Policy---2013---Rui Wang,Quan Yuan

With the rapid motorization in China, parking has become increasingly difficult and costly for automobile users. However, the effects of parking on the society go far beyond vehicle owners' costs. To inform decision makers in China and cities in similar motorizing societies, this study describes the market and

policy trends of automobile parking in Chinese cities. Available data show that the gap between supply and demand in parking has enlarged, while most city governments have little experience and are institutionally unprepared for the proper planning, regulation, and management of parking. International experience and the Chinese problems call for a reform in urban parking management in order to promote sustainable urban transportation and maximize social welfare. This paper offers policy and planning suggestions regarding on- and off-street parking.

A strategic approach for improving rural air transport in the United States

- Transport Policy---2013---Tony Grubesic,Alan T. Murray,Timothy C. Matisziw

Commercial air transport in rural and remote areas of the United States has a long history. After the Airline Deregulation Act of 1978, carriers were free to serve any cities and routes they wished. In anticipation of carriers gravitating toward large urban markets, the Essential Air Service (EAS) program was created to maintain commercial service in smaller and more geographically isolated locales throughout the United States. EAS has been continuously funded since 1978, but has recently attracted the attention of many fiscal hawks. Serving only six passengers per flight, on average, with costs approaching $200 million, there are long held concerns that EAS is a poor use of federal monies. The purpose of this paper is to highlight costs of the EAS program and identify systemic inefficiencies in the allocation of EAS resources. We show that service redundancies exist, with EAS markets being cannibalized by both peer EAS airports and other commercial alternatives. Further, we highlight strategic consolidation possibilities for EAS allocations and services, facilitating federal appropriations reduction without sacrificing existing geographic service needs.

The effect of parking charges and time limit to car usage and parking behaviour

- Transport Policy---2013---Jelena Simićević,Smiljan Vukanović,Nada Milosavljević

Parking policies are considered a powerful tool for solving parking problems as well as problems of the transportation system in general (traffic congestion, modal split, etc.). To define parking policy properly, its effects must be estimated and predicted. In this paper, based on stated preference data and using a logistic regression, a model to predict the effects of introducing or changing the parking price and time limitation was developed. The results show that parking prices affect car usage, while time limitations determine the type of parking used (on-street or off-street). A positive finding for policy makers is that users with work are more sensitive to parking measures than are other users, so parking measures can be used to manage user categories. Although there is a concern that parking policy can jeopardise the attractiveness and efficiency of a zone, the results show that a very small number of users would give up travelling into the zone.

Tradable mobility permits in roadway capacity allocation: Review and appraisal

- Transport Policy---2013---Wenbo Fan,Xinguo Jiang

The paper presents a comprehensive review on a variety of tradable mobility permits (TMP) schemes that are proposed as an innovative way of allocating roadway capacity. The study develops a comparative analysis and a qualitative evaluation to identify the similarities and variations among various TMP schemes. The paper summarizes both the strength and the weakness of different TMP schemes with respect to congestion reduction, market mechanism, and equity issues. A comparison between three typical TMP schemes and congestion pricing (CP) yields the following main conclusions: (i) there is no general superiority between the TMP schemes and the CP; (ii) various TMP schemes are unlikely to be combined into a general one, and should be separately designed for the particular objective and application condition; and (iii) different TMP schemes have different parts to be emphasized in the system design. The paper points out the implications for designs of pragmatic TMP schemes and the future research.

Practices of using weigh-in-motion technology for truck weight regulation in China

- Transport Policy---2013---Wen Hang,Yuanchang Xie,Jie He

Trucks exceeding legal axle and gross vehicle weight limits can bring severe damage to infrastructure and increase the risk of traffic crashes. It is therefore important to ensure that freight carriers comply with weight regulations. This paper provides a comprehensive review of how weigh-in-motion (WIM) technology has been used to improve the truck weight regulation in China. In particular, a toll-by-weight method is introduced for trucks using toll roads. Compared to the conventional vehicle class based toll structure, the toll-by-weight method establishes a fair fee structure that prevents overloaded trucks from taking advantage of non-overloaded trucks. It also allows freight carriers the flexibility of moderate overloading by paying higher toll rates. This paper further proposes a mechanism of integrating toll-by-weight with effective weight enforcement for truck weight regulations. It encourages overloaded trucks to use toll roads instead of vulnerable non-toll roads, and helps to generate additional much needed revenues by local governments for highway construction, maintenance, and truck weight enforcement. In addition, technical and managerial problems affecting the applications of WIM are pointed out in this paper. Finally, perspectives on future WIM development and adaptions of other advanced technologies for truck weight regulations are presented.

Public–private partnerships in China: A case of the Beijing No.4 Metro line

- Transport Policy---2013---Zheng Chang

Through a case study on Beijing's No. 4 Metro line, this paper illustrates benefits, costs, opportunities and risks in public–private partnerships (PPP) in China. It describes the process to land a concession agreement; demonstrates the consequences for revenue and costs from using a private entrepreneur; and estimates the benefits to the public sector. By using a PPP model, the public sector may save up to 31% of its initial investment and 9.4% of total expenses during the concession. The private investor may earn a profit, but bears a risk due to absence of the rule of law.

The role of intermodal transport in port regionalisation

- Transport Policy---2013---Jason Monios,Gordon Wilmsmeier

The port regionalisation concept extended earlier spatial models of port development with a focus on institutional relationships governing the complexity of inland connections. The concept accounts for the fact that modern ports operate in an increasingly complex and sophisticated transport and logistics environment, embedded within multi-scalar planning regimes. This paper addresses the role of intermodal transport in port regionalisation by reviewing the literature on the three core aspects of the concept: intermodal terminals, inland logistics and collective action problems.

Do air quality alerts reduce traffic? An analysis of traffic data from the Salt Lake City metropolitan area, Utah, USA

- Transport Policy---2013---Calvin P. Tribby,Harvey J. Miller,Ying Song,Ken R. Smith

Air quality alert programs are a form of "soft" or persuasion-based policy that is common in metropolitan areas that do not meet federal air quality standards in the United States. These programs disseminate daily air quality conditions, with ordinal ratings describing the health implications and suggesting reductions in automobile use and other actions that contribute to the poor air quality. Evidence regarding the effectiveness of air quality alert programs on driving is less encouraging than other soft policies to discourage driving, with many studies reporting small or no reductions in traffic. This study examines evidence for the effectiveness of air quality alert systems in reducing traffic over a 10-year period in Salt Lake and Davis counties, Utah, USA, a metropolitan area that often does not meet US federal air quality standards for both ground-level ozone in the summer and PM 2.5 pollution in

the winter. We find that while air quality alerts have some effectiveness for reducing traffic in the center city, these small reductions are exceeded by larger increases in traffic near the edge of the metropolitan area. These effects are stronger during the PM 2.5 alert season than during the ozone alert season. These increases can be explained as discretionary trips by individuals escaping poor air quality by driving to the mountains. A policy implication is that soft policies alone may not be effective at reducing driving behavior when the public health implication of the message conflicts with its public responsibility implication.

Curb parking pricing for local residents: An exploration in New York City based on willingness to pay

- Transport Policy---2013---Zhan Guo,Simon McDonnell

This paper investigates the feasibility of charging residents for on-street parking in dense urban neighborhoods as a way to clear parking supply and demand. We elicited residents' willingness to pay (WTP) for a hypothetical parking permit program in New York City using a payment card approach, and estimate the key determinants through a Double Hurdle model. A little more than half of respondents (52.5%) are willing to pay for an average $408 per year, even though the revenue is not specified to be return back to the neighborhoods. Pricing becomes more acceptable in neighborhoods where the major parking problem is shortage and crowding caused mainly by local residents instead of parking intrusion by non-residents. The WTP value varies by resident car ownership and home parking types. The results suggest that curb parking pricing for local residents might be both economically and politically feasible in certain dense urban neighborhoods.

Methodology for effective operation of road management equipment

- Transport Policy---2013---Choong Heon Yang,Amelia C. Regan

This paper presents a methodology for effective operation of road management equipment. The primary goal of this research is to aid public agencies with day-to-day road management within limited financial resources. In order to demonstrate the value of this approach, we present a case study using data collected for 18 regional offices of the South Korean Ministry of Land, Transport and Maritime Affairs. Road agencies want to know whether they currently have sufficient equipment to handle work demands, but this is difficult to predict. Thus, a methodology was developed to employ historical data on road management equipment, and two evaluation indicators were identified. Using our method, equipment can be classified into four groups: (1) frequently used and important, (2) relatively less used and important, (3) barely used and low importance, and (4) frequently used and low importance. In our case study we show that these can be used by regional offices to determine either to lend or borrow among offices or to consider purchase for both long and short term use. While our study focuses on a specific case study, the overall methodology can easily be applied by similar decision makers in other countries.

Influential constructs, mediating effects, and moderating effects on operations performance of high speed rail from passenger perspective

- Transport Policy---2013---Jui-Sheng Chou,Chun-Pin Yeh

In a competitive society with diverse consumer needs, service quality, customer satisfaction, customer loyalty, and corporate image determine the sustainability of service-oriented industries. However, management and leadership, employee satisfaction, and employee loyalty also influence company growth and profit. This study applied a theoretical model and findings from related literature to investigate the constructs and observed indices for measuring operations performance in the high-speed railway (HSR) from the passenger perspective. Cause and effect relationships between constructs and operations performance were quantified, and structural equation modeling was used to verify

the hypothetical relationships proposed in this study in order to identify constructs, to measure the effects of indices on the constructs, and to measure mediating and moderating effects between constructs. The analytical results showed that leadership and employee cognition have a greater influence on long-term profitability compared to service quality, customer recognition, and corporate image. Notably, employee cognition mediates the effect of leadership on service quality. Further, mediating and moderating effects of corporate image and customer recognition significantly affect operations performance. By using the confirmatory findings of this study as a policy making reference and for clarifying resource use, the HSR can enhance passenger perceptions. Improving the identified evaluation indicators can increase passenger loyalty and improve operating performance in the high-speed rail service.

New technologies for the old: Potential implications of living in later life for travel demand

- Transport Policy---2013---Christa Hubers,Glenn Lyons

Assistive technologies for older people, such as personal tracking devices and community alarms, can facilitate living independently for longer. Where and how older people live will affect patterns of travel associated with their lifestyles and needs. They may remain in their own homes, those of relatives or in residential care homes. They may make minimal or extensive use of technologies. As such, assistive technologies represent an example of technological developments and their social uptake outside the field of transport. Such developments may, nevertheless, have an indirect impact on travel demand and one which may be quite substantial. This paper aims, through a series of expert interviews, to examine: (i) to what extent the mobility effects of technological developments (outside transport) are being considered within the transport sector; (ii) how important or relevant it is for such consideration to be given; and (iii) ways in which such impacts can be accounted for in travel demand analysis and policy decisions. What emerges is that such indirect impacts are considered very important but rarely are they examined. The transport experts interviewed noted various ways of increasing the integration between transport and other domains. Several saw more emphasis on these issues in the education of transport professionals as an important starting point. The paper concludes with the case for using scenario planning as a means to emphasise how the living arrangements for older people, facilitated through assistive technologies, could produce distinct and significant consequences for travel demand.

Coping with congestion: Understanding the role of simultaneous transportation demand management policies on commuters

- Transport Policy---2013---Meeghat Habibian,Mohammad Kermanshah

This paper examines the role of transportation demand management (TDM) policies on commuters' mode choice in the city of Tehran. The analysis is based on the results of a stated preferences survey developed through the design of experiments approach. Five policies covering increasing parking cost, increasing fuel cost, cordon pricing, transit time reduction, and transit access improvement are assessed in order to study their impact on commuters' consideration of six modes of transportation to travel to work. A multinomial logit model was developed for the 366 commuters who regularly commute to their workplace in the center of the city. In addition to a number of commuting and contextual variables, the model shows that the single policies main effect and multiple policies interactions are significant in affecting commuters' mode choice. The marginal effects of policies are presented, and simultaneous effects of the policies on car usage variations are provided.

Examining the impact of carbon price changes under a personalised carbon trading scheme for transport

- Transport Policy---2013---David McNamara,Brian Caulfield

The research presented in this paper investigates the welfare effects of a Personal Carbon Trading Scheme (PCTS). A consumer surplus analysis is used to determine the welfare loss to individuals who undertake travel-to-work trips in the Dublin and the Western Border Region (WBR) of Ireland. Three CO2 price scenarios are analysed: a low, medium and high carbon price. These results are compared at an aggregate level for each electoral division to existing measures of deprivation derived from the Census 2006 to determine if electoral wards designated as relatively deprived also incur the largest welfare losses. The results are also compared to the density of population in each electoral division to investigate any link between density levels and welfare changes, particularly in rural regions.

A review of the effectiveness of adult cycle training in Tower Hamlets, London

- Transport Policy---2013---Rebecca Johnson,Sam Margolis

This study provides an evaluation of the effectiveness of adult cycle training in delivering changes in cycling and physical activity levels in the London Borough of Tower Hamlets. Evaluation of the programme was conducted using self-administered questionnaires completed pre-intervention (before the first training session) and again 3 months after the first training session. Just under half of those responding to both surveys (47%) reported cycling more frequently after the training than beforehand. Statistically significant increases in the mean number of days in the last week spent cycling for at least 30min, and in the mean number of days cycled to work in the last 7 days were observed. After the training, participants cycled for longer on days on which they rode a bike than beforehand and there was a significant increase in overall physical activity levels amongst participants post-intervention. In conclusion, cycle training can be seen to be a useful strategy in encouraging people to cycle more often, and for longer, however more work is necessary to establish the longevity of this and the effect of other factors.

Carsharing in a university setting: Impacts on vehicle ownership, parking demand, and mobility in Ithaca, NY

- Transport Policy---2013---Timon H. Stasko,Andrew B. Buck,H. Oliver Gao

Carsharing is growing rapidly in popularity, often backed by government and private partners, such as universities and developers. While reduced parking demand is frequently cited as a reason to promote carsharing, virtually no quantitative analysis has been done on the impact of carsharing on parking demand. Instead, prior studies focus on vehicle ownership, which has an implied connection to parking demand. This paper analyzes the impact of carsharing on parking demand in a university setting (with just over 1000 carsharing users) using a member survey and parking permit sales data. Changes in parking demand are broken down by geographic area and parking type. Members report the vast majority (over 76%) of forgone vehicles would be parked in the same area as the member's household on most weekdays, nights, and weekends. Roughly 30% would be parked on the street at most times, with the percentage parked in personal driveways and garages peaking at roughly 40% on nights and weekends and dropping to 26% on weekdays. Members reported an increase in shopping trips made by car or truck (statistically significant at 1% level), leading to a small increase in parking demand at stores, but this increase was much smaller than the reductions seen elsewhere. The paper also assesses other impacts which have so far been nearly exclusively measured in relatively large cities. For example, the survey revealed a reduction of 15.3 personal vehicles for every carsharing vehicle, roughly equivalent to findings from major cities.

Standing in cost-benefit analysis of road safety measures: A case of speed enforcement vs. speed change

- Transport Policy---2013---Knut Veisten,Christian Stefan,Martin Winkelbauer

Elvik (2006) discussed the appropriateness of including the benefits that offenders get when violating traffic

laws. While concluding that these benefits could not be given standing, Elvik resorted to argumentation from normative theories outside the schools of economic theory. In this article, we present arguments for omitting violators' benefits, or lost benefits, based on normative stands within economics school of thought. By means of two examples, we illustrate the distinction between a project of increased/improved enforcement of existing speed limits, where violators' time losses should not be included – compatible with Elvik's point of view – and a project of reduced speed limits, where the time loss should be included. This clarification of standing in cost-benefit analysis of road safety measures is based on the economics school of thought, where cost-benefit analysis is regarded as a decision tool operating within social constraints and where speed limits are considered as absolute institutions.

Regional logistics land allocation policies: Stimulating spatial concentration of logistics firms

- Transport Policy---2013---Frank P. van den Heuvel,Peter de Langen,Karel H. van Donselaar,Jan C. Fransoo

Although spatial concentration of logistics firms in logistics concentration areas can be beneficial for society at large, there is not much research on the relationship between land allocation policies and logistics concentration areas. This paper analyzes land allocation policies by means of a survey conducted in the south of the Netherlands. Results show that municipalities do not actively stimulate spatial concentration of logistics firms, although both aldermen and public administration employees acknowledge that co-location of logistics firms can lead to benefits. There is a need for cooperation between municipalities, such that a regional policy can be developed, to attain the regional benefits of logistics concentration areas, while local disadvantages (like congestion and CO2 emissions) can be reduced. Respondents acknowledge the positive effects of cooperation with respect to logistics land allocation, but recognize some impediments. Municipalities that already cooperate with others are positive about the results. Hence, municipalities are advised to build partnerships, such that land allocation policies can be better aligned with the stimulation of logistics concentration areas.

Equity in transport: The distribution of transit access and connectivity among affordable housing units

- Transport Policy---2013---Timothy F. Welch

In the United States, federal agencies are required to work towards providing equal access to resources for minority and low-income populations. Access to quality public transportation is critical for mobility to many of these populations. Determining how transit service is distributed among vulnerable groups has the potential to significantly enhance policy analysis. While many measures of accessibility exist, due to the complexity of transit networks and the scale of the urban areas, limited research has been conducted on developing a tool to measure how equitable the distribution of transit access is in a region. This paper develops a comprehensive method to quantify the quality of service and accessibility at each transit node in a network, combined with an index to measure the inequity (concentration of quality service) at the micro scale. These measures are applied to the distribution of all residential housing units, a random sampling of units and U.S. Department of Housing and Urban Development subsidized units in Baltimore, Maryland; to determine if the subsidized housing programs are achieving major policy objectives of providing equitable transit access to vulnerable groups. The results show that transit connectivity and accessibility is distributed among some types of subsidized housing units more equitably than can be achieved by random sampling in the general population, but for other types, the distribution is less equitable; indicating some policies to enhance transit access among these units have not been effective. Evidence from this study suggests that developers of affordable housing and transportation planners should work together to find development locations that place more emphasis on transit locations with high connectivity rather than simply reducing

distance to any transit.

Evaluating safe routes to school events that designate days for walking and bicycling

- Transport Policy---2013---Aaron Buckley,Michael B. Lowry,Helen Brown,Benjamin Barton

This paper presents a case study evaluation of days designated for walking and bicycling as part of a Safe Routes to School program. The case study examines two elementary schools in Moscow, Idaho that annually participate in two designated days for walking and bicycling, "International Walk to School Day" in the fall and "Fill the Racks!" in the spring. Students walking or bicycling to school were counted before and after the events. For comparison, counts were also observed at a nearby school not involved with the Safe Routes to School program. Count data was collected for 8 days. Furthermore, 45 students and 17 parents were surveyed; and five parents and four community leaders were interviewed. The count data showed a significant increase in students using active modes of travel on the day of the event and a few weeks later. The interviews and surveys showed, among other things, there is strong support for the special events and most parents felt the designated days increased their child's motivation to walk to school. Many parents said the spring event prompted their child to return to walking to school after the cold winter months. Policy implications and other lessons learned are provided.

Measuring the impact of unfamiliar transit travel using a university access survey

- Transport Policy---2013---Lorelei Schmitt,Graham Currie,Alexa Delbosc

A number of campaigns, policy initiatives, and research studies target promoting travel behaviour change in an effort to reduce automobile dependency. However there is scant, if any, research about the actual experience of new travel behaviours and their potential importance. Yet research in psychology has shown first impressions to be integral to all attitude development due to a phenomenon referred to as the 'primacy effect'. However the 'primacy effect' concept has never been explored in the context of urban transit, one of the key modes targeted for individuals to use in place of cars.

A methodology for measuring the sustainability of car transport systems

- Transport Policy---2013---T.W. Smith,C.J. Axon,R.C. Darton

Measuring the sustainability of car fleets, an important task in developing transport policy, can be accomplished with an appropriate set of indicators. We applied the Process Analysis Method of sustainability assessment to generate an indicator set in a systematic and transparent way, that is consistent with a declared definition of a sustainable transport system. Our method identifies stakeholder groups, the full range of impacts across the environmental, economic and human/social domains of sustainability, and those who generate and receive those impacts. Car users are shown by the analysis to have dual roles, both as individual makers of decisions and as beneficiaries/sufferers of the impacts resulting from communal choice. Thus car users, through their experience of service quality, are a potential force for system change. Our method addresses many of the well-known flaws in measuring transport sustainability. The indicator set created is independent of national characteristics and will be useful to transport policy practitioners and sustainable mobility researchers globally.

Quantitative evaluation model of air cargo competitiveness and comparative analysis of major Asia-Pacific airports

- Transport Policy---2013---Ching-Cheng Chao,Po-Cheng Yu

This study develops a quantitative evaluation model for analyzing air cargo competitiveness of airports. First, according to a literature review and expert opinions, quantitative measures for evaluating air cargo competitiveness are derived using the Delphi method. Then the

weights and value functions of these measures are obtained through expert questionnaire surveys. Applying the value functions to the operational data of different airports yields the value of each measure. Finally, multiplying the values with their corresponding weights sheds light on the competitiveness of individual and overall measures. Comparison of major Asia-Pacific airports is made in terms of different dimensions of air cargo competitiveness. The analysis results reveal that Hong Kong is the most competitive in terms of airline transport capacity and economic development while Changi is the most competitive with respect to airport facilities and operation. As for overall air cargo competitiveness, Hong Kong ranked top, followed by Changi, Pudong, Incheon, Taoyuan, Bangkok, Narita, Jakarta, Kuala Lumpur and Manila International Airports. Findings of this study can provide airports with useful references for operation management and formulation of development strategies.

Land value capture to fund public transportation infrastructure: Examination of joint development projects' revenue yield and stability

- Transport Policy---2013---Shishir Mathur,Adam Smith

This paper examines joint development projects' ability to generate revenue for transit agencies. Using interviews, and primary and secondary text, the paper studies five joint development projects nation-wide and finds that revenue yield and stability from joint development projects vary widely. The paper argues that joint development projects benefit from supportive land use and zoning, and clear policy objectives and political direction. Finally, inflation-adjusted minimum guaranteed revenues and gross revenue sharing help enhance revenue yield and stability.

Why do immigrants drive less? Confirmations, complications, and new hypotheses from a qualitative study in New Jersey, USA

- Transport Policy---2013---Daniel G. Chatman,Nicholas J. Klein

Recent immigrants to the United States drive autos less than the US-born, with rapid increases in their ownership and use of autos over time, and a persistently lower level of auto use even when controlling for socioeconomic characteristics and time in the US. Quantitative studies have not yet explained these phenomena. Given that population growth in the US is largely dependent on immigration, understanding auto ownership and use among immigrants is important for transportation sustainability.

Fiscal federalism and prospects for metropolitan transportation authorities in Portugal

- Transport Policy---2013---Christopher Zegras,Joshua Nelson,Rosário Macário,Christopher Grillo

Fiscal federalism refers to the attribution of public finance functions among different levels of government. We examine Portugal's metropolitan transportation sector through the fiscal federalist lens, in light of the country's decentralization efforts and new relevant legislation. We clarify basic principles of fiscal federalism and adapt them to the finance of metropolitan transportation systems – typically characterized by multiple jurisdictions, numerous externalities and equity concerns – showing the inadequacy of general practice. Portugal's overall public finance system partially adheres to fiscal federalist principles; the transportation sector less so. Metropolitan transportation faces particular troubles, with few direct user fees, prices inadequately reflecting costs, and heavy reliance on central government subsidies for public transportation investments and operations. A new law creating metropolitan transportation authorities is only modestly consistent with fiscal federalist principles, since it inadequately details financial responsibilities and remains under heavy central government control. Absent additional reforms, the new metropolitan authorities should aim to make the transportation finance system explicit and test incentive grants to induce inter-municipal cooperation.

From words to action: Concepts, framings of problems and knowledge production practices in regional transport infrastructure planning in Sweden

- Transport Policy---2013---Fredrik Pettersson

This paper presents an analysis of a regional transport infrastructure plan in Sweden. A comparison is made of two concepts central to transport infrastructure planning in Sweden; Regional expansion and Environmentally sound transport. These concepts signify different perspectives on the benefits and problems with transport. The analysis explains how these clashing perspectives are resolved in the planning process. A discourse theoretical framework is applied to analyse the interplay between the concepts, the framings of problems and solutions, knowledge production practices and the outcomes of the planning process.

Active school trips: associations with caregiver walking frequency

- Transport Policy---2013---Hyunsoo Park,Robert Noland,Ugo Lachapelle

Household and parental characteristics and perceptions of walking and the built environment may reduce the propensity of children to use active travel modes (walking and bicycling) for their school trip. This paper examines whether there is a relationship between walking or bicycling to school and the walking habits of caregivers or parents. A statewide pedestrian survey of New Jersey residents was used to assess the mode taken by children for their school trip (age of respondents (parents) 19–84; n=353). Socio-demographic characteristics, public school density, full and part-time employment status of respondents, self-reported frequency of walking of adult respondents and perceived neighborhood environment characteristics are used as independent variables. Logit models are estimated to test associations between these variables. Non-minority ethnic status, women respondent's employment type, higher income, and vehicle ownership are negatively associated with active travel to school, while higher public school density is positively associated with choice of an active travel mode. Even in favorable circumstances for active travel to school, the employment circumstances of parents or caregivers may deter children from walking to school. When parents are active, their children are also more likely to be active. Poor sidewalk quality also deters parents from letting children use active modes for their school trip.

The assessment of market power of hub airports

- Transport Policy---2013---Andreas Polk,Volodymyr Bilotkach

Airport regulation regimes are under revision in many countries. The decision about the extent of airport regulation is based on an economic analysis of market power, which is done in two steps. The first step involves defining the relevant markets the airport is operating on. This in turn is based on an economic analysis of the particular circumstances of the airport, and must be compatible with competition law. The second step consists of the evaluation of the airport's competitive position in all identified markets. Due to industry particularities, many diverse issues must be taken into account in this process, such as questions of upstream and downstream market interaction, airport congestion, peak-load pricing, or offsetting bargaining power. Many of these questions have been theoretically analyzed in the industrial organization literature, but have only rarely been applied in practical competition analysis with respect to airports. This paper builds a bridge between the theoretical insights and their practical application to airport regulation policy. We derive the principles for a sound economic analysis of the market power of airports, given the time and data constraints encountered in practice by the regulatory authorities and other involved parties, and propose a general framework for the analysis of market power of airports. We focus on hub airports, as the analysis of these gateways covers all the relevant issues, including countervailing power of the hub operator.

The cross elasticity between gasoline prices and transit use: Evidence from Chicago

- Transport Policy---2013---William P. Nowak,Ian Savage

This paper calculates the cross elasticity between the price of gasoline and transit ridership in Chicago using monthly data for the period between January 1999 and December 2010. Separate estimations are conducted for city heavy rail, city bus, commuter rail and suburban bus services. A 12-month difference model is used to overcome seasonality. The paper finds that the cross elasticities when gas prices were less than $3 a gallon were small, with a magnitude of less than 0.05. When prices exceeded $3 a gallon, the elasticity was larger, in the range of 0.12–0.14, for the rail modes. In the summer of 2008 when prices exceeded $4 a gallon, there was considerable responsiveness with elasticities of 0.28–0.30 for city and suburban bus, and 0.37 for commuter rail. These values are similar to, or even larger than, those found during the oil crises of the 1970s and early 1980s.

A solution for urban road selection and construction problem using simulation and goal programming—Case study of the city of Isfahan

- Transport Policy---2013---Hadi Karimi Dehnavi,Mohammad Taghi Rezvan,Abdolmatin Shirmohammadli,Dirk Vallée

The aim of this paper is to propose a new hybrid method of urban road(s) selection and construction by using a combination of simulation and weighted goal programming (WGP) with different environmental and economical criteria. First, different scenarios were developed based on current and proved future urban land use and on feasibility. These scenarios then were simulated by applying EMME3 software for a scheduled year. The outputs for each scenario were used as input in weighted goal programming. By using the significance of goals which determined by opinion of experts, the pair-wise comparison procedure has been done. The results of WGP determine the scenario with the highest possible utility. This integrated methodology has been applied in the city of Isfahan (Iran). The selected scenario by the proposed methodology, improves the conditions of all six criteria in comparison with current traffic network. This methodology could be applicable for large-scale transportation networks.

Handling stakeholder uncertain judgments in strategic transport service analyses

- Transport Policy---2013---Toni Lupo

The quality level of services has to be constantly controlled, especially under conditions of competition increasing and limited resources. However, considering that service performance analyses are based on stakeholders' judgments, they can be characterized by possible uncertainties related to incompleteness for partial ignorance, imprecision for subjectivity and even vagueness. Therefore, under these conditions, unreliable results can be obtained by widely used service analysis methodologies. In the present paper, a methodology based on a recent extension of the SERVQUAL model, and that uses in combined manner the fuzzy set theory and the analytic hierarchy process method is proposed to effectively handle uncertainty in service performance analyses. In particular, the fuzzy set theory is considered to deal with such uncertainty, whereas the AHP method is adopted as tool to estimate the importance weights of the strategic service attributes.

Factors affecting the adoption of vehicle sharing systems by young drivers

- Transport Policy---2013---Dimitrios Efthymiou,Constantinos Antoniou,Paul Waddell

Transportation patterns in big cities are redefined by the growing trend of car ownership and usage costs (e.g. the initial cost of buying a car, the constantly growing fuel prices, additional maintenance and insurance costs and the increased parking demand and time of travel). Under these circumstances, the demand for alternative vehicle-sharing transportation modes, such as carsharing or bikesharing, increases. Companies and authorities planning to develop such schemes need to

know the factors driving their adoption, so that they can optimally position these services in a cost-effective way that will maximize their use. In this paper, the results of an on-line survey that was conducted in Greece, a country where carsharing is effectively non-existent and bikesharing is just emerging, are presented and analyzed. Given the nature of the survey and the fact that younger people are the most likely target audience for these services, the analysis focuses on data from the age group 18–35 years old.

Using data envelopment analysis as a public transport project appraisal tool

- Transport Policy---2013---Brian Caulfield,Diarmuid Bailey,Shane Mullarkey

The provision of a fast, frequent and modern public transport service operating from Dublin city centre to the airport has been a topic of great interest in recent times, in Ireland. Due to Ireland's poor financial situation, the choice of infrastructure investment has become more important than ever and hence, large expensive projects such as an underground Metro line called Metro North have been widely criticised. The main objective of this research is to investigate and identify the most efficient transport solution for the Dublin city centre-airport route. The Dublin Area Rapid Transit (DART) (over ground heavy rail) spur and Metro North are explored along with a Bus Rapid Transit (BRT) route and a Luas (tram) line. Data Envelopment Analysis (DEA) was employed to identify the most efficient solution for the city centre-airport route and to establish the reasons for inefficiency.

The value of dedicated cyclist and pedestrian infrastructure on rural roads

- Transport Policy---2013---James Laird,Matthew Page,Shujie Shen

In contrast to urban areas, very little quantitative work has been done on the demand for rural cycling infrastructure and the willingness of users to pay for such infrastructure. Furthermore there is little evidence on the demand for or value of walking infrastructure in either urban or rural areas. The value of and the propensity to walk or cycle in rural areas is likely to be different from that in urban areas, partly due to the distances involved, but also the different levels of traffic. Using evidence from Ireland this paper presents new evidence on the value of pedestrian and cyclist infrastructure in a rural environment. The models are sensitive to the household's location as well as other demographic factors. Average willingness to pay estimates for users of the facilities are 41.0 cents/trip for walking and 19.3 cents/trip for cycling. These results when applied ex ante to a number of proposed rural road upgrades demonstrate that such infrastructure offers value for money. There remain significant barriers to increased participation in walking and cycling, which makes it difficult to estimate demand and willingness to pay models based on data, which do not reveal peoples' attitudes to walking and cycling (e.g. census data).

Home parking convenience, household car usage, and implications to residential parking policies

- Transport Policy---2013---Zhan Guo

This paper investigates the effect of home parking convenience on households' car usage, and the implications to residential parking policies. A random sample of 840 households is selected from a travel survey in the New York City region, and their home parking types are identified through Google Street View. It found that with the same car ownership level, households without off-street parking used cars much less, and relied more on alternative modes than those with off-street parking. For households with access to both garage and street parking, those who use the handy street parking tend to make more car tours than those who do not. In general, convenient home parking encourages households' car usage. Policy implications to the minimum off-street parking requirement, residents parking permit, street cleaning, and new urbanism neighborhood design are discussed.

Changes subsequent to infrastructure investments: Forecasts, expectations and ex-post situation

- Transport Policy---2013---Erik Louw,Martijn Leijten,Evert Meijers

The effects of investments in infrastructure on local and regional economic development have long been the subject of scientific debate. An issue in this debate is whether the construction of new infrastructure between core and peripheral regions induces economic benefits in these regions or not. Most of the studies that assess these benefits are ex-ante forecasts, whereas far less ex-post studies are known.

Efficient procurement of public air services—Lessons learned from European transport authorities' perspectives

- Transport Policy---2013---Rico Merkert,O' Fee, Basil

This paper set out to identify the best practice from different European policy approaches by viewing issues from a sponsoring public transport authority perspective. The heart of this paper is a survey of European air service procurement authorities. We examine the authorities' perspectives on their rationale for imposing public service obligations (PSOs) on scheduled air services including likely future funding trends and investigate various aspects of the procedures connected with the PSO process (e.g., transparency of subsidies and risk sharing with operators). We also explore various aspects of the obligations that authorities actually impose upon routes and operators (e.g. maximum fare, aircraft size etc). A particular interest of this paper is in the authorities' policies regarding marketing the PSO and promoting competition in their tendering exercises. The lessons derived from this EU experience are discussed with a view in assisting policy makers when promoting and drafting their own regional air transport programmes, or in further refining existing schemes.

The wider value of rural rail provision

- Transport Policy---2013---Daniel Johnson,James Jackson,Chris Nash

In the context of recent plans for public sector expenditure, the value for money provided by rural public transport is an important issue in Britain and elsewhere, and one aspect of this is the option and non-use value placed on public transport by residents. Whilst there are a small number of studies which have estimated option and non-use values, they rest largely on contingent valuation methods which are subject to dangers of bias, and concentrate on commuter services into cities rather than truly rural services. This paper seeks to overcome these problems by conducting a Stated Preference (SP) experiment in rural communities, which values the provision of rail services and compares this against Post Office provision. We believe that using this approach, and allowing respondents to compare willingness to pay for rail services with that for another important rural service subject to threatened cuts, should produce more reliable results; moreover we achieve this using self completion questionnaires rather than much more expensive interviews. Our results show much lower values for rail than previous studies, though this is to be expected in truly rural areas where the likelihood of commuting by rail is much lower. Other non-use values are greater than option values in this context.

Baby boomers' mobility patterns and preferences: What are the implications for future transport?

- Transport Policy---2013---Anu Siren,Sonja Haustein

The demographic grand challenge of population ageing will be reflected in most areas of society and, to a great extent, in the area of transportation as well. It will have an impact on, for example, travel demand, infrastructure needs, traffic safety and the climate. The post-World War II cohorts, the so-called "baby boomers", will comprise a large share of tomorrow's older population, and it is expected that they will differ

from their parents' generation when they grow old. In order to better understand how the ageing baby boomers may affect future travel demand, the travel behaviour and expectations of Danish baby boomers were analysed based on 1772 standardised telephone interviews. In general, the baby boomers reported being healthy, independent and highly (auto)mobile. They were also optimistic regarding their level of mobility, capability to use a variety of travel modes and ability to lead an independent life in the future. However, there were significant gender differences in terms of present and expected car use in old age, which were somewhat similar to those observed in older cohorts. In addition, different sub groups of baby boomers could be identified based on their future expectations: the so-called Flexibles, Independents and Restricted subjects. The segments showed significant differences in current travel behaviour and living conditions, as well as some similarities to former segments of older road users. The results indicate that the baby boomers are likely to be strong consumers of the transport system also as they age, but that the group is also heterogeneous. Thus, overly optimistic scenarios about independent baby boomers who differ from the previous generations and whose need for external support in old age will be minimal may be unrealistic.

Physical infrastructure and shipment consolidation efficiency drivers in Brazilian ports: A two-stage network-DEA approach

- Transport Policy---2013---Peter F. Wanke

Port efficiency has been widely studied using standard DEA (Data Envelopment Analysis) models and its variations. As a matter of fact, these models do not account for the internal structure relative to measures characterizing port operations performance. In this paper, efficiency in Brazilian ports is measured using a two-stage process. In the first stage, called physical infrastructure efficiency, assets (number of berths, warehousing area, and yard area) are used to accomplish a certain shipment frequency per year. In the second stage, called shipment consolidation efficiency, these movements allow solid bulk and containerized cargoes to be handled. The network-DEA centralized efficiency model is adopted here to optimize both stages simultaneously. Results indicate that a private administration exerts a positive impact on physical infrastructure efficiency levels, while the hinterland size and the operation of both types of cargoes have a positive impact on shipment consolidation efficiency levels. Policy implications for the new regulatory framework on the Brazilian port sector are also derived.

Measuring generalised transport costs as an indicator of accessibility changes over time

- Transport Policy---2013---Carl Koopmans,Wim Groot,Pim Warffemius,Jan Anne Annema,Sascha Hoogendoorn-Lanser

Accessibility in transport policy documents is usually measured through partial indicators such as road speeds, traffic queues or train fares. In the literature, more advanced indicators are found, based on e.g. market potential or utility-based methods. This paper presents a generalised transport costs indicator for policy making which incorporates financial costs, travel times, and reliability of travel times. It calculates the average costs per kilometre of trips by transport mode, trip purpose, trip distance, region and time-of-day.

An investigation into the core underlying problems of India's airlines

- Transport Policy---2013---O′ Connell, John F.,Pukezhenthi Krishnamurthy,David Warnock-Smith,Zheng Lei,Chika Miyoshi

India' s aviation industry promises huge growth potential due to a large and growing middle class population, favourable demographics, rapid economic growth, higher disposable incomes, and overall low air transport penetration levels of less than 3%. However, the Indian Aviation Industry has been going through a turbulent phase over the past several years, facing multiple and prolonged difficulties through which carriers are continuously underperforming financially. After conducting a set of expert interviews backed by a statistical analysis of secondary data, this paper concludes

that restrictions on foreign ownership, outdated regulatory policies and overtaxed fuel, overlain by industry wide overcapacity issues are the major contributing factors.

Exploring the causal relationship between bicycle choice and trip chain pattern

- Transport Policy---2013---Zhibin Li,Wei Wang,Chen Yang,Guojun Jiang

Choices of bicycle and trip chain are important decisions in an individual's daily travel activities. Little is known about the causal relationship between the two decisions. It is interesting to ask if a decision on bicycle choice is made prior to the determination on a trip chain, or is dependent on the pre-determined chain pattern. This study aims to explore the relationship between the choices of bicycle and trip chain and capture the order of decision between them. Based on the survey data from a medium-sized Chinese city, the co-evolutionary approach with logit-modeling framework was estimated for the study purpose. Results show that there are more bicycle uses in the subsistence trip chains as compared to these non-subsistence ones. Considering the interaction between the two decisions improves the predicting accuracy of both bicycle choice and chain choice. In most cases, a trip chain is determined prior to a decision on bicycle choice, especially when the chain contains subsistence activities. For travelers who currently using a bicycle, most of them first decide the chain type and then choose a bicycle accordingly. Most of travelers who first determine the trip mode do not consider using a bicycle. We also estimate a model to predict the decision process of travelers. The order of decision is mainly impacted by the individual and household characteristics as well as the travel attributes. Findings of this study are discussed to assist the development of policies to promote cycling in urban areas.

Aggregate estimation of the price elasticity of demand for public transport in integrated fare systems: The case of Transantiago

- Transport Policy---2013---Louis de Grange,Felipe González,Juan Carlos Muñoz,Rodrigo Troncoso

Price elasticities of demand for public transport are a key determinant in evaluating the impact of changes in fares on user flows, yet in many integrated fare transit systems, estimating these indicators is often hampered by two realities: the fare changes for different modes are implemented simultaneously and their magnitudes are highly correlated. This strong collinearity is particularly problematic in linear or log-linear models, commonly used for elasticity estimation, and in a case study of Santiago, Chile, robust results with such specifications proved elusive. This paper presents a method based on discrete choice models to estimate the elasticities in an integrated fare system that overcomes these econometric problems, generating results that are both robust and consistent with those reported in the literature. The proposed models are also easy to update and evaluate.

The optimal aviation gasoline tax for U.S. general aviation

- Transport Policy---2013---Joseph B. Sobieralski

This study estimates the optimal aviation gasoline tax for U.S. general aviation that takes into account the accident, lead pollution, and greenhouse gas emission externalities, as well as the balance between excise taxes and labor taxes to finance government spending. The calculated optimal tax rate is \$3.60gal 1, which is over 18 times greater than the current tax rate and 5 times greater than the Federal Aviation Administration proposed tax rate. The Pigovian component is \$0.89, and we observe that the accident externality is taxed more severely than the pollution externality. The largest component of the optimal tax rate is the Ramsey component at \$2.70, which reflects the ability of the government to raise revenue from a price inelastic good like aviation gasoline. The optimal tax is estimated to reduce lead emissions by 9%, greenhouse

gas emissions by approximately 18% and accidents by 17%.

Some measures for sustaining red-light camera programs and their negative impacts

- Transport Policy---2013---Qiang Yang,Lee D. Han,Christopher R. Cherry

Automated enforcement red-light cameras (RLC) have been widely adopted by municipalities around the world as a measure of curbing red-light running (RLR) at signalized intersections and reducing the cost of law enforcement. While a consensus has not yet been reached about whether RLC in general can benefit intersection safety by reducing RLR and crashes, recent debates revolve around using RLC as a revenue generator. Some of the political backlash of RLC is the perception that they are installed primarily to fulfill revenue guarantees and sustain the RLC program. Some municipalities have been charged with changing the signal phasing to trap more red-light runners and increase the revenue from RLC programs. This paper focuses on a number of engineering strategies, mainly related to signal timing that may be used by municipalities to achieve their financial goals. The negative impacts of implementing these measures on the safety and efficiency of intersection operations and public support on RLC programs are also discussed. These strategies are also revealed to increase transparency of the divergent motivations of RLC vendors, municipalities, policy makers and safety advocates.

Speeding behavior on urban residential streets with a 30km/h speed limit under the framework of the theory of planned behavior

- Transport Policy---2013---Do Duy Dinh,Hisashi Kubota

To combat speeding issues on urban residential streets with a speed limit of 30km/h, it is necessary to identify the determinants as to why this violation has often been committed willingly. The present study employed the theory of planned behavior (TPB) as a frame of reference to address this issue. Vehicle speeds were observed individually on two residential street sections both with a 30km/h speed limit, then a questionnaire survey was conducted to the corresponding drivers. The results based on the sample of 376 Japanese respondents showed that speeding intention significantly associated with objectively-assessed speeding behavior while a number of variables were found as significant predictors of speeding intention. Apart from the factors that have been reported in literature, this study proposed three new context-based variables including perceived appropriateness of the 30km/h speed limit, perceived function of residential streets, and perceived right of vulnerable street users. The data showed that all of the three variables significantly associated to speeding intention while perceived appropriateness of the 30km/h speed limit had a direct impact on observed driving speed after controlling for other TPB variables. On the basis of the aforementioned findings, the implications for speeding interventions and related polices were also discussed.

User satisfaction and the organization of local public transport: Evidence from European cities

- Transport Policy---2013---Carlo Fiorio,Massimo Florio,Giovanni Perucca

In recent decades, market-opening policies in local public transport (LPT) have impacted most European countries. However, we can observe a high degree of variability in possible LPT arrangements, from public monopolies to open markets. This work addresses the following research question: How does user satisfaction correlate to alternative organisational models of LPT service provision? We use the results of a large survey conducted in 2009 in 33 European cities to analyse the likelihood of satisfaction with standard probit models. Results show that the highest levels of satisfaction correlate with the presence of a single LPT provider, as opposed to an industry structure in which multiple providers operate in the same market area.

Perceived service quality in bus transit service: A structural equation approach

- Transport Policy---2013---Juan de Oña,Rocío de Oña,Laura Eboli,Gabriella Mazzulla

This paper proposes a methodology for evaluating the quality of service perceived by users of a bus transit service. A Structural Equation Model (SEM) approach is used to reveal the unobserved latent aspects describing the service and the relationships between these aspects with the Overall Service Quality. Data from a Customer Satisfaction Survey conducted by the Transport Consortium of Granada (Spain) are analyzed. A total of 1200 surveys were collected, and two passengers' statements about the Overall Service Quality were gathered: the first one when passengers have not reflected on the attributes describing the service, and the second one after they have thought about them. This is the first time that the Overall Service Quality of a public transport system has been jointly explained by these two overall evaluations when a SEM approach is adopted.

Are road transportation investments in line with demand projections? A gravity-based analysis for Turkey

- Transport Policy---2013---Füsun Ülengin,Özay Özaydın,Burç Ülengin,Andreas Kopp,Şule Önsel,Özgür Kabak,Emel Aktaş

In this research, an integrated gravity-based model was built, and a scenario analysis was conducted to project the demand levels for routes related to the highway projects suggested in TINA-Turkey. The gravity-based model was used to perform a disaggregated analysis to estimate the demand levels that will occur on the routes which are planned to be improved in specific regions of Turkey from now until 2020. During the scenario development phase for these gravity-based models, the growth rate of Turkey's GDP, as estimated by the World Bank from now until 2017, was used as the baseline scenario. Besides, it is assumed that the gross value added (GVA) of the origin and destination regions of the selected routes will show a pattern similar to GDP growth rates. Based on the estimated GDP values, and the projected GVA growth rates, the demand for each selected route was projected and found that the demand level for some of these road projects is expected to be very low, and hence additional measures would be needed to make these investments worthwhile.

The significance of transport mobility in predicting well-being

- Transport Policy---2013---Dianne A. Vella-Brodrick,Janet Stanley

Transport mobility provides increased opportunities for individuals to undertake fundamental tasks beyond the home environment, such as going to work and purchasing essential goods. Moreover, transport mobility may also play an important role in helping to satisfy inherent psychosocial needs which are deemed necessary for well-being, such as relating well with others, feelings of competence and mastery, and heightened autonomy. Exploring these relationships more fully is the focus of the current study. Based on responses from 435 participants from Melbourne, Australia, hierarchical regression analyses were undertaken to test whether transport mobility predicts subjective well-being as mediated by psychological well-being (N=435). Support was found for a full mediation model, whereby transport mobility predicted subjective well-being through the mediating variables of environmental mastery, positive relations with others and self acceptance. Thus, the impact and benefits of transport mobility extend to psychosocial factors related to well-being. Although additional work is needed to confirm these findings using varied samples and measurement approaches, this is a valuable outcome which provides some justification for developing policy and investing resources into improving transport mobility to promote highly desirable outcomes related to well-being.

Impact of the Safe Routes to School program on walking and biking: Eugene, Oregon study

- Transport Policy---2013---Noreen C. McDonald,Yizhao Yang,Steve M. Abbott,Allison N. Bul-

lock

Policymakers in many countries, including the United States, United Kingdom, and Australia, have introduced programs to increase walking and biking to school through education, encouragement, and infrastructure improvements. The U.S. government has allocated over $1.1 billion to the federal Safe Routes to School program since 2005. However, there are few evaluations of the Safe Routes to School program. Our study used a robust quasi-experimental research design to measure the impacts of Eugene, Oregon's Safe Routes to School program on walking and biking. Using data collected between 2007 and 2011 at 14 schools with and without Safe Routes to School programs, we showed that the Safe Routes to School program was associated with increases in walking and biking. Education and encouragement programs were associated with a five percentage point increase in biking. Augmenting education programs with additional SRTS improvements such as sidewalks, crosswalks, covered bike parking, and Boltage was associated with increases in walking and biking of 5–20 percentage points. The study results illustrate the potential for the Safe Routes to School program to change behavior and should encourage other communities to plan for multi-modal school travel.

A Cochrane systematic review of the effectiveness of organisational travel plans: Improving the evidence base for transport decisions

- Transport Policy---2013---A.K. Macmillan,J. Hosking,J. L. Connor,C. Bullen,S. Ameratunga

Population dependence on car use has adverse health consequences including road traffic injury, physical inactivity, air pollution and social severance. Widespread car dependence also entrenches lifestyles that require unsustainable levels of energy use. Most transport policies explicitly include goals for public health and sustainability. Transport interventions can therefore be seen as complex public health programmes, and assessing their outcomes against health and sustainability goals is vital. Using organisational travel plans (OTPs) as an example, we demonstrate how best practice epidemiological systematic reviews can be used to assess the existing evidence to inform transport policy. Such a synthesis of the evidence for OTPs has not been undertaken previously.

Dynamic relationship between air transport demand and economic growth in the United States: A new look

- Transport Policy---2013---Junwook Chi,Jungho Baek

This paper examines the short- and long-run effects of economic growth and market shocks (e.g., 9/11 terrorist attacks, Iraq war, SARS epidemic, and 2008 financial crisis) on air passenger and freight services using an autoregressive distributed lag (ARDL) approach to cointegration. Results show that, in the long-run, both air passenger and freight services tend to increase with economic growth. In the short-run, however, only air passenger service is responsive to economic growth. Finally, only the 9/11 terrorist attacks and the SARS have detrimental effects on air passenger demand both in the short- and long-run, and in the long-run, respectively. However, these market shocks are found to have little impact on air freight demand.

Strategies and instruments for low-carbon urban transport: An international review on trends and effects

- Transport Policy---2013---Kazuki Nakamura,Yoshitsugu Hayashi

Designing low-carbon urban transport systems is a key element in realising low-carbon cities for tackling the climate change issues on an urban scale. Low-carbon transport measures can be classified according to their strategies and instruments. It is more useful for decision making to identify what options are more feasible and effective among available ones in each type of cities. This paper gives an overview of the trends and effects of low-carbon measures for urban transport, dependent upon the development stages and types of urban land-use transport systems. Typical

measures affecting low-carbon transport systems all over the world are classified through the CUTE matrix to capture the trends. Then, their prospective effects on CO2 mitigation are discussed by reviewing empirical studies. These reviews show that the feasibility and effectiveness of transport strategies are significantly affected by the development process of cities.

The future of mobility in cities: Challenges for urban modelling

- Transport Policy---2013---Michael Wegener

Urban development in the last two centuries has been driven by an unprecedented growth in mobility made possible by abundant and cheap energy. Yet this trend will not continue forever. Despite technological innovation, finite fossil fuel reserves will in the long run lead to increasing costs of transport. Moreover, to fight global warming many governments have set ambitious greenhouse gas reduction targets, and to achieve them fossil fuels must become more expensive either through market developments or by political intervention. This paper gives an overview about the drivers, feedbacks and constraints of urban mobility and location in a possible future in which transport energy will no longer be abundant and cheap. It asks whether current urban models are able to adequately model the impacts of significantly higher transport costs and demonstrates by an example how it can be done.

Transport futures: Thinking the unthinkable

- Transport Policy---2013---David Banister,Robin Hickman

It is becoming increasingly important to think about longer term possibilities and directions that are trend breaking and can help anticipate the unexpected. The future is perhaps becoming less certain, or at least uncertainty is a central feature of future trajectories. This paper discusses the role that different types of scenarios can play in helping derive potential transport futures – including issues of possibility, plausibility and desirability – giving examples of each. It then contextualises the scenarios, emphasising the need for the longer view, the importance of decarbonising the economy, and in engaging decisions makers at all levels in a fully participatory process to confront the need for strong action on mitigation and adaptation. This is illustrated with an example from Delhi to demonstrate some of the recent developments and applications of these principles. Finally, some comments are made on the issues relating to improving our understanding of sustainability, and the difficulty of making radical changes to individual and societal values, and to travel behaviours, often requiring immediate and large scale actions.

Macromotives and microbehaviors: Climate change constraints and passenger mobility scenarios for France

- Transport Policy---2013---Pr. Yves Crozet,Hector Lopez-Ruiz

The reduction of greenhouse gas emission is now firmly established at the top of the public policy agenda, to the extent that it is increasingly often presented as one of the major constraints which will be placed on activities, particularly in the transport sector. This sector creates large amounts of greenhouse gases and is characterized by the highly decentralized nature of its emissions which are the outcome of the travel decisions taken by billions of individuals. The collective problem is therefore created by a multitude of individual behaviors. If travel choices are constrained in an attempt to solve this collective problem, we need an understanding of the economic bases of individual behaviors. With this in view, this paper begins by presenting the macroscopic impacts of a number of sustainable travel scenarios in France in the year 2050. It then shows the changes in trends which accompany the necessary changes in individual travel behaviors. Some of these changes in trends amount to breaks with the past which will be far from easy to implement.

Internalisation of external costs of transport–A target driven approach with a focus on climate change

- Transport Policy---2013---Antonio Musso,Werner Rothengatter

The traditional answer of economists to the problem of internalising external costs of transport is “setting prices right”. In a neoclassical economic world this would correspond to setting prices according to marginal social costs. The neoclassical world is far from reality, however, and therefore workable instruments have to be developed with respect to technology, transaction costs and social acceptance. From this follows that the appropriate lever point for public intervention has to be identified for every type of externality of transport. This results in a strategy bundle for which every instrument should be optimised according to economic rules. While the principle appears simple its implementation leads to rather complex follow-up problems. Some instruments have only partial effects and should be complemented by further instruments (e.g.: emission trading in the case of climate change). Other instruments have various side impacts and influence some external effects in the desired direction but others in a counterproductive way (e.g.: emission standards for NOx and PM and their impacts on CO2). In this paper we give a brief outline of the theoretical foundation of the problem, which can be formulated as a multi-objective programming problem. Based on this we suggest a heuristic solution, which translates essential objectives into constraints in form of safe minimum requirements for objective achievement. The problem reduces then to find least cost solutions for the design of instruments, which are employed to achieve the safe minimum requirements. In this approach the “right prices” for external effects come out as by-products of the optimal solution (shadow prices) and can be compared with the results of direct marginal external cost estimations. We give examples for the quantification of external costs of noise and of climate change, based on this approach.

Changing North American vehicle-travel price sensitivities: Implications for transport and energy policy

- Transport Policy---2013---Todd Litman

There is a growing interest in transportation pricing reforms (increased fuel taxes, efficient road and parking pricing, and distance-based vehicle insurance and registration fees) to help achieve various policy objectives including reduced traffic congestion, accidents and pollution emissions. Their effectiveness is affected by the price sensitivity of vehicle fuel consumption and travel, measured as elasticities (percentage change in consumption caused by a percentage change in price). Lower elasticities imply that price reforms are relatively ineffective in achieving objectives, high prices significantly harm consumers, and rebound effects are small so strategies that increase vehicle fuel efficiency are relatively effective at conserving fuel. Higher elasticities imply that price reforms are relatively effective in achieving objectives, consumers can easily reduce fuel consumption and vehicle travel, and rebound effects are relatively large. Some studies found that US price elasticities declined during the last quarter of the Twentieth Century but recent evidence suggests that vehicle travel has since become more price sensitive. This article examines evidence of changing vehicle fuel and travel elasticities, and discusses policy implications.

Income tax deduction of commuting expenses in an urban CGE study: The case of German cities

- Transport Policy---2013---Georg Hirte,Stefan Tscharaktschiew

Granting the right to deduct commuting expenses from the income tax base has regularly been under debate during the last decades. This paper provides for the first time an insight into the magnitude of the effects of this kind of commuting subsidy under different funding schemes. The economic and spatial effects are calculated by applying a spatial CGE approach calibrated to a German urban area. The findings suggest that effects on urban sprawl characterized by suburbanization, spatial expansion of the city, and increasing commuting

distance are surprisingly small. Concerning welfare, we found that the current level of tax deductions in Germany is too small in the case of income tax funding. If one considers further changes in the tax system welfare can be considerably enhanced by raising tax deductions above that level. In particular this refers to a tax structure where energy taxes are used to make traveling by car less attractive and tax deductions are used to lower the negative impact of taxes on labor supply.

Congestion pricing applications to manage high temporal demand for public services and their relevance to air space management

- Transport Policy---2013---Karla Hoffman,Frank Berardino,George Hunter

This paper surveys pricing mechanisms used by government agencies to manage congestion, as well as highlights the many political and social issues that have to be addressed in order to implement a pricing mechanism. This survey was undertaken in order to be able to understand how congestion pricing could be used to help manage airspace capacity. This is an important question since a 2008 analysis by the Joint Economic Committee of the US Congress suggested that domestic air traffic delays in 2007 cost the economy as much as $41 billion, including $19 billion in increased operational costs for the airlines and $12 billion worth of lost time for passengers.

Effects of the optimal n-step toll scheme on bulk carriers queuing for multiple berths at a busy port

- Transport Policy---2013---Chen-Hsiu Laih,Pey-Yuan Sun

Compared with the liner container ships, the tramp bulk carriers often have to queue for vacant berths at a busy port. In order to solve this problem, this paper develops the optimal n-step toll schemes (n=1, 2, 3, ⋯) to bulk carriers in a queue for multiple berths. Bulk carriers' queuing times at the anchorage will be rationally decreased after pricing the toll schemes. This paper also shows the regularities in all equilibrium results under the toll schemes. The above outcomes are useful if the flexible pricing policy to a queue of bulk carriers is considered by the port authorities.

Impacts of time-varying cordon pricing: Validation and application of mesoscopic model for Stockholm

- Transport Policy---2013---Ida Kristoffersson

This paper uses a simulation model to compare traffic and welfare effects of changes to the charging schedule currently in use in Stockholm. In particular, a step toll is compared to its flat counterpart at two charging levels. The increments between steps are also increased in a peaked step toll scenario. Furthermore, results from simulation of the current toll ring are compared to real-world measurements in a first attempt to validate model predictions regarding impacts of a time-varying congestion charging scheme. In the model, car users have the possibility to respond to congestion charging by changing departure time, route or switch to public transport and travel times are calculated using mesoscopic traffic simulation. Validation shows that departure time choice adjustments because of congestion charging are overestimated by the model that is based on stated preference data. This warrants further research on discrepancies between stated and revealed adjustments to congestion charging.

Network resilience for transport security: Some methodological considerations

- Transport Policy---2013---Aura Reggiani

This paper proposes a general conceptual framework which aims to integrate the concept of network resilience within that of transport security.

Safeguarding critical transportation infrastructure: The US case

- Transport Policy---2013---Joseph S. Szyliowicz

This paper analyzes the state of critical transportation infrastructure in the US, its relationship to security,

and how the lack of an updated national policy to resolve the serious weaknesses of the transportation infrastructure negatively impact security. The difficulties in safeguarding transportation networks are identified along with the degree to which changes enacted since 9/11 regarding intelligence and administration, notably the establishment of the Department of Homeland Security, have led to increased security. However, these efforts, however successful, must be supplemented by a decision-making approach that goes beyond prevention and recognizes the importance of resiliency and such subsidiary concepts as robustness and redundancy.

US and EU strategies for maritime transport security: A comparative perspective

- Transport Policy---2013---Paola Papa

In the second half of the 20th century, international maritime transport experienced a prosperous period characterised by the growing integration of markets, by the globalisation of international trade flows and by great advances in technologies. This scenario has been dramatically disrupted by terrorist attacks with strong implications also in terms of policy.

Data from telecommunication networks for incident management: An exploratory review on transport safety and security

- Transport Policy---2013---John Steenbruggen,Maria Teresa Borzacchiello,Peter Nijkamp,Henk Scholten

Problems such as traffic congestion and environmental sustainability are forcing us to review our long-term plans for transport, whose aim should be to develop and improve safety, security and effectiveness of the transportation systems. The consequences of traffic accidents are not only limited to road travellers (congestion, delays), but may also affect the area surrounding the incidents, for instance, the release of chemical substances. The lack of a real-time assessment of the mobility consequences of an incident, as well as of its wider consequences for the surrounding area, in terms of security and safety, hampers the decision-makers ability to respond effectively to an incident and to manage its consequences.

A method to assess multi-modal Hazmat transport security vulnerabilities: Hazmat transport SVA

- Transport Policy---2013---G.L.L. Reniers,W. Dullaert

The suggested Hazmat transport Security Vulnerability Assessment (SVA) methodology presents a user-friendly approach to determine relative security risk levels of the different modes of hazardous freight transport (i.e., road, railway, inland waterways and pipeline transportation). First, transport routes are divided into smaller route segments. Second, likelihood scores of security-related accidents in which dangerous freight is involved and possibly causing fatalities in the surrounding population, are determined per route segment. Third, the consequences of accident scenarios (using reference products and spatial plans) are calculated in terms of the number of people within the 1% lethality distance of the accident center. Fourth, using these likelihood scores and consequence figures, transport route security risk levels are determined. Fifth, transshipment risks are considered for determining the final transport route security risk levels. This leads to a multi-modal user-friendly security threat assessment tool which can be used by policy makers as well as by industrialists (shippers or Logistics Service Providers). The generic method allows for comparing the security risk levels of the different route segments and routes of transportation of hazardous goods and for taking countermeasures from a uni-modal as well as from a multi-modal perspective.

Travel behavior in the face of surface transportation terror threats

- Transport Policy---2013---Wafa Elias,Gila Albert,Yoram Shiftan

This paper focuses on the impact of surface transportation terror threats on travel behavior. In particular, we evaluate the impact on refraining from bus usage

and consequently on mode choice, and the extent of passengers' fear and risk perception of a terrorist attack. The paper is based on a survey carried out in Jerusalem, the capital of Israel, and in Haifa, the third largest metropolitan area in Israel. Both cities, especially Jerusalem, experienced severe terror attacks in the post -9/11 era. The results indicate that the factors investigated, especially fear and risk perception, are central in understanding travel behavior in regard to public transportation in Israel. Women are more afraid of being involved in such a tragedy, perceive its risk to be higher than do men, and therefore the impact on women's travel behavior is more intensive; the level of fear of a terror attack in both cities is similar. The results also show that people are aware that the risk of road crashes is higher than the risk of terror attacks. Although this is in line with the reality, people's behavior may be strongly affected by the threat of terror attacks despite its low probability of occurrence. Consequently, an undesired shift from public transportation to private passenger car may occur.

Possible transport energy sources for the future

- Transport Policy---2013---L. De Simio,M. Gambino,S. Iannaccone

In the medium to long term, low fossil fuel availability will make it necessary to find alternatives. Mass production of biofuels will not be a practical solution because it requires strong competition for land that is used for growing food. Therefore, it will be necessary to revise the frame of transportation energy sources. The number of pure light- and heavy-duty electric vehicles could increase in urban areas. Instead, it will be hard to find a viable alternative to the internal combustion engine for extra-urban transport vehicles, therefore alternative synthetic fuels could be used to compensate for fossil fuel depletion. Aside from a small share obtainable from biomass, most synthetic fuels are expected to be obtained from coal. Among these, synthetic natural gas represents a very good solution. In fact, synthetic natural gas will be advantageous with respect to hydrogen, whose on-board storage will be an unsolved problem in the medium term, and with respect to synthetic liquid fuels, which require more energy in the production phase. Moreover, the carbon content of liquid fuels, which is higher than that of gaseous fuels, will be responsible for higher CO2 emissions from vehicles. Currently, natural gas has poor diffusion in the transport sector, and this paper highlights the motivations for favouring a policy aimed at increasing the share of gaseous fuel-powered vehicles. In addition to the low environmental impact, synthetic natural gas also offers the possibility of optimising the utilisation of future resources.

Freeway passenger car drivers' travel choice behaviour in a distance-based toll system

- Transport Policy---2013---Rong-Chang Jou,Yi-Chun Yeh

At present, Taiwan's freeways adopt frequency-based toll collection mechanism, and the distances between toll stations are about the same. The current toll mechanism cannot differentiate the actual distances travelled by freeway users. To fulfil the purpose of fairness and equity, distance-based toll collection will be put into practice in 2013. It is, therefore, interesting to study the effects of toll rates on passenger car drivers' travel choice behaviour, including departure time and route. Samples are further segmented by trip lengths into short, medium and long distances, respectively. Mixed logit models, which take individual heterogeneity into account, are estimated and the results find that travel time is an important variable influencing the choice of travel behaviour in the long distance model. Other significant variables include choice inertia, frequency of freeway use, time of freeway use, trip purpose, whether drivers pass toll plaza, toll rate, etc. The signs of the estimated parameters all fit prior knowledge and are statistically significant. The results also show the toll revenue for different scenario is less than the toll fee in the original per-entry-based toll collection system, indicating that these results are in line with the government' s commitment. In the future, if the distance-based system results in differential pricing, this study' s findings may serve as a reference.

Sustainable, safe, smart—three key elements of Singapore's evolving transport policies

- Transport Policy---2013---M.M. Haque,H.C. Chin,A.K. Debnath

Sustainability, safety and smartness are three key elements of a modern transportation system. This study illustrates various policy directions and initiatives of Singapore to address how its transportation system is progressing in light of these three components. Sustainability targets economical efficiency, environmental justice and social equity by including policies for integrating land use and transport planning, ensuring adequate transport supply measures, managing travel demand efficiently, and incorporating environment-friendly strategies. Safety initiatives of its transportation system aim to minimize injuries and incidents of all users including motorists, public transport commuters, pedestrians, and bicyclists. Smartness incorporates qualities like real time sensing, fast processing and decision making, and automated action-taking into its control, monitoring, information management and revenue collection systems. Various policy implications and technology applications along these three directions reveal that smart technologies facilitate implementation of policies promoting sustainability and safety. The Singapore experience could serve as a good reference for other cities in promoting a transportation system that is sustainable, safe and smart.

The impact of port throughput on local employment: Evidence from a panel of European regions

- Transport Policy---2013---Anna Bottasso,Maurizio Conti,Claudio Ferrari,Olaf Merk,Alessio Tei

In this paper we study the impact of port activities on local employment by analyzing a sample of about 560 regions located in ten West European countries and observed over the period 2000–2006. The biggest European ports of OECD countries belong to our sample, which includes 116 ports. The empirical analysis is based on the estimation of a set of employment equations with the GMM-System estimator of Blundell and Bond (1998) that allows us to take into account persistence effects in employment, regional unobserved time-invariant heterogeneity, and endogeneity of port activity.

Bidding to drive: Car license auction policy in Shanghai and its public acceptance

- Transport Policy---2013---Xiaojie Chen,Jinhua Zhao

Increased automobile ownership and use in China over the last two decades has increased energy consumption, worsened air pollution, and exacerbated congestion. However, the countrywide growth in car ownership conceals great variation among cities. For example, Shanghai and Beijing each had about 2 million motor vehicles in 2004, but by 2010, Beijing had 4.8 million motor vehicles whereas Shanghai had only 3.1 million. Among the factors contributing to this divergence is Shanghai's vehicle control policy, which uses monthly license auctions to limit the number of new cars. The policy appears to be effective: in addition to dampening growth in car ownership, it generates annual revenues up to 5 billion CNY (800 million USD). But, despite these apparent successes, the degree to which the public accepts this policy is unknown.

Ex post socio-economic assessment of the Oresund Bridge

- Transport Policy---2013---M.Aa. Knudsen,J. Rich

The paper presents an ex post socio-economic assessment of the Oresund Bridge conducted ten years after the opening in July 2000. The study applies historical micro data to re construct the travel pattern with no bridge in place and compare this to the current situation. To complete the socio-economic assessment, the consumer benefits including all freight and passenger modes, are compared with the cost profile of the bridge. The monetary contributions are extrapolated to a complete 50 year period. It is revealed that the bridge from 2000–2010 generated a consumer surplus of €2 billion in 2000 prices discounted at 3.5% p.a., which

should be compared with a total construction cost of approximately €4 billion. Seen over the 50 year period and by assuming a medium growth scenario the bridge is expected to generate an internal rate of return in the magnitude of 9% corresponding to a benefit-cost rate of 2.2.

Policies for promoting walking and cycling in England: A view from the street

- Transport Policy---2013---Colin G. Pooley,Dave Horton,Griet Scheldeman,Caroline Mullen,Tim Jones,Miles Tight,Ann Jopson,Alison Chisholm

Transport policies to increase active and sustainable travel in Britain have focused mainly on persuading people of the health benefits of walking and cycling for short trips, and have assumed that if people can be persuaded that more active travel has personal benefits then behavioural change will follow. Research reported in this paper, based mainly on detailed qualitative research in four English towns, argues that the complexities and contingencies that most people encounter in everyday life often make such behavioural change difficult. Attention is focused on three sets of factors: perceptions of risk; constraints created by family and household responsibilities; and perceptions of normality. It is suggested that unless such factors are tackled directly then policies to increase levels of walking and cycling will have limited success. In particular, it is argued that there needs to be a much more integrated approach to transport policy that combines interventions to make walking and (especially) cycling as risk-free as possible with restrictions on car use and attitudinal shifts in the ways in which motorists view other road users. Such policies also need to be linked to wider social and economic change which, in combination, creates an environment in which walking or cycling for short trips in urban areas is perceived as the logical and normal means of travel and using the car is viewed as exceptional.

Public–private contracting and incentives for public transport: Can anything be learned from the Sydney Metro experience?

- Transport Policy---2013---Cameron Gordon,Corinne Mulley,Nick Stevens,Rhonda Daniels

The New South Wales (NSW) government created the Sydney Metro Authority to design, build and operate a completely separate underground Metro rail system to supplement the existing public transport network in Sydney. By the time the NSW government abruptly cancelled the entire Metro project in early 2010, the authority had conceived and designed a contract that was proceeding to procurement. This paper examines the nature of the proposed Sydney Metro contract in relation to its performance framework and compares this to the frameworks in current contracts for bus, rail and ferry public transport in Sydney. Against this background, the paper examines the extent to which the Sydney Metro approach has had an impact on subsequent public transport contracts in the context of the literature on public private contracting and incentives for public transport procurement. The paper concludes that little has been implemented, although the other mode contracts now enable more performance measurement and incentivisation. In particular, the decision to award contracts to existing (and mostly public sector) operators appears to have acted as a brake on developing these performance elements.

Entropy-based performance evaluation on institutional structures of trunk highway management—Case study in China

- Transport Policy---2013---Zhentian Sun,Xuhong Li,Wenxin Qiao,Ali Haghani

Due to the large scale highway construction and fuel tax reform, the Chinese government is suffering from serious difficulties in the Trunk Highway (TH) management (similar to arterial highways in the US). Most concerns are related to the misappropriation of funds and over-staffing. To solve these problems, an effective

approach is to employ an appropriate Finance and Personnel Management Institutional Structure (FAPMIS). This paper proposes a quantitative method to evaluate the performance of FAPMIS. FAPMISs are classified into three types based on their differences: vertical management structure (VMS), regional management structure (RMS), and hybrid of vertical and regional management structure (HVRMS). These three types are represented by three different graphical structures. Based on these structures, the authors propose three measures, i.e., graph entropy (GE), time efficacy entropy (TEE) and quality entropy (QE) to evaluate the performance of FAPMIS. When comparing the numerical results among the measures, we found that HVRMS got the minimum TEE and GE values, which indicates its inefficiency in combating the misappropriation of funds and over-staffing in TH management. Thus, HVRMS is not recommended for real-life applications in China. However, VMS attains a higher GE and TEE value than RMS, indicating that VMS will theoretically lead to relatively lower risk of misappropriation of funds and over-staffing.

Commercial vehicle pre-clearance programs: Current issues and recommendations for potential implementation

- Transport Policy---2013---Lee, Jinwoo (Brian),Kristin Jaeckel,Keechoo Choi,Garland Chow

The regulation of overweight trucks is of increasing importance. Quickly growing heavy vehicle volumes overproportionally contribute to roadway damage. Raising maintenance costs and compromised road safety are also becoming a major concern to managing agencies. Minimizing pavement wear is done by regulating overloaded trucks on major highways at weigh stations. However, due to lengthy inspections and insufficient capacities, weigh stations tend to be inefficient. New practices, using Radio Frequency Identification (RFID) transponders and weigh-in-motion technologies, called preclearance programs, have been set up in a number of countries. The primary aim of this study is to investigate the current issues with regard to the implementation and operation of the preclearance program. The State of Queensland, Australia, is used as a case study. The investigation focuses on three aspects; the first emphasizes on identifying the need for improvement of the current regulation programs in Queensland. Second, the operators of existing preclearance programs are interviewed for their lessons-learned and the marketing strategies used for promoting their programs. The trucking companies in Queensland are interviewed for their experiences with the current weighing practices and attitudes toward the potential preclearance system. Finally, the estimated benefit of the preclearance program deployment in Queensland is analyzed. The penultimate part brings the former four parts together and provides the study findings and recommendations. The framework and study findings could be valuable inputs for other roadway agencies considering a similar preclearance program or looking to promote their existing ones.

How accurate are national road traffic growth-rate forecasts?—The case of Norway

- Transport Policy---2013---James Odeck

This paper evaluates the accuracy of the annual national road traffic growth-rate forecasts that are prepared by the Norwegian road authorities. The rationale for the study is the fact that national and regional traffic growth-rate forecasts are the basis for policy formation, and inaccurate forecasts may lead to inappropriate policies. The data correspond to the period of 1996–2008 whereas the forecasting models were revised in 2001. The results reveal the following: (1) traffic growth-rate forecasts were more inaccurate in the period before the revision as compared to the period after the revision and underestimation is most common; (2) the naïve growth-rate forecasts perform better than the official forecasts, but GDP growth-rate forecasts perform worse than the official forecasts; (3) the growth-rate forecasts are unbiased and efficient at the national level, but there are variations among regions and time periods. Overall, the Norwegian growth-rate forecast appears to perform fairly well in the short run, but the small inaccuracies that were observed

may cause a problem in the long run, particularly in relation to the evaluation of the long-term effects of investments. We therefore advice that models need to be continually revised to accommodate more recent data such as international traffic and immigration which seem to greatly impact on the accuracy of models.

Modelling public-transport users' behaviour at connection point

- Transport Policy---2013---Avishai Ceder,Subeh Chowdhury,Nima Taghipouran,Jared Olsen

Out-of-vehicle times were shown to be perceived as being more onerous than in-vehicle time by transit users when making transfers. The present study has two main objectives. The first objective is to determine the effects of uncertainty, in out-of-vehicle times during transfers, on transit users' willingness to use transfer routes. The second objective is to determine the influence of out-of-vehicle facilities, offered by public-transport (PT) operators, on transit users' perception of trip attributes related to transfers. A user preference survey was conducted at two major PT terminals in Auckland, New Zealand. The survey data was modelled using cumulative prospect theory and fuzzy logic. The results showed that for all trip attributes, except for comfort, transit users' exhibited risk averse behaviour; users' revealed greater preference for the transfer route with less uncertainty in the out-of-vehicle times. For comfort, transit users' displayed risk-taking characteristics when the waiting time for a seat was less than 5min. Such findings suggest that increasing the consistency in out-of-vehicle times will increase attractiveness of transfer routes thus enabling a more efficient and integrated network of PT routes to result in enlargement of ridership. Policy makers and PT planners must focus on methods of reducing uncertainty in out-of-vehicle times during transfers. Analysis of transit users' perception of trip attributes, given their current station, revealed statistical evidence of differences for two trip attributes, transfer waiting time and vehicle delay. Such findings indicate that transit users who are accustomed to better out-of-vehicle facilities have a lower tolerance for uncertainty in transfer waiting times and delay times. To the authors' knowledge, this study provides for the first time in literature a comparison between the two cognitive models. The comparison revealed that CPT and fuzzy logic models are both capable of representing transit users' decision making process. However, while CPT provides an indication of transit users' preference for a transfer route, fuzzy logic is capable of providing a closer approximation of the proportion of transit users preferring a transfer route.

Evaluation of the relevance measure between ports and regional economy using structural equation modeling

- Transport Policy---2013---Ping Deng,Shiqing Lu,Hanbin Xiao

This study examined the relationship between ports (port demand, port supply and value added activity in port) and regional economy from a logistics perspective that provided intellectual support for policy makers in their strategic port related decisions. The major port cities involved in China's five coastal port clusters were taken as the samples in order to conform to the development trend of Chinese port cluster. A structural equation modeling (SEM) approach was employed to test a hypothesized model concerning ports and their regional economy. Results indicated that port supply had a positive effect on port demand. In addition, the findings indicated that value added activity in port had a positive effect on the development of regional economy. However, port supply and port demand were not found to have significantly positive effects on regional economy. Theoretical and practical implications of the research findings for policy makers are discussed.

A five-year follow-up among older people after an outdoor environment intervention

- Transport Policy---2013---Agneta Ståhl,Vibeke Horstmann,Susanne Iwarsson

This study investigates older inhabitants' appreciation of environmental measures taken in their residential area and the effect on perceived difficulty as

pedestrians and in outdoor activity. The study is based on data collected with a mailed questionnaire at baseline and at a 5-year follow-up (after intervention) posted to 195 people aged 65+ in a residential area in a medium-sized Swedish town, rather typical for Northern Europe. Appreciation of the environment was analysed overall and in sub-groups. Overall appreciation was higher for women, in particular as regards longer green time at signalised crossings, and for those reporting better perceived health, in particular concerning separation between bicyclists and pedestrians. As concerns changes in perceived difficulty as pedestrians and in outdoor activity, no differences were found, either overall or in sub-groups. However, the study identifies which environmental measures older people appreciate, indicating that certain sub-groups may benefit more from interventions in the outdoor environment.

Competing mobility needs: The users, actors, and discourses in Atlanta, Georgia

- Transport Policy---2013---Laurel Paget-Seekins

There is a growing use of sales tax referendums to fund transportation in the US; this takes conflicts over funding out of the technical planning process and into the public arena. An analytical framework is presented that examines the interactions between transport users, political actors, and discourses in the competition over transport resources. A case study of the selection of projects for a tax referendum in Atlanta, Georgia is used to illustrate the importance of understanding the interactions between all three factors. The outcome of the project selection represents the growing importance of the choice discourse in Atlanta. The political power of actors is not correlated to the size of transport user groups they represent. Understanding the differences in discourse is important to understand disagreements within actor coalitions.

The impact of sectoral economic development on the energy efficiency and CO2 emissions of road freight transport

- Transport Policy---2013---Heikki Liimatainen,Markus Pöllänen

The branches of economy differ in the amount and characteristics of freight transport services they require and use. Thus, different branches also have different energy efficiencies and carbon dioxide emissions from transport. Previous research has highlighted a serious lack of data inhibiting the understanding of these issues.

Are cell phone laws in the U.S. effective in reducing fatal crashes involving young drivers?

- Transport Policy---2013---Siew Hoon Lim,Junwook Chi

Cell phone laws prohibiting individuals from texting or using the phone while driving have been much debated in the United States. Currently, 33 states have passed cell phone laws targeting only young and novice drivers, while 10 states have similar laws for all drivers regardless of age. This paper examines the efficacy of state cell phone laws in reducing non-alcohol related fatal crashes involving drivers under the age of 21. We found that handheld cell phone bans targeting all drivers reduced fatal crashes involving young drivers, but there was insufficient evidence that complete cell phone bans targeting only young drivers reduced fatal crashes. In addition, the effect of graduated licensing programs was insignificant for the period 2000–2010.

Analyzing competition of international air cargo carriers in the Asian general air cargo markets

- Transport Policy---2013---Guo-Chou Shiao,Cherng-Chwan Hwang

This paper presents a model structure to analyze the competitive strategies available to air cargo carriers in the Asian markets, in which all-cargo airlines and combination airlines offer service. Through a two-stage, Nash best-response game, equilibria in the air transportation industry are searched to evaluate individual

airline's profit. First, airlines choose whether or not to enter a market and second, they attempt to optimize profits through choice of service frequencies, aircraft sizes and airfreight rate, given the decisions of others. Taipei-Hong Kong and Taipei-Los Angeles route markets are selected as the empirical cases of model application. The examples indicate that combination airlines have competitive advantages in the markets and the equilibria in the markets may change due to the changes of air cargo demand in the market, air passenger travel demand, the operation scale of all-cargo carriers and the availability of time slots at the airports for all-cargo operators.

The road to happiness: Measuring Dutch car drivers' satisfaction with travel

- Transport Policy---2013---Dick Ettema,Tommy Gärling,Lars E. Olsson,Margareta Friman,Sjef Moerdijk

Recent research suggests that travellers' anticipated trip utility may differ from the utility they actually experience when making the trip. This implies that it is important to investigate not only the factors underlying trip decision making, but also the actual experience of the trip. To that end, this paper presents an empirical test of the satisfaction with travel scale (STS) that was developed to measure travellers' satisfaction with travel. STS measures travel satisfaction in terms of two affective (positive activation versus negative de-activation and positive de-activation versus negative activation) and one cognitive dimension. The STS was applied in the Netherlands in a survey of car users. The results suggest that the reliability of the measurement scales is satisfactory to good, and that they are indicative of an overarching concept of travel satisfaction. Regression analyses carried out with the three STS dimensions as dependent variables show that STS is influenced by experienced traffic safety, annoyance with other road users, the trip being tiring, being distracted by billboards, and lack of freedom to choose speed and lane. In addition, travel purpose and personal characteristics play a role. Overall, the findings provide support for the validity of the STS as a tool to measure satisfaction with travel. It is concluded that using tools such as STS may provide relevant insights into how qualitative and design-related factors influence the attractiveness of trips made by car or other travel modes.

Analysis of the non-motorized commuter journeys in major Irish cities

- Transport Policy---2013---Anneka Ruth Lawson,Karen McMorrow,Bidisha Ghosh

Non-motorized commuting such as, walking and cycling to work has been recognized as essential in attaining sustainability in urban mobility. Owing to this recognition, in recent years there has been a surge of interest among policy makers and practitioners in promoting non-motorized commuting in Ireland. This paper presents an investigative study to explain the non-motorized mode share of commuter journeys in terms of relevant socioeconomic, transportation and household specific factors in five major cities of Ireland. The non-motorized modes were analyzed using the latest available Irish census data (2006). An overall analysis of the entire study region was conducted along with the development of models specific to each city, gender, distance (under and over 5km) and to the choice between non-motorized modes (walking and cycling) to gain a deeper understanding of the determinants which influence the choice of non-motorized travel mode for commuter journeys. Gender, car ownership and journey distance were revealed by analysis to have the largest effect on the use of non-motorized transport (NMT). Major Irish cities show similar behavior regarding NMT use and nation-wide policy development can be successful, provided some region or city specific differences are incorporated during policy implementation. The developed models are important tools in understanding the effectiveness of the policy interventions in promoting non-motorized travel for utilitarian purposes across the major cities of Ireland.

Vehicular fleets forecasting to project pollutant emissions: Mexico city metropolitan area case

- Transport Policy---2013---Adolfo Hernández-Moreno,Violeta Mugica-Álvarez

Vehicular fleet forecasting has a strategic value for governmental planning management and assessment, for economic policies and environmental programs, but particularly to estimate future emission inventories and fuel demand projections. In order to determine the forecasts of detailed vehicular fleets, those comprise the overall car stock and their associated pollutant emissions and fuel demand, specific curves of retirement models were used in addition to econometric analysis. To obtain forecasts for the year 2015, this methodology was applied to the Mexico City Metropolitan Area case using data since 1990. The validation of the models applied was done through economic data from 2004, 2006 and 2008. The results of the forecasts carried out displayed high confidence levels, above 95% for the medium term. The exercise with the forecasted fleets produced an expected increase of around 21% of criteria pollutants and 31% in greenhouse gases emissions due to vehicular activity, from 2007 to 2015. Further, an increase in fuel demand of around 22.9% gasoline and 27.1% diesel in the same period was estimated, which are lower than those officially projected. Finally, a specific coefficient β to the Gompertz equation applied to Mexico City case was obtained.

Comparing resale prices and total cost of ownership for gasoline, hybrid and diesel passenger cars and trucks

- Transport Policy---2013---Elisabeth A. Gilmore,Lester Lave

Turbocharged direct injection (TDI) diesel and hybridized electric gasoline (HEV) vehicles provide higher fuel economy, but have higher manufacturing costs and sell at higher prices than conventional gasoline vehicles. All other attributes being equal, rational consumers expect to recover this price premium in fuel savings over the vehicle lifetime. Since many owners sell their vehicle after three to five years, resale prices should also reflect fuel savings. Here, we employ data from used vehicle auctions in 2008–2009 for paired alternative and conventional vehicles to compare the difference in resale prices to the expected fuel savings and the five-year cost of ownership expressed as the net present value (NPV). To estimate resale prices,we group the auction data by season and by year. We then correct for accumulated odometer mileage, which accounts for most of the variability in prices. At five years, higher fuel economy vehicles retain a higher proportion of their initial price than conventional options. The ratio of the resale value to the initial purchase price increases at higher fuel prices. For the paired HEV – conventional passenger vehicles, the difference in resale prices approximates the expected future fuel savings. The price difference for TDI diesel–gasoline pairs exceeds the fuel savings; other attributes such as performance or prestige may account for this difference. Regardless of the mechanism, the fuel savings and higher resale values compensate for the price premium for the TDI diesel and HEV options.

Post-project evaluation of travel demand forecasts: Implications from the case of a Japanese railway

- Transport Policy---2013---Nobuhiro Sanko,Takayuki Morikawa,Yoshitaka Nagamatsu

Inaccuracies in forecasting create serious problems for transportation projects. To improve forecasting accuracy, researchers must investigate the reasons for the inaccuracies. However, very little research has been done, and the percentage of errors for each reason has rarely been examined. After perusing various studies on forecasting inaccuracies, the authors determined that an in-depth case study was necessary. This paper describes such a case study: an overestimate in a forecast of travel demand, forecast using the four-step method, for the Tokadai Line rail service in a suburb of Nagoya, Japan. The paper examines the following factors behind the errors: target area, population, modal split, failure to consider the effects of a competing railway, inappropriate selection of modal

choice model, and an incomplete network. Through this case, three implications of general inaccuracies in forecasting are presented. First, while previous studies have shown that input uncertainties are larger than model uncertainties, this does not mean that inputs cause larger errors. Second, the uncertainties related to inputs must be prioritised. Finally, the reasons for the inaccuracies are more difficult than expected to identify, since the same inaccuracies can be explained by more than one reason.

Charging versus rewarding: A comparison of road-pricing and rewarding peak avoidance in the Netherlands

- Transport Policy---2013---Taede Tillema,Eran Ben-Elia,Dick Ettema,Janet van Delden

The aim of this paper is to compare two congestion management schemes – road-pricing and peak avoidance rewarding – and their impact on commuter behaviour, based on two studies that were conducted in the Netherlands. The road-pricing study is based on stated preference data, whereas the study involving rewards was conducted in the context of a longitudinal field experiment. Given the substantial differences in data sources and analytical techniques applied beforehand, the comparison is made at an indicative level. It can be cautiously concluded that, as psychological theory predicts, rewarding is more effective in diverting commuters from peak periods. In both cases, the most popular alternative to peak-driving is off-peak driving. Most of the change in behaviour is attributed to introducing the new measure, whereas the impact of different price/reward levels is marginally decreasing in sensitivity and effectiveness. The short-term and long-term policy implications of these findings on the implementation of both measures are further discussed.

Evaluation of south-Australia's TravelSmart project: Changes in community's attitudes to travel

- Transport Policy---2013---Yun Zhang,Peter Stopher,Belinda Halling

The research this paper presents is from the TravelSmart Households in the West project (THITW), which was implemented in Western Adelaide, South Australia by the South Australian Department of Transport, Energy and Infrastructure (SA DTEI). The primary aim of this project was to reduce transport-related greenhouse gas emissions through travel behaviour changes. In this paper, we present a study where before and after surveys were conducted to evaluate to what extent this project impacted the community's attitudes with respect to travel behaviour change, that is, not to evaluate their behaviour change, but to see if the THITW Project impacted their attitudes about use of car and alternatives to the car. The results show that in the before survey, inadequate public transport did not get mentioned as one of the most cited disadvantages of reducing car use while in the after survey, public transport has come into the minds of both THITW participants and non-participants. Moreover, an analysis of attitudinal statement scales shows that, compared to the 2005 survey, the THITW Project has contributed to some degree of attitude change. Particularly, evidence was found that THITW participants have significantly increased their willingness to reduce car use. We conclude that evidence exists that the THITW project has had the desired effect of changing participants' attitudes towards reducing car use.

Estimating recreational cyclists' preferences for bicycle routes – Evidence from Taiwan

- Transport Policy---2013---Ching-Fu Chen,Pei-Chun Chen

This paper examines recreational cyclists' preferences for bicycle routes in Taiwan using the stated preference method. The multinomial logit model is employed to estimate the relative influences of facility attributes on bicycle route choice behaviour, while the latent class model is adopted in order to better understand the differences in preferences. Preference heterogeneity is characterized by cyclist recreation specialization level. Using data collected from 232 recreational cyclists in Taiwan, the results indicate that bicycle facility attributes, such as basic facilities and main-

tenance equipment, tourist information centers, and attractions exhibit significant effects on recreational cyclists' preferences. Cyclists with high levels of recreation specialization appear to be more likely to choose challenge and endurance routes than those with low recreational specialization. The implications of this work are presented and discussed.

Is the use of informal public transport modes in developing countries habitual? An empirical study in Davao City, Philippines

- Transport Policy---2013---Marie Danielle Guillen,Haruo Ishida,Naohisa Okamoto

The presence of unique kinds of public transportation often described as informal characterizes many cities in developing countries. As often noted, people in the lower income categories are usually the ones who rely on informal public transport services. In the Philippines, one can observed that an average Filipino uses door-to-door transport services regularly. This starts from stepping out of the house, walking several paces (if at all), hailing a "pedicab" (bicycle with a side-cab) or tricycle (motorcycle with side-cab), to riding a public utility jeepney (PUJs) or bus, getting-off, hopping on to another "pedicab or "tricycle" , and getting transported right to the door of final destination. Using Davao City, Philippines as the case study area, the paper tries to explore the concept of habit and dependency on the different road-based public transport modes based on both theories of rational behavior and planned behavior. Empirical results using structural analysis show the strong public transport dependency to PUJs and tricycles where half of the household population have vehicles. It confirms the role of rational behavior where socio-economic factors affect modal decision. Likewise, the study also shows interesting findings wherein the quality of service evaluation played a direct role in the perceived dependency to formal modes (buses, taxis) and informal mode (such as motorcycle taxis or MC taxis) but an indirect role in the actual use of the mode. The study shows the relationship of perceived reliance vis-à-vis trip recall using indigenous modes (PUJs, tricycles) and supports the theory that suggests the role of habits and "mere exposure" effect. As noted in many related studies, it is not easy to alter habits. This indicator is validated by the actual use of public transport modes especially tricycles and MC taxis for short-distance trips as well as how one views own dependency vis-à-vis how the same individual sees his/her household and community dependency to a certain public transport mode. These findings suggest the need to understand Filipino commuter's psychology and a careful review and understanding of the concept of sustainability, infrastructure needs, seamless multi-modal connections and over-all quality of service given limited economic support in a context of an emerging city in a developing country.

Service-related traffic: An analysis of the influence of firms on travel behaviour

- Transport Policy---2013---Paul Hebes,Julius Menge,Barbara Lenz

Services are becoming more and more important in industrialized countries. Yet very little is known about the traffic initiated by the provision of these services. Particularly the role of firms in this context is an unexplored field of research. To know how firms influence the travel behaviour of their employees, is however crucial for public authorities and for development of political measures.

The influence of neighbourhood design on travel behaviour: Empirical evidence from North East England

- Transport Policy---2013---Paulus Teguh Aditjandra,Corinne Mulley,John D. Nelson

This paper investigates the factors that affect travel behaviour within neighbourhoods in Tyne and Wear, North East England while accounting for differences in attitudes and perceptions. Ten different neighbourhoods have been carefully selected to characterise the two different types of traditional and suburban neighbourhood street layouts. A self-administered questionnaire has been delivered to 2200 households to capture neighbourhood design, travel patterns, travel

attitudes and socio-economic characteristics. Multivariate analysis of cross-sectional data shows that some socio-economic variables as well as travel attitudes and neighbourhood design preferences can explain the differences in travel patterns between the two distinct neighbourhood designs. The results show additionally that the traditional neighbourhood group is more sensitive to factors of perception and attitudes in relation to neighbourhood design that lead to walking, cycling and public transport use travel patterns, suggesting that land-use policy designed to accommodate lower carbon-based travel together with measures to encourage active travel will have greater impact on the traditional group than the suburban group. This finding suggests that generic measures imposed by many governments, and certainly implied by current UK land-use policy, to promote sustainable mobility should be selectively targeted.

Children’s travel behaviour and its health implications

- Transport Policy---2013---Roger L. Mackett

Children’s travel behaviour varies from that of adults in several ways: they have less choice about where they go and often they are not allowed to travel unescorted by an older person. The factors that influence children’s travel behaviour have changed in recent years, with the development of car-oriented lifestyles, increased numbers of mothers in employment and changes in attitudes towards children’s independent mobility. The purpose of this paper is to examine the nature of children’s travel behaviour and its implications for their volumes of physical activity and so for their health. After considering the nature of children’s travel behaviour and the factors that influence it, the effects of children’s travel behaviour on their volumes of physical activity are discussed; then some measures being adopted in Britain to reverse the adverse trends are described. Conclusions are drawn in terms of the policy implications.

School travel behaviour in the Netherlands and Flanders

- Transport Policy---2013---C.D. van Goeverden,E. de Boer

Studies on school travelling frequently deal with active travelling that is considered important in preventing obesity. Most research has been done in low bicycle countries where walking is the main active mode. The paper presents an analysis for the Netherlands and Flanders, two European countries with high bicycle use. The study analyses two aspects of school travel behaviour: home-to-school distances and modal choice. Both are analysed for primary and secondary school students. A descriptive analysis learns that in Flanders trip lengths to primary schools are significantly larger than in the Netherlands and that the bicycle is more frequently used in the Netherlands. Analyses of influencing variables for both home-to-school distance and modal choice demonstrate that ‘hard’ factors that define the objective conditions for school choice (crucial for home-to-school distance) and modal choice are most influential. They regard the locations of eligible schools and the qualities of the eligible modes. Just one other factor is significant in the explanation of home-to-school distances: car ownership. On the other hand, modal choice is influenced by several other socio-cultural factors, where age of the pupil, size of the household, and car ownership are most important. Most outcomes are in line with other studies. The observed high bicycle use demonstrates that the bicycle has the potential to account for a large number of trips and can even be the dominant mode in school travelling.

Modelling demand under parking and cordon pricing policy

- Transport Policy---2013---Kian Ahmadi Azari,Sulistyo Arintono,Hussain Hamid,Riza Atiq O.K. Rahmat

The purpose of this study was to explore travellers’ responsiveness to congestion pricing (cordon pricing) and parking attributes (especially parking pricing) in

deciding whether to drive and park in the central business district (CBD). Employing the stated-preference method, data were collected by personal interviews in Mashhad City CBD. The respondents were requested to report their current trip to the CBD by answering a set of questions and scenarios to consider five alternatives, including two parking locations in the CBD: park inside the cordon-pricing zone or outside and access the cordon area by walking or public transport, shift to public transport (taxi and bus), or cancelling of their trip to the CBD. The two parking locations were categorised by cordon and parking tariff schedule, search and queue time for a parking space, and access time from the parking space to the final destination. The preferences regarding mode of transportation and parking choices were determined using a multinomial logit model, which was used to estimate elasticity values and the willingness-to-pay among attributes. The results indicate that drivers are highly sensitive to cordon charge (1.145), significantly more than to parking cost, search and egress times in switching mode and parking choice. Furthermore, respondents' reactions suggest that drivers' willingness to pay for parking fees is higher than their tendency to pay for cordon tolls.

Sustainability assessment at the transportation planning level: Performance measures and indexes

- Transport Policy---2013---Christy Mihyeon Jeon,Adjo A. Amekudzi,Randall L. Guensler

While the definition of a sustainable transportation system is varied, there is emerging consensus that transportation system sustainability should capture attributes of system effectiveness and system impacts on economic development, environmental integrity, and social quality of life. Sustainability assessment can be incorporated at the planning level in order to influence decision making, and support policies that affect regional sustainability. This paper reviews methodologies that can be applied in sustainability assessment in transportation planning in order to shed light on the procedures being used to incorporate sustainability more effectively in the planning process. Using data from the Atlanta Metropolitan Region, the study identifies performance measures based on sustainability issues and regional goals and evaluates proposed transportation and land use alternatives. The study evaluates and discusses several performance measures and aggregates them into indexes representing four parameters of sustainability: system effectiveness, environmental, economic, and social impacts, to enable visualization and assessment of tradeoffs and dominance for the competing alternatives. This study is potentially useful to agencies interested in understanding the range of tools being used for sustainability assessment, expanding or refining their performance measures to capture sustainability in transportation planning, and using them in evaluating tradeoffs among competing alternatives as well as in identifying dominant alternatives.

One approach for road transport project selection

- Transport Policy---2013---Ivan Ivanović,Dragana Grujičić,Dragana Macura,Jadranka Jović,Nebojša Bojović

The rapid development of civilization, population growth and constant increase in the resource consumption level had an effect on changes in methodologies and procedures for approaching the problem in many areas including the traffic engineering.

Thou shalt drive electric and hybrid vehicles: Scenario analysis on energy saving and emission mitigation for road transportation sector in China

- Transport Policy---2013---Ling-Yun He,Yu Chen

Road transport today is responsible for a significant and growing share of anthropogenic emissions and energy consumption. This paper attempts to address the possible policy measures to reduce the energy consumption and mitigate the harmful emissions, especially greenhouse gas (GHG) from China's road transportation sector. Five scenarios, which assess electric

or/and hybrid vehicles, are designed and examined to estimate the potentials for reducing consumption and emissions. It is concluded that comprehensive and appropriate strategies be promoted to minimize the adverse impacts of China's road vehicles on energy demand and environmental sustainability. For future policy implementation, it is appropriate to promote both high-efficient pure electric and hybrid vehicles simultaneously and improve shares of both types by a wide margin. To be more specific, significant energy saving and emissions reduction can be achieved by promoting electric vehicles in some subsectors (such as Passenger vehicle (PV), Light truck (LT), Bus and Motorcycle (MC)), and by promoting hybrid vehicles in other subsector (Heavy truck (HT)). Our results can provide better insights for both policy makers and practitioners in the field.

A GIS-based appraisal framework for new local railway stations and services

- Transport Policy---2013---Simon P. Blainey,John M. Preston

This paper describes the development of an integrated appraisal procedure for new local railway stations. The procedure is not intended to act as a 'solid state' set of guidelines, but instead to provide a framework containing current best practice, within which individual elements can be updated and enhanced as new evidence becomes available without affecting the rest of the methodology. The framework includes a number of different elements, which are brought together in an appraisal spreadsheet but which can be altered without affecting other sections of the procedure. First, the best locations for new stations within the study area are chosen, with potential sites selected, catchments defined, infrastructure capacity assessed and potential service patterns planned. Usage at the potential stations is predicted using trip end and flow level demand models, and the extent of abstraction from neighbouring stations is considered. The benefits and costs of constructing the stations are then estimated, including direct financial gains and losses as well as wider economic impacts and social costs and benefits. Finally, these are brought together to calculate financial and social net present values and benefit–cost ratios, with break-even demand levels for new stations also provided. The framework provides a consistent means of estimating the costs and benefits of the large number of schemes for new local railway stations in the UK, and use of a standardised methodology allows those schemes with the best case for construction to be prioritised. Since rail privatisation in the mid-1990s the costs of new stations have escalated dramatically, meaning that stations have to demonstrate much greater revenue-earning potential than was previously the case to justify construction. By providing more accurate forecasts and thus reducing uncertainty over scheme costs and benefits, this appraisal procedure can help to ensure that the best return is obtained on the limited investment funds which are available.

Reducing parking demand and traffic congestion at the American University of Beirut

- Transport Policy---2013---Alisar Aoun,Maya Abou-Zeid,Isam Kaysi,Cynthia Myntti

The American University of Beirut (AUB), an urban campus in the city center of Beirut, Lebanon, is seeking solutions to parking and congestion problems in its neighborhood. However, documented Transportation Demand Management (TDM) practices at campuses are mostly from the developed world, and contrast markedly with Beirut, which lacks an organized public transport sector and effective law enforcement. Further, the AUB campus population comes from wealthier households and has higher car ownership compared to the rest of Lebanon. Thus, conventional strategies such as subsidizing transit passes and restricting or pricing parking are not perceived to be appropriate solutions for AUB and many other developing world cases. We examine five American campuses to learn: What are the impacts of increasing campus parking supply? How can transit be promoted without an organized public transit sector? And, how can we incentivize a high-income campus population to use campus transit services? Lessons for AUB are: campus transport services do not always stem from existing

public transport services – some campuses have successfully initiated their own transport services; designing a campus transport service catered to the target population can be extremely effective for example in dealing with high-income clients; and ridership on mass transport systems is partly dependent on driving disincentives such as limited, priced parking. Based on these findings, we propose a new mobility solution at AUB, dynamic taxi-sharing, and present preliminary mode shift survey data indicating a potential market and positive reductions in vehicle trips.

Reconceptualising policy integration in road safety management

- Transport Policy---2013---Joao Manuel da Costa Canoquena

Unless sustained, coordinated action is generated in road safety, road traffic deaths are poised to rise from approximately 1.3 to 1.9 million a year by 2020 (Krug, 2012). To generate this harmonised response, road safety management agencies are being urged to adopt multisectoral collaboration (WHO, 2009b), which is achievable through the principle of policy integration. Yet policy integration, in its current hierarchical format, is marred by a lack of universality of its interpretation, a failure to anticipate the complexities of coordinated effort, dearth of information about its design and the absence of a normative perspective to share responsibility. This paper addresses this ill-conception of policy integration by reconceptualising it through a qualitative examination of 16 road safety stakeholders' written submissions, lodged with the Australian Transport Council in 2011. The resulting, new principle of policy integration, Participatory Deliberative Integration, provides a conceptual framework for the alignment of effort across stakeholders in transport, health, traffic law enforcement, relevant trades and the community. With the adoption of Participatory Deliberative Integration, road safety management agencies should secure the commitment of key stakeholders in the development and implementation of, amongst other policy measures, National Road Safety Strategies and Mix Mode Integrated Timetabling.

Time series analysis of rail freight services by the private sector in Europe

- Transport Policy---2013---Clare Woroniuk,Marin Marinov,Tom Zunder,Phil Mortimer

This paper explores rail freight services provided by the private sector in the context of a rail freight corridor through Europe with new EU policy directives in place and assesses the corridor using time series analysis. Comparisons between three different operational time periods are discussed; analysis suggests that these types of services operated on trans-European rail freight corridors appear to be a viable and reliable concept in the near future.

Household composition and within-household car saturation in Melbourne

- Transport Policy---2013---Alexa Delbosc

This paper examines how household size and composition influences whether a household runs fewer cars than adults of driving age or at least one car per adult ('household car saturation'). Data from the Victorian Integrated Survey of Travel and Activity in Melbourne, Australia was used to compare the household characteristics, neighbourhood characteristics and household income of saturated and non-saturated households. These predictors were then entered into two binary logit models. The largest influence on car saturation was the number of adults in the household where households with three adults were 45% less likely to be car-saturated than one-adult households, ceteris paribus. The presence of a young adult was particularly influential, likely because young adults are less likely to be licensed and less likely to be able to afford their own vehicle. The impact of household size is a concern in Australia where the average household size has been slowly decreasing; however this trend may be countered by an increase in young adults living at home for longer. Implications for policy are discussed.

A study on airlines' differentiated cargo service strategies

- Transport Policy---2013---Chaug-Ing Hsu,Yu-Hua Chen,Wei-Ting Chen

This study analyzes how an airline operates differentiated cargo services to meet shipping demand for different goods so as to enhance its service level, air freight demand, and total profit. The shipping alternative choice model assumes shippers with different demand characteristics choose the alternative with the lowest transportation and inventory costs between express and standard shipping services offered by different airlines. The study then formulates airline cost functions with respect to providing standard and express services. Furthermore, the study explores demand–supply interactions and constructs a mathematical programming model to determine flight frequencies and shipping charges for standard and express services by maximizing the object airline's total profit. The results show that those shipping high-value freights tend to select express shipping services and, for the object airline, operating differentiated cargo services rather than the current standard services can raise its market share and total profit by 19.4% and 8.6%, respectively. Moreover, for perishable goods stored in lower temperature-control devices, the charges should be higher. The results also show that not only airlines, but also shippers, can markedly reduce their costs and enhance their competitive advantages with express shipping services.

Community participation and behavioral changes of helmet use in Thailand

- Transport Policy---2013---Vatanavongs Ratanavaraha,Sajjakaj Jomnonkwao

The loss of life and property from motorcycle accidents is a significant public issue in countries with a high dependency on motorcycles. This includes Thailand, where the damage from motorcycle accidents has been increasing yearly. Helmets are one of the most effective pieces of equipment in reducing the severity of injuries in each crash. An increase in helmet use amongst motorcycle riders would therefore reduce the loss of life. With this in mind, Thailand has adopted a wide-scale enforcement of laws regarding helmet use, but there are limits to how widely enforcement can work. Community participation is considered key in increasing the rate of helmet usage. In this, people in the community become the driving force behind mechanisms of community safety through community participation, including public information, public consultation, public meetings, and participative decision-making. This study aims to capture the concept of community participation as a means of increasing the rate of helmet use, and to identify economic, social, and environmental factors that affect the helmet usage of people at the local level, including gender, age, location, number of road lanes, time of day, day of the week, and traffic conditions. As a result of this community participation project in the study area, this survey has found an increase of 13.23% in the rates of helmet usage.

Quality attributes of public transport that attract car users: A research review

- Transport Policy---2013---Lauren Redman,Margareta Friman,Tommy Gärling,Terry Hartig

The transport sector presents contentious issues with respect to sustainable development, particularly regarding the use of private motorised vehicles in urban areas. Public transport (PT) together with cycling and walking are generally agreed to be sustainable alternatives to private car use. This paper aims to contribute to a better understanding of those aspects of PT quality most likely to attract car users. Toward achieving this aim, relevant research was sought to answer the following two questions: What quality attributes of PT services are attractive to users? And what changes in quality attributes of PT services would encourage modal shift from private motor vehicles to PT? Using a qualitative systematic review, it is concluded that while service reliability and frequency are important PT attributes in general, those attributes most effective in attracting car users are largely affective and connected to individual perceptions, motivations and contexts. Reduced fare promotions and other habit-interrupting

transport policy measures can succeed in encouraging car users to try PT services initially. Attributes over and above basic accessibility, reliability and mobility provision, perceived by the target market as important service attributes, must then be provided in sustaining the switch from car use after promotional tactics have expired.

Theory of routine mode choice decisions: An operational framework to increase sustainable transportation

- Transport Policy---2013---Robert J. Schneider

A growing number of communities in the United States are seeking to improve the sustainability of their transportation systems by shifting routine automobile travel to walking and bicycling. In order to identify strategies that may be most effective at increasing pedestrian and bicycle transportation in a specific local context, practitioners need a greater understanding of the underlying thought process that people use to select travel modes. Previous research from the travel behavior and psychology fields provides the foundation for a five-step, operational Theory of Routine Mode Choice Decisions. Walking and bicycling could be promoted through each of the five steps: awareness and availability (e.g., offer individual marketing programs), basic safety and security (e.g., make pedestrian and bicycle facility improvements and increase education and enforcement efforts), convenience and cost (e.g., institute higher-density, mixed land uses, and limited, more expensive automobile parking), enjoyment (e.g., plant street trees and increase awareness of non-motorized transportation benefits), and habit (e.g., target information about sustainable transportation options to people making key life changes). The components of the theory are supported by in-depth interview responses from the San Francisco Bay Area.

Subjective valuation of the transit transfer experience: The case of Santiago de Chile

- Transport Policy---2013---Francisca Javiera Navarrete,Juan de Dios Ortúzar

The still controversial Transantiago public transport system, in Santiago de Chile, has a topological structure that often requires its users to make one or more transfers to reach their destinations. This was rarely necessary in the previous non-integrated system and users reacted with unexpected displeasure when it started even though fare integration in the new system means that transferring involved no extra costs. This study investigates users' subjective valuations of the transfer experience and its associated elements (walking and waiting times), analysing how these vary for different types of transfer combinations. In particular, we determine the relative preferences the following transfer combinations: metro–metro, metro–bus, bus–metro and bus–bus, with emphasis on the importance of various physical characteristics such as information availability, the existence of station escalators and the ability to board the first available bus or train. We also estimate the relative valuation of the different time component values (walking, waiting and in-vehicle) of trips including a transfer, and also derived the penalties users assign to trips that require transferring at intermodal stations during the morning peak hour. The trip time components most heavily penalised were the walking time involved in transferring and the final walking time to the user's destination.

An analysis of park-and-ride provision at light rail stations across the US

- Transport Policy---2013---Michael Duncan,Robert K. Christensen

Whether to provide a park-and-ride facility is a key decision for transit agencies when they are planning for a new or expanded rail system. We seek to better understand the reasons behind park-and-ride provision by estimating a logit model that predicts the presence of parking at a set of new light rail stations across the US. In terms of station area attributes, this model demonstrates a relatively predictable pattern, with parking facilities more frequently occurring in lower density environments where land is cheap and available. After controlling for station attributes, certain transit operators exhibit a greater propensity to provide

park-and-ride facilities (e.g., those that serve multiple jurisdictions, have large service areas, and rely heavily on local funding). Further, parking provision also varies based on the characteristics of the municipality in which the station is located. Stations within municipalities that use mayor-council forms of government, for example, are more likely to include parking.

Car stickiness: Heuristics and biases in travel choice

- Transport Policy---2013---Alessandro Innocenti,Patrizia Lattarulo,Maria Grazia Pazienza

We conduct a laboratory experiment to investigate the factors determining travel mode choice. Two different scenarios are considered. In the first scenario, subjects have to decide whether to commute by car or by metro. Metro costs are fixed, while car costs are uncertain and determined by the joint effect of casual events and traffic congestion. In the second scenario, subjects have to decide whether to travel by car or by bus, whose costs are determined by a different combination of chance and traffic congestion. Subjects receive feedback information on the actual travel times of both modes. We find that individuals show a marked preference for cars, are inclined to confirm their first choice and exhibit travel mode stickiness. We conclude that travel mode choice is subject to cognitive heuristics and biases leading to robust deviations from rational behaviour.

The economic effects of government regulation: Evidence from the New York taxicab market

- Transport Policy---2013---Tamer Cetin,Kadir Yasin Eryigit

This paper empirically investigates the economic effects of government regulation in a regulated taxicab market. We use a cointegration model with structural breaks to test the hypothesis that government regulation increases the price of the regulated good and/or causes the monopoly price. We examine the New York taxicab market and argue that regulation brings about artificial rents by increasing medallion prices, and an increase in medallion prices gives rises to upward pressure on taxi fares. The evidence presented shows that regulation of the New York taxicab market increases medallion prices, and this increase in medallion prices pressures on taxi fares.

Decision making algorithm for bus passenger simulation during the vehicle design process

- Transport Policy---2013---Tomasz Schelenz,Ángel Suescun,MariAnne Karlsson,Li Wikström

This paper presents a bus passenger decision making algorithm that can be applied to evaluate a new bus design using agent-based simulation techniques. For each single passenger, the algorithm builds a ranked list of available targets (seats and standing areas) according to their preferences and selects the most convenient one. The algorithm is fitted to work with a generic parametric passenger model and allow differentiating several passenger types managing their preferences regarding the entry door, seat location and standing area, among others. The differences in these preferences allow us to distinguish the types of bus passenger. The algorithm also takes into account the variation of preferences according to the amount of passengers onboard. Four fill-in modes from a nearly empty bus to maximum capacity have been implemented. To evaluate the performance of the algorithm, two case studies have been implemented within the XJTEK AnyLogic simulation environment. The decision making algorithm has been used to model the behaviour of the eight types of passengers in two different bus layouts, one with three doors and the other with five. The types of passengers were defined by Chalmers University of Technology in a previous work from 100 observations at bus stops and onboard buses in Gothenburg, Bremerhaven and Rome. The results prove that the passenger decision making algorithm can be effectively used to evaluate a new design of a bus layout using agent-based simulation techniques estimating the parameters that measure quality of service (passengers' satisfaction and dwell time among others).

Referendum voting in road pricing reform: A review of the evidence

- Transport Policy---2013---David Hensher,Zheng Li

Voting support for congestion charging has a very recent history with, until now, only two congestion charging schemes approved by a majority in referendum voting (Stockholm and Milan). This paper presents a review of referendum voting behaviour in road pricing reform, in which a number of key factors that influence voters' behaviour are identified including voter expectations, awareness of what road pricing reform means, familiarity with the road pricing debate, perceived fairness, environmental concerns, car dependence, and the value of a trial. The two most important reasons that the majority of congestion charging proposals were voted against in referenda in jurisdictions such as Manchester and Edinburgh in the UK are uncertainty associated with the effectiveness of congestion charging and the lack of information on congestion charging. Based on two successful congestion charging referenda and ideas from research studies, this paper proposes a two-step approach to address the barriers to the successful implementation of congestion charging in a package of transport reform initiatives.

Italian seaports' competition policies: Facts and figures

- Transport Policy---2013---Antonio Musso,Cristiana Piccioni,Eddy Van de Voorde

Three decades ago, ports were generally regarded as homogeneous entities that competed with each other at different operational levels. In the course of the 1990s, however, the "port product" increasingly came to be seen as a set of interlinking functions, with the port as such serving as one of the links in the overall logistic chain. The most recent literature has revisited the concept of port competition to take due account of the complex and heterogeneous nature of ports today. Moreover, the focus is no longer exclusively on competition between ports, but increasingly also on internal competition, between individual production companies and service providers operating within or making use of the same port setting.

Does flexitime affect choice of departure time for morning home-based commuting trips? Evidence from two regions in California

- Transport Policy---2013---Sylvia Y. He

Over the past twenty-five years, more workers in the United States have been given the option of flexible work schedules, which are designed to redistribute commuter traffic over the course of a day by allowing employees to vary their arrival and/or departure times. This paper examines whether and to what degree access to flexible work schedules affects the departure times of commuters in the two largest and most congested areas of California: the Los Angeles and San Francisco regions. Trip data were obtained from the 2009 US National Household Travel Survey (NHTS). The results of this study show that people who have access to flexitime preferred later departure times rather than earlier times. Workers with flexible schedules were 3.30% less likely to depart before peak hours, 4.11% less likely during peak hours, and 7.41% more likely afterwards. Based on these findings, government agencies and private firms in regions with severe traffic congestion problems may consider adopting alternative work schedules.

The sensitivity of on-street parking demand in response to price changes: A case study in Seattle, WA

- Transport Policy---2013---Dadi Baldur Ottosson,Cynthia Chen,Tingting Wang,Haiyun Lin

This study investigates the sensitivity of on-street parking demand using the automatic transaction data from parking pay stations obtained before and after a parking rate change that was implemented in Seattle in early 2011. The parking rate implementation is based on performance-based pricing where rates are increased, decreased, or not changed in neighborhoods with occupancy levels higher than, lower than, or within the

desired level. We calculated the price elasticity of on-street parking demand, or the percentage change in block-level occupancy in response to a change in pricing, modified by time of day and neighborhood characteristics. This study is the first one that calculates price elasticity by time of day for on-street parking demand on a block level in the U.S. context. This study is also the first one that empirically derives how neighborhood characteristics affect on-street parking demand in response to pricing. Moreover, this study looks into how pricing results in changes in parking turnover rates, parking duration and total revenue generated.

Towards a holistic approach to the travel experience: A qualitative study of bus transportation

- Transport Policy---2013---Rui Carreira,Lia Patrício,Renato Natal Jorge,Chris Magee,Qi Van Eikema Hommes

This article presents the results of a qualitative study with 49 bus passengers in two types of mid-distance journeys: (1) experience-centric trips (touristic), and (2) utilitarian trips (intercity transportation). Study results show that passenger travel experience encompasses all moments of contact with the transportation service, as well as aspects that are not in direct control of the transportation provider. The results also reveal that the travel experience involves a holistic set of customer responses that go beyond cognitive assessments, also comprising sensorial and emotional components. The comparison of the two transportation settings shows that both experience-centric and utilitarian trip passengers have a holistic view of the travel experience, although focusing on different experience drivers and customer responses. These findings indicate that transport providers and planners should pay attention to the overall customer travel experience from a holistic view, and that transportation services should be carefully designed and managed in a systemic way.

Truck driver perceptions and preferences: Congestion and conflict, managed lanes, and tolls

- Transport Policy---2012---Christopher R. Cherry,Adebola A. Adelakun

Growing truck traffic has elevated interest for developing new policy and engineering strategies to address efficiency and safety challenges associated with increasingly mixed traffic streams, especially in dense and congested urban areas. This paper focuses on revealing perceptions of truck drivers to urban congestion and safety challenges and gauges their interests in potential geometric or operational solutions, including managed truck lanes and tolling. A survey of 500 long-haul truck drivers was administered in Knoxville, Tennessee, at the crossroads of major north–south and east–west interstate highways. The dataset was evenly divided between independent owner-operators and company employed drivers. These two populations had somewhat varied trip making behavior, but their perceptions of traffic problems were consistent. The most problematic factors on Knoxville's urban highways include aggressive drivers, congestion, car lane changing behavior, and merging vehicles. The survey suggested several alternative truck lane management configurations and most of the respondents supported moving truck lanes to the inside travel lanes to avoid merging and lane-changing cars, either through traditional truck lanes restrictions or truck-only lanes. Respondents were polarized for and against the current truck lane restrictions; mandating trucks use the right two lanes. The mean willingness-to-pay to avoid ten minutes of congestion (through truck management) is about $2.00, lower than other studies. The results of this survey could be generalizable to other urban areas since most traffic is non-local. Future managed lane approaches can balance driver perceptions with operational efficiency to provide acceptable and high performing truck infrastructure.

Union compensation following intrastate deregulation: Evidence from the US trucking industry

- Transport Policy---2012---Steven Trick,James Peoples

This study contributes to the analysis of union pay compensation patterns in the trucking industry by considering the effect of intrastate deregulation on wage and nonwage compensation in the US trucking industry. Providing such an analysis contributes to gaining greater understanding of the persistence of relatively high union premiums in the for-hire sector following federal legislation promoting interstate competition. For-hire trucking still faced intrastate rate and entry regulation following interstate deregulation within this trucking sector. Hence, intrastate service could still generate rent to be shared with drivers. The passage of the Airport Improvement Act (AIA) of 1995 created a business environment that placed additional competitive pressure on rates by eliminating intrastate regulation. Given the stepped-up competition following this act, this study hypothesizes that for-hire union premiums should continue to decline if union drivers were the beneficiaries of regulatory rent. Findings using individual worker information support this study's hypothesis.

What are the ingredients of successful travel behavioural change campaigns?

- Transport Policy---2012---Nick Davies

An examination of the evidence from twenty case studies of behavioural change projects identifies common and specific elements which led to their success. Using evidence from a recent EU project, the paper discusses the design of travel behaviour change campaigns, with specific reference to the theoretical underpinnings and practical approaches of social marketing. Important design elements include clear measureable aims, a combination of communications and face-to-face marketing approaches and formative research to build a holistic picture of the target audience and identify potential barriers to behavioural change. The varying nature of campaigns reflects a need to improve and synchronise evaluation, with particular focus on the actual design of the campaign.

Transport and ethics: Dilemmas for CBA researchers. An interview-based study from the Netherlands

- Transport Policy---2012---Bert Van Wee,Eric Molin

This paper presents the results of an interview- and web questionnaire-based study into the ethics-related dilemmas of researchers in the field of cost–benefit analysis (CBA) in the Netherlands. The results reveal first that ethical codes are only known to a limited extent by researchers in the Dutch CBA community, and formalized. Second, having the promoter of major infrastructure projects as the client for 'independent' ex ante CBA of those projects creates a conflict of interest, and limits the usefulness of CBA in modern societies. Third, respondents with a university background tend to value the interests of society more highly than consultants, who value the client's interests more. Fourth, role-related dilemmas can easily occur. A first dilemma in this category relates to the trade-off between the quality of research and constraints (on time, money, and delivery), a second dilemma relates to what research a university should or should not do, a third dilemma follows from the publication culture at universities. Fifth, the respondents believe that the Dutch OEI-guidelines (guidelines that explain that a CBA should be carried out for large national infrastructure projects, including how these CBAs should be carried out) increased the quality of CBAs for national projects in the Netherlands and reduced ethical dilemmas for researchers. We present several possible implications of our research, including arguments for developing codes of conduct for clients of research; doing CBA for more than only large national projects; and an independent second opinion or an independent committee supervising the CBA research.

The impact of airport and seaport privatization on efficiency and performance: A review of the international evidence and implications for developing countries

- Transport Policy---2012---Stephen X.H. Gong,Kevin Cullinane,Michael Firth

This article provides a synthesis of the international evidence with respect to the impact of privatization on the efficiency and performance of airports and seaports. The theoretical frameworks, particularly the arguments for potential efficiency gains from privatization are reviewed first, followed by a discussion and evaluation of the empirical results and conclusions from selected studies of airport and seaport privatization. Then, policy implications of the theoretical frameworks and the international evidence are discussed with special reference to privatization of the transport infrastructure in developing countries. Future research directions are also suggested.

Travel mode switching: Comparison of findings from two public transportation experiments

- Transport Policy---2012---Maya Abou-Zeid,Moshe Ben-Akiva

In previous research, we conducted a small-scale experiment in Switzerland to study the effect of a temporary use of public transportation by habitual car drivers on their commute satisfaction and mode switching. This paper reports findings from a similar experiment conducted at the Massachusetts Institute of Technology (MIT) with a larger sample, focusing on mode switching differences between the two experiments. Whereas none of the Swiss participants switched, about 30% of MIT participants switched to public transportation after the intervention (or treatment). An analysis of the underlying reasons for these differences is presented, including individual socio-demographic factors, travel attributes and institutional transportation policies, experiment context, social influences, and psychological variables. The individual and behavioral variables are compared between those who switched to public transportation and those who did not, and pre- to post-treatment changes are analyzed. Those who switched to public transportation were more predisposed to switching, were more cost-conscious, and had more favorable perceptions and attitudes towards public transportation. Those who did not switch became happier with their cars. Implications for mode switching policies employing free public transportation tickets and for institutional transportation policies are drawn.

Estimating values of travel time savings for toll roads: Avoiding a common error

- Transport Policy---2012---Zheng Li,David Hensher

Traditionally, the empirical valuation of travel time savings (VTTS) is obtained from a linear utility specification in a discrete choice model, which implicitly assumes a risk-neutral attitude. This paper draws on recent contributions by the authors that accommodate the attitude towards risk within a non-linear utility specification as a preferred framework within which to value travel time savings. The interest in the non-linear form is motivated by the evidence in Hensher et al. (2011) that mean estimates of VTTS in a proposed toll road context are significantly lower when account is taken of risk attitude. The percentage reduction in the estimate of mean VTTS is approximately (coincidentally) equal to the actual percentage error in traffic forecasts associated with the new tollroad two years after opening. If we could show that this evidence of a lower mean estimate under the non-linear treatment is found in other data settings, then we gain confidence in suggesting that the linear-utility assumption to valuing travel time savings might be a potential contributor to over-predicted tollroad traffic forecasts. The non-linear model is applied herein to two other tollroad choice data sets and we find that sampled car commuters tend to be risk taking when decision making is subject to risk (due to the presence of variability in travel times). The model produces lower mean VTTS estimates than the traditional (linear) model, providing additional evidence of a systematic over-prediction of VTTS under the linear assumption. This paper suggests that future empirical studies on valuing time savings (and

variability) should address the attitude towards risk.

Evaluating European railway deregulation using different approaches

- Transport Policy---2012---Pedro Cantos-Sánchez,José Pastor,Lorenzo Serrano Martinez

There has recently been a great deal of interest in the impacts of the deregulating and restructuring measures in the European railway sector. A vast amount of literature is devoted to analyzing the effects of these deregulation and restructuring measures on efficiency and productivity and the results are not totally unambiguous. However, while most of the papers show that the introduction of competition within the sector (in both passenger and freight markets) has had a positive impact in terms of efficiency and productivity, the impact of vertical separation has produced different results in the literature. The contribution of this paper to the existing literature is twofold. Firstly we estimate efficiency levels (using a sample with information of 23 European national rail systems from 2001 to 2008) using alternative approaches. Then we compare the results of both techniques in order to analyze the potential differences between these approaches. Secondly we estimate the effects of the reforms on inefficiency levels and we find that the rankings obtained are similar, and that the best way to foster an increase in efficiency is always by combining vertical and horizontal reforms in the rail industry.

Have Spanish port sector reforms during the last two decades been successful? A cost frontier approach

- Transport Policy---2012---Ana Rodriguez-Alvarez,Beatriz Tovar

The evolution of the port management model in Spain has been marked by three legislative reforms in the last two decades. This legislation was designed so that the Spanish regulatory framework could embrace the forms of port organization and management that would in turn permit the Spanish ports to function competitively and efficiently, and to be suitably positioned within the distribution systems. This paper aims to analyze the impact of these regulatory changes upon the economic efficiency of the Spanish Port Authorities during 1993–2007 period. To do this, we use a short run total cost model after contrasting that it is the more appropriate because our results suggest that this sector is not in long-run equilibrium. The results demonstrate that the impact of these legislative reforms has not been equal. The most significant changes, in terms of economic efficiency, took place in the first period. The results were also positive for the second period, although the efficiency gains were much more modest. Finally the third legislative reform seemed to have had a contrary effect upon economic efficiency.

Making better choices: a systematic comparison of adversarial and collaborative approaches to the transport policy process

- Transport Policy---2012---Christiane Baumann,Stuart White

This paper investigates the practical and theoretical advantages of collaborative stakeholder (CSD) dialogue over adversarial processes in facilitating better transport policy choices.

The typical company car user does not exist: The case of Flemish company car drivers

- Transport Policy---2012---Cathy Macharis,Astrid De Witte

In recent years the use of company cars has gained a lot of importance. In Belgium, they are increasingly used by companies as an incentive to motivate and compensate employees, resulting in the fact that half of the new car registrations are nowadays made in the name of a company and that companies account for 10% of the Belgian car fleet. In many cases the company car can also be used for private trips. In addition, most costs related to the use of a company car are borne by the employer, turning company cars into a nearly free way of travelling for the employee. Research has already established that the yearly amount of kilometres driven

with a company car is significantly higher than that of private cars (e.g., Hubert and Toint, 2002; De Witte et al., 2009). Consequently, the rising phenomenon of company cars and its impact on our daily mobility can no longer be ignored. The aim of this paper is to explore the travel behaviours of company car users to make recommendations towards policy makers. This paper uses cluster analysis to show that there is no such thing as the 'typical' company car user. Three types of company car users were identified, each using their company car for different reasons and therefore each requiring different policy actions.

The impact of public reforms on the productivity of Spanish ports: A parametric distance function approach

- Transport Policy---2012---Ramón Núñez-Sánchez,Pablo Coto-Millán

This paper analyses the evolution of total factor productivity and its decomposition between 1986 and 2005 in the Spanish port authorities using a parametric distance function approach. During this period, the Spanish port authorities experienced three important regulatory changes. The results show that technical progress and scale efficiency gains improved the total factor productivity, whereas technical efficiency losses reduced the total factor productivity. The change in the model of port management from a tool port model to a landlord port model, the Spanish economic policy in the early nineties, the adoption of particular technologies and the ports' overcapacity could explain these results.

Establishing public policy to protect critical infrastructure: Finding a balance between exposure and cost in Los Angeles County

- Transport Policy---2012---Justin Yates,Rajan Batta,Mark Karwan,Irene Casas

This paper examines the problem of critical infrastructure protection in urban environments and provides a mechanism for evaluating the performance allocated resources on defense of the region. In the devised formulation, a bi-level mixed integer program and hypercube queuing model compose the mathematical model used to represent the concept of critical infrastructure protection between an attacker and a defender operating within the urban environment and an experimental design is used as the basis for observing salient properties and trends. Applying the model within Los Angeles County, California, results demonstrate the trade-offs observed in various protection schemes and illustrate how continuously increasing defense resources does not guarantee a safer region. The implication of detection strategy on response capability is also assessed through the case study, illustrating the importance of balance when deriving solutions. We also show how the mathematical model may be used to support research and development in defense technologies by identifying resource characteristics that strongly influence infrastructure protection.

Car attitudes in children from different socio-economic backgrounds in the Netherlands

- Transport Policy---2012---Helen Kopnina,Melanie Williams

This research explores the attitudes of children from different socio-economic backgrounds towards cars. This paper explores their projected choices and motivations in the context of (1) post-materialist values; (2) economic constraints; and (3) social status theories; and draws upon survey research among 140 upper elementary school children in the Netherlands between September 2010 and January 2011. Comparative analysis shows that there are significant differences in attitudes of children from different socio-economic backgrounds. Pupils from the affluent predominantly ethnically Dutch schools showed greater awareness of and concern about their parents' and general use of cars, and less desire to own a car in the future, children from less economically advantaged schools demonstrated lower environmental awareness and concern and more desire to own a car in the future. This study is based on a small sample and indicates a need for large-scale follow-up study of children's attitudes towards cars.

General cargo and containership emergent routes: A complex networks description

- Transport Policy---2012---Carlos Pais Montes,Maria Jesus Freire Seoane,Fernando González Laxe

The paper aims to explain the evolution of the containerized and general cargo maritime routes in the last 3 years using complex networks analysis. Several particular results are searched: which ports are currently rising or dwindling in throughput; how is the structure of their network dynamics; and how to describe the resemblances and differences between these two transport patterns.

Towards effective urban transportation system in Lagos, Nigeria: Commuters' opinions and experiences

- Transport Policy---2012---Olurominiyi O. Ibitayo

The economic and financial sustainability of cities is inextricably linked with the viability of the city's transportation system. The viability of the system can be enhanced through an understanding of commuters' opinions and experiences. Using Lagos, Nigeria, as a case study, the purpose of this study therefore is to investigate commuters' opinions and experiences about several elements of the city's transportation system.

Integration in Dutch planning of motorways: From "line" towards "area-oriented" approaches

- Transport Policy---2012---Niels Heeres,Taede Tillema,Jos Arts

In Dutch motorway planning we can observe a gradual transformation from traditional line-oriented planning towards what are known as area-oriented approaches. Area-oriented planning – apparent in various gradations from landscaping, context-sensitive design, area-oriented approaches to integrated area-development – is expected to better incorporate the complex array of needs, demands and opportunities of the area surrounding newly planned road infrastructure. The integration of infrastructure and other spatial policy sectors such as housing, business, water, nature and recreation is expected to lead to better, more sustainable road infrastructure development. This paper explores the shift from line-oriented planning towards area-oriented planning. We conducted a historical analysis of policy developments in Dutch road infrastructure planning and have conceptualized area-oriented approaches in road infrastructure planning. Furthermore, the developments observed in the Netherlands are placed in an international perspective, through an overview of developments and practices in several Western countries.

A small step toward environmentally sustainable transport? The media debate over the Finnish carbon dioxide-based car tax reform

- Transport Policy---2012---Nina A. Nygrén,Jari Lyytimäki,Petri Tapio

Societies are increasingly characterised by increasing mobility of people and materials. Consequently, harmful environmental impacts of transport are likely to increase unless specific policies aimed at mitigating these impacts can be successfully implemented. Based on EU-level requirements for carbon dioxide emission reductions, a car tax reform was enacted in Finland in 2008. By using the environmental protection process (EPP) framework as a conceptual tool, we perform a quantitative content analysis of media discussion of the car tax reform. The EPP framework is an integrative tool, aimed at an overall view of the characteristics of environmental problems and mitigation measures. The results show that societal factors, emissions, measures and the potential side-effects of the reform dominated the media discussion. Short-term impacts were emphasised over longer-term perspectives in the discussion's future-orientation. Overall, it seems that in spite of a relatively wide-ranging discussion, the media debate contributed only marginally to public understanding of the prerequisites for environmentally sustainable transport.

Assessment of policy strategies to develop intermodal services: The case of inland terminals in Germany

- Transport Policy---2012---Gernot Liedtke,David Guillermo Carrillo Murillo

The welfare effects of two policies that could promote intermodal services, investment grants for terminal operators and the internalisation of external cost are analysed. For this purpose, a market equilibrium model has been developed, covering the dynamic demand and supply interactions of logistics and transport markets. The emergence or closure of terminals is modelled assuming free market entry and exit, and competition by product differentiation. In a first step, analytical results are presented showing that investment grants for terminal operators could have a negative effect on market efficiency due to a massive entry on the market for terminals. In a second step, a hierarchical choice model mapping the decisions of shippers/forwarders in detail is combined with the market equilibrium model. The combined simulation model is applied to German terminals, and different policy packages are analysed. It can be seen that in markets with high volume, the welfare maximizing policy strategy is the internalisation of external cost only. However, in less developed markets, a combination of both, direct subsidies in form of investment grants and internalisation of external cost, could be indicated. Finally, the implications of the results derived from the model and the empirical analysis of transport policy are identified.

The Hunter Valley access undertaking: Elements of a negotiated settlement

- Transport Policy---2012---Stephen Bordignon,Stephen Littlechild

Is Australian transport regulation ready for negotiated access undertakings? On 29 June 2011 the Australian Competition and Consumer Commission (ACCC) accepted an access undertaking from Australian Rail Track Corporation (ARTC) in relation to the Hunter Valley rail network. The ACCC encouraged ARTC and its users (principally coal producers) to discuss and negotiate the detail of the undertaking. At the final stage the parties were able to resolve their differences and put an agreed undertaking to the ACCC. Compared to the undertaking that the ACCC would likely otherwise have accepted, this agreement was for a shorter term and embodied other provisions preferred by the users, in return for a higher rate of return requested by ARTC. The paper discusses the nature and lessons of this experience.

Logistics network and externalities for short sea transport: An analysis of horticultural exports from southeast Spain

- Transport Policy---2012---Juan Carlos Pérez-Mesa,Emilio Galdeano-Gómez,Jose A. Salinas Andújar

This paper discusses the benefits of using short sea shipping in intermodal transport for fruit and vegetables. Multi-Criteria Decision Making techniques are applied to determine optimal allocation between land and intermodal transport, including environmental externalities. A sensitivity analysis is also carried out to monitor changing priorities among decision-makers (exporters) so as to encourage a modal shift. The results reveal savings in intermodal transport costs and a slight reduction in externalities with respect to land transport. However, the exporter must assume an increased delivery time of goods. At present, this situation is far from a reality, highlighting how inherently complicated it is to change the modes of transport.

Modelling motorway merge: The current practice in the UK and towards establishing general principles

- Transport Policy---2012---Ronghui Liu,Geoff Hyman

Motorway merging has been regarded as a major source of conflicts and congestion, but has long been recognised as an area in which modelling has been relatively weak. The current traffic models represent the traffic operations at a merge are based on gap-acceptance

approach, with the merging traffic giving-way to traffic on the mainline carriageway and imposing little or no delay to the mainline traffic. The results tend to overestimate delays to the merging traffic, and underestimate delays and interruptions to the mainline traffic.

The impact of recession on airports' cost efficiency

- Transport Policy---2012---Augusto Voltes-Dorta,Romano Pagliari

The recent economic downturn took a severe toll on the aviation industry, leading to a significant contraction in air transport demand. In spite of that, airports' operating costs did not mirror the declining traffic trends and continued to increase during the same period. This paper sought to estimate the impact of the recession on airports' cost efficiency and financial performance. This is achieved by estimating the industry's short-run cost frontier over a balanced pool database of 194 airports observed between 2007 and 2009. Results show that airports struggled to control operating costs during the recession. Efficiency losses were estimated to be in excess of USD 5.5 billion, contributing to a significant reduction in industry operating margin. Results also suggest that airports that are corporatised and have not pursued extensive out-sourcing of activities are better able to manage their costs during periods of economic recession.

Freeway booking policy: Public discourse and acceptability analysis

- Transport Policy---2012---Younshik Chung,Taijin Song,Jungsik Park

This study proposes a new strategy, called "freeway booking," to mitigate freeway traffic congestion by using advanced traffic technologies and traffic demand management policies and to analyze public discourse and acceptability for the new traffic control policy. While the new control system is a technological issue, the introduction of a new policy must also consider public preference and acceptability. The capability of system control is often not enough to lead to the success of a new policy; the successful implementation of a new policy requires study on a range of issues including identifying the public perception and acceptability. Consequently, to accomplish the analysis of public discourse and acceptability, motorist surveys were carried out with residents of Seoul Metropolitan areas who were returning home from holidays. As a result, 66% of respondents agreed with the proposed policy; 24% of them disagreed and 11% of them gave the no-comment response. Public acceptability was found to be higher with increase in age, household income, the number of family members, and in the inconvenience for using freeways during the major Korean Holidays. Additionally, the married and female respondents tended to show higher acceptability. The results can be informative and practically used for developing participatory policies to successfully integrate public discourse and preference. Also suggested is the consideration of narrative policy as a means to improve public acceptability.

Remote, rural, and regional airports in Australia

- Transport Policy---2012---Paul Donehue,Douglas Baker

This paper provides an overview of the challenges faced by remote, rural and regional airports in Australia. The deregulation of airports over the past decades has resulted in local councils owning most of the rural and regional airports across Australia. The paper provides an overview of the international literature on regional airports and research directed at defining the issues faced by regional and rural airports in Australia. A survey of airport managers, regulators and local councils was undertaken across Australia to outline the challenges and stresses that regional airports are facing. Core findings indicate that the operation of rural and regional airports is under stress due to the interrelating factors of infrastructure costs, high cost of maintenance, and security infrastructure upgrades. Small airports often compete with one another to attract airlines and maintain their infrastructure advantage.

Common ground: Eight factors that influence walking and biking to school

- Transport Policy---2012---Orion Stewart,Anne Vernez Moudon,Charlotte Claybrooke

The primary goals of Safe Routes to School (SRTS) programs are to increase the number and safety of children walking, biking or using other forms of active travel to school (ATS). This study reviewed quantitative and qualitative research and identified eight common factors that influenced the choice of ATS: distance to school, parental fear of traffic and crime, family schedule constraints and values, neighborhood and family resources and culture, weather, and school characteristics. Suggestions were made as to how these barriers and facilitators of ATS could be integrated into the decision to fund local SRTS programs and to improve their effectiveness.

Examining the potential for modal change: Motivators and barriers for bicycle commuting in Dar-es-Salaam

- Transport Policy---2012---Alphonse Nkurunziza,Mark Zuidgeest,Mark Brussel,Martin Van Maarseveen

The paper examines the effect of various motivators, barriers and policy related interventions (i.e., personal, social and physical–environmental factors) on bicycle commuting in Dares-Salaam, Tanzania. The research shows that these factors have different effects on people depending on the stage of change of cycling behaviour these people are in. In particular, the effects vary among people in the early stages of change of cycling behaviour (pre-contemplation and contemplation) and those in the late stages of change (action and maintenance). Importantly, results indicate that addressing physical barriers alone is likely to have little impact on encouraging bicycle commuting. More specifically, the research shows that perceived motivator variables (e.g. low bicycle price, quality of bicycle, cycling training, and direct cycling routes) are strongly associated with bicycle commuting. Physical barriers including weather, absence of safe parking at home and at work, lack of bicycle paths and water showers at work places as well as personal barriers like social status, social (in)security and not feeling comfortable on a bicycle have the most negative influence on bicycle commuting. Policy related interventions like exemption of bicycle import tax, car congestion charges, and guarding bicycles at public places have a strong impact on bicycle use. The study findings provide a clear understanding of the key influencing factors which can serve as an empirical basis for development of more effective targeted measures to encourage modal change.

The Spitsmijden experiment: A reward to battle congestion

- Transport Policy---2012---Jasper Knockaert,Yin-Yen Tseng,Erik Verhoef,Jan Rouwendal

It can be imagined that a reward may be a far more popular policy instrument than the traditional taxation approach towards containing externalities, usually presented in public economics literature. Given the implied policy potential, we conducted an extensive reward experiment in real world conditions on a congested motorway corridor in the Netherlands.

An insight into policy transfer processes within an EU project and implications for future project design

- Transport Policy---2012---O' Dolan, Catriona,Tom Rye

Policy transfer is the process of applying a policy, or knowledge that informs a policy, from one setting to another. It is considered to be an effective way for cities, municipalities or countries to learn from one another, and is documented by many (e.g. Evans, 2009; Common, 2001) as a process that is being used with increasing frequency. The European Union (EU) provides the ideal platform for knowledge exchange between member states and its various funding streams for multi-national projects, especially so. To date there has been little research into the effectiveness of EU-funded projects for facilitating such policy transfer and in particular which particular processes within them

were most effective at delivering the transfer. This paper examines five different processes used within the EU-funded Active Access project, which aimed to encourage cycling and especially walking for short trips, walking audits, stakeholder exchange workshop, shadowing, analysis of best practice and overall participation within the project. The processes are analysed under a framework for policy transfer (Dolowitz and Marsh, 2000). Quantitative and qualitative analysis of questionnaires completed by the project partners focuses on how effective those involved perceived the different methods of transfer. The results presented in the paper illustrate that some methods of policy transfer are perceived to be more effective in delivering the same message than others. Insight is also given with regard to the cultural barriers that exist for such knowledge transfer. The implications for the design of future multi-national projects in order to maximise effective policy transfer, is discussed.

The determinants of fuel use in the trucking industry—volume, fleet characteristics and the rebound effect

- Transport Policy---2012---Bruno De Borger,Ismir Mulalic

This paper studies the determinants of fuel use in the trucking industry in Denmark, using aggregate time series data for the period 1980–2007. The model captures the main linkages between the demand for freight transport, the characteristics of the vehicle fleet, and the demand for fuel. Results include the following. First, we precisely define and estimate a rebound effect of improvements in fuel efficiency in the trucking industry: behavioural adjustments in the industry imply that an exogenous improvement in fuel efficiency reduces fuel use less than proportionately. Our best estimate of this effect is approximately 10% in the short run and 17% in the long run, so that a 1% improvement in fuel efficiency reduces fuel use by 0.90% (short-run) to 0.83% (long-run). Second, we find that higher fuel prices raise the average capacity of trucks, and they induce firms to invest in newer, typically more fuel efficient, trucks. Third, these adjustments and the rebound effect jointly imply that the effect of higher fuel prices on fuel use in the trucking industry is fairly small; estimated price elasticities are 0.13 and 0.22 in the short run and in the long run, respectively. The empirical results of this paper have implications for judging the implications of fuel efficiency standards and regulations with respect to larger trucks in the EU.

The challenges of transport PPP's in low-income developing countries: A case study of Bangladesh

- Transport Policy---2012---Cameron Gordon

Public–Private Partnerships (PPP) in transport are a growing phenomenon throughout the world. The developing world in particular has seen a veritable explosion of such arrangements. There can be, however, a significant difference between developing countries that are 'low-income' versus those that are middle-income. In some ways low-income countries can benefit more from the access to new capital and technical expertise that a PPP can bring. On the other hand there can be significant barriers to implementation of PPP's in low-income nations and equity issues can loom especially large there. This paper examines these differences by way of a case study of the country of Bangladesh. The paper concludes with a discussion of preliminary 'lessons learned' in bringing transport PPP's to low-income countries.

Modelling the causes and impacts of personal safety perceptions on public transport ridership

- Transport Policy---2012---Alexa Delbosc,Graham Currie

Fears about crime-related personal safety on public transport can have an important impact on ridership. A range of studies have examined different factors that influence perceptions of crime risk. This study uses structural equation modelling to explore the influences on perceptions of safety on public transport and the impact these perceptions have on ridership using a survey sample from Melbourne, Australia. The largest direct

influences on feelings of safety on public transport were trust in others and feeling safe in one's home or on the street at night. Gender and age are commonly-cited influences in the literature but in this model their influence on feelings of safety was indirect. The total indirect effect of age was larger than the indirect effect of gender. Feelings of safety had a small but significant positive influence on how frequently people used public transport. This was slightly smaller than the negative effect of cars in the household but larger than the negative effect of distance from the city centre.

Infrastructure quality regulation

- Transport Policy---2012---Jan Sand

Infrastructure quality is crucial to achieve an efficient transportation network. This paper considers the regulation of infrastructure quality when the impact of investments on demand is private information. The choice of vertical structure has an impact on the information rent, and it is shown that the value of the firm's private information is reduced under vertical separation. In determining the optimal quality, there is a trade-off between information rent and internalization of the vertical externality. Hence, both the magnitude of the infrastructure charge and the decision on the vertical structure are crucial factors.

Opportunities and strategies for increasing bus ridership in rural Japan: A case study of Hidaka City

- Transport Policy---2012---Djoen San Santoso,Masaru Yajima,Kunihiro Sakamoto,Hisashi Kubota

Attracting people to use the public bus has never been easy. Private vehicles have typically offered better alternatives than the public bus at the cost of environmental problems. The challenge is even greater in rural areas and small cities where factors such as diverse activity locations, abundant parking lots, and non-existence of traffic jams have justified the use of private car as a commuting mode. This paper tries to address this challenge by analyzing the prospect of increasing patronage for a local public bus in Hidaka City, a small city in Japan. A questionnaire survey collected from three main residential complexes in the city was used in the analysis. The study mainly focused on work commuting trips and the respondents were categorized into train commuters and non-train commuters for the analysis. The results showed that up to a 14% increase can be expected from the train commuters with the majority share coming from motorized modes. Strategic implementation in improving the services was not as straight forward as expected. However, the findings indicated that the right direction had been pursued.

Valuing perceived insecurity associated with use of and access to public transport

- Transport Policy---2012---Maria Börjesson

This study uses a stated choice experiment and drawings of four different type-environments to assess how various security-promoting factors in the built physical environment influence valuation of walking time when accessing public transport. Valuations that can be applied for evaluating policies to improve perceived security are obtained. Consistent results are achieved, indicating that the method is promising for incorporating aspects in the physical environment in the welfare analysis. The results indicate a systematic variation in value of walk time in different physical environments and it is more dependent of the physical environment for women than for men. This paper thereby contributes to the literature by showing that results by social sciences can be verified using methods and theories traditionally used in transport and welfare analysis and may therefore be incorporated in standard CBA. A contribution of this study is the insight that the perception of insecurity involved in accessing the public transport system is a welfare loss that can be quantified.

An empirical evaluation of the impact of three urban transportation policies on transit use

- Transport Policy---2012---Louis de Grange,Rodrigo Troncoso,Felipe González

The impact on transportation mode choice of policies implementing metro network expansion, fare subsidies and automobile use and ownership regulation was evaluated econometrically using data for 41 world cities. Controlling socioeconomic and demographic variables, it was found that an increase in metro network extension of 10% generates an average decrease in automobile use of 2%. The results also showed that regulation of automobile use or ownership leads to a significant rise in public transit use. By contrast, no evidence was discovered suggesting that transit fare subsidies produce significant increases in transit ridership.

Container movement by rail in India: A review of policy evolution

- Transport Policy---2012---Rachna Gangwar,Sebastian Morris,Ajay Pandey,G. Raghuram

Container movement by rail was a monopoly of Indian Railways (IR) until 2005. Its subsidiary Container Corporation (CONCOR) was the sole operator of container trains. Entry of other entities in 2007 has been driven by larger public policy concerns. In the process, issues such as incumbent resistance, entry barriers, and lack of level playing field had an impact. These issues were enhanced by the use of a closely held organisation as a consultant, and conflicting roles of IR as licensor, regulator, service provider, and operator. This paper attempts to review the process starting from the policy announcement (February 2005) to evolution of a Model Concession Agreement (January 2007). It shows how policies were influenced by the incumbent to restrict competition by creating barriers on the one hand and how an alternate view provided by external entities, like the Planning Commission and other non-IR stakeholders significantly altered the course of action leading to entry of a large number of competing players.

Consequences of differences in cost-benefit methodology in railway infrastructure appraisal —A comparison between selected countries

- Transport Policy---2012---Nils O.E. Olsson,Andreas Økland,Siri B. Halvorsen

This paper presents the cost-benefit methodology used in the appraisal of railway infrastructure in Norway, Sweden, Denmark, the UK, France, Germany and Switzerland. The consequences of differences in methodology are illustrated by a case-study undertaken with the methodology from each of the seven countries. Differences in methodology means that results from the analyses are far from similar. The case project has a positive net present value based on Swiss and British methodology, but negative net present value using methodology from any of the other five countries.

Critical factors and risk allocation for PPP policy: Comparison between HSR and general infrastructure projects

- Transport Policy---2012---Jui-Sheng Chou,H. Ping Tserng,Chieh Lin,Chun-Pin Yeh

This study compared the use of public–private partnership (PPP) policy between high speed rail (HSR) projects and general infrastructure projects. Based on extensive literature reviews, drivers for adopting PPP strategy, critical success factors, and preferred risk factor allocation were collected to design a structural questionnaire for professionals in Taiwan and to elicit their PPP project experience. Analytical findings reveal that most experience learnt from general infrastructure projects is applicable in HSR projects after proper modification. This study provides a valuable reference for stakeholders interested in executing HSR via PPP.

Characteristics of cost overruns for Dutch transport infrastructure projects and the importance of the decision to build and project phases

- Transport Policy---2012---C.C. Cantarelli,E.J.E. Molin,B. van Wee,Bent Flyvbjerg

Using a methodology similar to that used the in the worldwide research, the cost performance of Dutch large-scale transport infrastructure projects is determined. In the Netherlands, cost overruns are as common as cost underruns but because cost overruns are

larger than cost underruns projects on average have a cost overrun of 16.5%. The focus on one country further enabled to consider cost overruns during different project development phases. It turned out that in the Netherlands the majority of the cost overrun occurs in the pre-construction phase (the period between the formal decision to build and the start of construction). The frequency as well as the magnitude of pre-construction cost overrun is significantly higher than in the construction phase. The used methodology of calculating cost overruns does however not take lock-in into account. This phenomenon shows that the real decision to build was taken much earlier in the decision-making process. Since estimated costs are usually lower during these earlier stages, the cost overruns based on this real decision to build are likely to be much higher. Cost overruns presented in studies are therefore often underestimated and the problem of cost overruns is much larger than we think.

Carbon related taxation policies for road transport: Efficacy of ownership and usage taxes, and the role of public transport and motorist cost perception on policy outcomes

- Transport Policy---2012---Miao Fu,J Andrew Kelly

Based on an extensively calibrated and methodologically reprogrammed national transport model, this paper evaluates the impacts of recently adopted carbon related transport taxes in Ireland. We find that the fuel based carbon tax reduces CO2 emissions by 1.75–3.82%. The higher band of this reduction range depends on users considering only immediate costs when making trip decisions, and the presence of a strong substitution capacity between public and private transport. Carbon related vehicle registration tax (VRT) and motor (annual road) taxation, however, exhibit little impact on carbon emissions alone and principally support a shift in fleet structure toward diesel and more fuel efficient cars. Over the longer term this shift results in a mild increase in NOx and PM emissions. Overall the study finds that the fuel based carbon tax is better than VRT and motor tax in terms of tax revenue, carbon emission reductions and social welfare, but worse than the latter in terms of household utility and production costs. The greatest CO2 reductions are achieved through a combined policy package of fuel tax and VRT and motor tax changes. The combined impacts of VRT, motor tax and fuel tax on the reduction of CO2 emissions is estimated as 4.29% in 2030, and 4.58% if the elasticities of substitution are improved. The positive combined effects of these policies, in terms of social welfare, can be significantly improved by double-dividend effects, where policymakers replace labour taxes with these new environmental taxes.

Exploring the transition to a clean vehicle fleet: From stakeholder views to transport policy implications

- Transport Policy---2012---Michiels Hans,Beckx Carolien,Schrooten Liesbeth,Vernaillen Stijn,Denys Tobias

To promote clean cars, a consistent policy mix is indispensable. In order to rely on a combination of several insights and instruments to achieve this goal this study includes the vision of different stakeholders on a transition to more environmentally friendly vehicles in Belgium. Based on this vision, two policy scenarios were developed and the impact of each scenario was evaluated in terms of the resulting vehicle fleet composition, vehicle kilometres and emissions. Further, the well-towheel environmental impact of the vehicles in the fleet was assessed by means of the 'Ecoscore' indicator.

Optimizing the implementation of policy measures through social acceptance segmentation

- Transport Policy---2012---Mario Cools,Kris Brijs,Hans Tormans,Jessie De Laender,Geert Wets

This paper proposes Q-methodology as a technique for the identification of more homogeneous subgroups

or 'segments' within a rather heterogeneous overall population when it comes to social acceptance of demand-restricting policy measures. Identification of such segments would allow policy makers to better tailor their future actions and thereby increase the chance for a successful implementation of the measures they propose. A set of 33 persons, selected in function of age, gender and car ownership evaluated the acceptability of a total number of 42 demand-restricting policy measures. Special care was taken that the final set of statements covered the four classically distinguished demand-restricting strategies, i.e., improved transport options, incentives for the use of alternative transport modes, parking and land-use management, and institutional policy revision. In addition, a balance between both 'hard' and 'soft' and 'push' and 'pull' measures was strived for. The results indicate that four different segments in terms of social acceptance of demand-restricting policy measures can be distinguished, i.e., travelers in favor of traffic calming, travelers against hard push measures, travelers in favor of demand restriction, and travelers against policy innovations. Besides the differences and similarities between these segments, the practical implications for policy makers are discussed, together with a series of specific recommendations and suggestions for future research.

Different cost performance: different determinants?

- Transport Policy---2012---C.C. Cantarelli,B. van Wee,E.J.E. Molin,Bent Flyvbjerg

This paper examines three independent explanatory variables and their relation with cost overrun in order to decide whether this is different for Dutch infrastructure projects compared to worldwide findings. The three independent variables are project type (road, rail, and fixed link projects), project size (measured in terms of estimated costs) and the length of the project implementation phase. For Dutch projects, average cost overrun is 10.6% for rail, 18.6% for roads and 21.7% for fixed links. For project size, small Dutch projects have the largest average percentage cost overruns but in terms of total overrun, large projects have a larger share. The length of the implementation phase and especially the length of the pre-construction phase are important determinants of cost overruns in the Netherlands. With each additional year of pre-construction, percentage cost overrun increases by five percentage points. In contrast, the length of the construction phase has hardly any influence on cost overruns. This is an important contribution to current knowledge about cost overruns, because the period in which projects are most prone to cost overruns is narrowed down considerably, at least in the Netherlands. This means that to determine the causes and cures of overruns one should focus on the period.

Eco-driving: Strategic, tactical, and operational decisions of the driver that influence vehicle fuel economy

- Transport Policy---2012---Michael Sivak,Brandon Schoettle

This paper presents information about the effects of decisions that a driver can make to influence on-road fuel economy of light-duty vehicles. These include strategic decisions (vehicle selection and maintenance), tactical decisions (route selection and vehicle load), and operational decisions (driver behavior). The results indicate that vehicle selection has by far the most dominant effect: The best vehicle currently available for sale in the U.S. is nine times more fuel efficient than the worst vehicle. Nevertheless, the remaining factors that a driver has control over can contribute, in total, to about a 45% reduction in the on-road fuel economy per driver—a magnitude well worth emphasizing. Furthermore, increased efforts should also be directed at increasing vehicle occupancy, which has dropped by 30% from 1960. That drop, by itself, increased the energy intensity of driving per occupant by about 30%.

Exploring spatio-temporal commuting patterns in a university environment

- Transport Policy---2012---Eric M. Delmelle,Elizabeth Cahill Delmelle

Universities in small towns are often located so that amenities, stores, activities and housing are concentrated within a short distance from campus. Given this compactness between origins and destinations, bicycling and walking should be ideal modes of transportation among a university population. This research seeks to explore the spatial, temporal and gender differences in transportation modal choice among student commuters with an objective of uncovering incentives to increase the use of non-motorized or public transportation to the campus. Findings point to the availability of lower-cost parking permits as an enabler of shorter distance car commutes, especially in the winter season. Male students are found to be more likely to switch commuting modes throughout the year while females are generally more likely to drive. Differences in commuting choice behavior between students with children, and traditional undergraduate and graduate students are also found. Policy implications of the stated preference survey are discussed.

On the mobility policies of companies: What are the good practices? The Belgian case

- Transport Policy---2012---Laurent Van Malderen,Bart Jourquin,Isabelle Thomas,Thomas Vanoutrive,Ann Verhetsel,Frank Witlox

Companies play an important role in the mobility debate as they can be considered as the primary 'creators' of commuting traffic. In recent years, companies have developed a variety of initiatives to improve the mobility of their employees, although their visions and actions are often neglected in the research literature. This paper aims at identifying the good practice in mobility policies of workplaces located in Belgium. To achieve this objective, existing research and two large-scale Belgian surveys of commuting are analysed. First, workplaces are clustered in order to identify those where the alternative modes of transport which are promoted by the policy are popular among employees. Then, quantitative analyses are performed to find out what are the good practices of mobility policies.

Demographic determinants of daily travel demand

- Transport Policy---2012---David Metz

Per capita demand for daily travel in a number of developed countries has ceased to grow, which means that demographic change, both growth and ageing of the population, will be the main determinant of future travel demand and traffic levels. The effect of demographic change on travel demand arises through changes in land use, which in turn are affected by planning policy. In particular, how the additional population will be housed, whether on greenfield or brownfield sites, will be important for decisions on investment in the transport system. Increased population density within existing urban areas facilitates access and is best served by public transport. The declining share of car-based journeys in London illustrates the scope for containing traffic congestion and carbon emissions.

Does the commute mode affect the frequency of walking behavior? The public transit link

- Transport Policy---2012---Ugo Lachapelle,Robert Noland

The mode used to travel to work and how frequently an individual walks for all purposes is examined. Commuting by public transit, in particular, is hypothesized to lead to more overall walking, relative to commuting with a car. A statewide computer assisted telephone survey in New Jersey (n=530) was used to collect information on the mode usually used for the commute, the frequency of walking for all purposes, socio-demographic characteristics and neighborhood indicators of the presence of destinations within a 10min walk. Ordered probit models of the frequency of walk trips were estimated. Respectively, 63% and 68%, of those commuting by transit and walking or bicycling report walking at least once a day. Public transit commuters walked more frequently for all purposes than car commuters; and almost as frequently as those walking to work. There were significant differences in walking frequency between transit modes (bus vs. train/subway/light rail) and non-significant differences

between transit access mode (walking vs. park-and-ride). Working from home was not associated with more frequent walking. The time that a transit user spent walking to transit stations or stops was on average slightly shorter than the time spent walking during a journey to work by walking. Walking more to access neighborhood destinations seemed to account for this higher frequency of walking in transit users. Transit service and neighborhood destinations may be complementary in supporting increased walking activity and transit use.

High-speed train planning in France: Lessons from the Mediterranean TGV-line

- Transport Policy---2012---Stéphanie Leheis

This paper explores the implementation and decision-making process in TGV projects and how these have changed, especially since the construction of the Mediterranean TGV-line. While paradoxically, this project was probably the most controversial, it is now seen as a huge success for all the actors involved.

Effectiveness of a web-based intervention to encourage carpooling to work: A case study of Wellington, New Zealand

- Transport Policy---2012---Wokje Abrahamse,Michael Keall

Despite the many advantages of private car travel, excessive use of the private car has many negative consequences, such as congestion and air pollution. There is widespread recognition of the need to limit the demand for private car travel through travel demand management measures, such as information and incentives. This study examines the effectiveness of Let's Carpool, an initiative aimed at increasing vehicle occupancy in the Wellington region of New Zealand, and it examines factors related to solo driving. Let's Carpool uses ride-matching software to facilitate finding a carpool match for the commute to and from work. This evaluation study among nearly 1300 registrants of Let's Carpool shows that the percentage of commuters enrolled in the scheme who carpooled as their main mode of transport for getting to work increased significantly (from 12% to 27%), while the percentage of commuters indicating they drove alone decreased significantly. The frequency of driving alone also decreased significantly. Beliefs about cost, comfort, and convenience were related to solo driving. Based on the findings, recommendations are made to further enhance the effect of carpool initiatives.

Effects of survey techniques on on-board survey performance

- Transport Policy---2012---Babak Memarian,Jeong, "David" Hyung Seok,Daiho Uhm

On-board survey is one of the most common survey methods utilized on transit units like buses to obtain vital information regarding customer trip characteristics, travel behavior, demographic characteristics, and customers' attitude toward services. The quantity and the quality of data collected through on-board surveys are very critical and often are a major concern for transit systems because survey results are used for current or future route planning, modeling, etc. Thus, applying appropriate survey techniques for on-board surveys is crucial to collecting the required amount of data to fulfill the transit system's current and future needs without survey cost and time overruns. This study tested three different on-board survey techniques to quantitatively evaluate the effects of each technique on the overall response rate and unit cost. These three tests are (a) length of questionnaire, (b) incentives, and (c) surveyors. The tests were conducted on selected routes of the Tulsa Transit System. The test results indicate that different combinations of techniques will result in different response rates and unit costs. Thus, good planning and piloting tests for the different on-board survey techniques, and appropriate interpretations of the pilot test results, are crucial to acquiring the expected performance of the main survey while staying within budget.

The impact of fare integration on travel behavior and transit ridership

- Transport Policy---2012---Nir Sharaby,Yoram Shiftan

Integrated, high quality, and accessible transit systems are essential for attracting travelers to shift from private to public. This change in personal behavior is desired in order to reduce congestion and air pollutant emissions in city centers. This paper focuses on evaluating the impact of fare integration on transit ridership and travel behavior, using the city of Haifa, Israel, as a case study. The city's new, integrated, fare policy changed the historically complex per-boarding system to a simple five-zone fare system with free transfers, reducing fares for many passengers. Using fare-box data, on-board surveys and travel-behavior model estimation, we show that the new fare policy managed to negate the downward trend in transit ridership. Fare-box data showed a significant increase in single ticket sales of up to 25% over the first year following the launch of the reform; the survey's results pointed to an increase of 7.7% in passenger trips and 18.6% in boarding. The number of passenger boarding per trip increased from 1.38 to 1.52, implying that people were utilizing the free transfer option and enjoying a wider range of routes. The model results showed that fare reduction was a significant factor in attracting transit users, and that the public transport reform had three important contributions: first, it encouraged travelers to shift from private cars or taxi to buses; second, it created new trips, offering more opportunities for activity participation; and third, it increased travel options by allowing travelers to choose a better route.

Do long stay parkers pay the Melbourne congestion levy?

- Transport Policy---2012---Paul Hamer,William Young,Graham Currie

The pricing of parking is a common tool used by governments to facilitate the efficient movement of traffic, raise revenue and influence travel behaviour. In January 2006, the Victorian Government introduced a 'congestion levy' on long-stay, off-street car parking spaces within inner Melbourne, as a means of reducing peak-hour traffic congestion. This study provides an overview of the congestion levy and examines how the levy was passed onto users in the period immediately following its introduction. Specifically, it asks the question do long stay parkers pay the Melbourne Congestion Levy since if they do not pay the levy it is unlikely to achieve the stated levy aims. The paper finds that between December 2005 and June 2008, early-bird parking prices in commercial off-street car parks increased in real terms by 11%–17% above their pre-levy level. This increase covered only 40%–60% of the total cost of the levy. Further data collected in 2009 suggests that between June 2008 and April 2009, early-bird parking prices dropped, such that by April 2009, early-bird parking prices may have increased by as little as 8% above December 2005 prices—representing just 30% of the full levy. Therefore, the study finds that although long-stay parking charges in commercial car parks have increased in real terms since the introduction of the levy, the scale of the increase suggests that some of the cost of the levy is being borne by short-stay users and the parking operators themselves. The paper also finds that across all off-street parking facilities within inner Melbourne, a majority of drivers have their parking fees paid for by their employers. These findings suggest that the way in which the levy is being implemented by parking providers is undermining the stated purpose of the levy and may be limiting its effectiveness in changing travel behaviour. The key recommendation of the paper is therefore to develop a closer link between the levy and its intended target in order to obtain the required policy outcomes.

Evaluation of flexible route bus transport for older people

- Transport Policy---2012---Kieran Broome,Linda Worrall,Jennifer Fleming,Duncan Boldy

A long distance to the bus stop, poor pedestrian accessibility and inadequate shelters are barriers to bus use for older people. Flexible route bus transport poses an opportunity to overcome these barriers.

Impacts of alternative vehicle fuel policies on Canadian energy demand and emissions

- Transport Policy---2012---Lanhai Li,Robert Hoffeman,Bert McInnis,Mupenzi Jean de la Paix,Xuemei Li

Laboratory studies have provided evidences regarding the impacts of engine technology on vehicle emissions; however, questions remain regarding the relations between alternative vehicle fuels and on-road vehicle emissions as well as energy demands from upstream fuel production processes to end-use across spatial and temporal dimensions. This study attempted to apply a system simulation model for investigating investigate the impact of alternative vehicle fuel policies, on the energy demand and GHG emissions in transport sector level and national level through the introduction of higher fuel efficiency engines for on-road vehicles. The model with a calibration period from 1976 to 2005 simulates the future change by 2050. The results indicate that the introduction of new engines with alternative energy will substantially reduce energy demand and GHG emissions from road transport sector, but it might result in different impacts on national total energy demand and GHG emissions. Using a non-fossil energy source to generate hydrogen may significantly reduce national total energy demand and GHG emissions; while conventional fossil energy sources may raise total national energy demand with a limited reduction of national total GHG emissions on comparison with hybrid engine scenario.

Public transport congestion costs: The case of the Paris subway

- Transport Policy---2012---Prud'homme, Rémy,Martin Koning,Luc Lenormand,Anne Fehr

The paper argues that congestion in public transportation is alike the much more studied road congestion. It sets out to produce, on the case of the Paris subway, a congestion cost curve linking the willingness to pay for non-congested travel to actual congestion levels. Congestion costs appear high. What travelers would be ready to pay to avoid congestion in the Paris subway is on average about three times the amount of their out-of-pocket payments. An 8% increase in densities experienced over the 2002–2007 period implies a welfare loss of at least 75M€/year. Taking into account the subway congestion costs and the resulting externalities modifies significantly the optimal car-subway mix (from 8% to 24% according to a tentative computable model).

Green cars sterilize congestion charges: A model analysis of the reduced impact of Stockholm road tolls

- Transport Policy---2012---Lars Hultkrantz,Xing Liu

Before–after comparisons indicate that the impact of the road toll in Stockholm on traffic volumes was smaller when the system was re-opened in 2007, compared to the effect during the trial in 2006. We calibrate a modal-choice model on data for Stockholm from before and during the trial and use it to simulate the effects of some seemingly subtle changes of the design of the congestion-charge scheme. We find that the growth of the share of exempted "green" cars and the decision to make charges deductible from the income tax was about to considerably reduce the positive welfare effect of the toll at the time when the "green" car exemption was abolished.

Building a bridge, transport infrastructure and population characteristics: Explaining active travel into Glasgow

- Transport Policy---2012---Gerry McCartney,Bruce Whyte,Mark Livingston,Fiona Crawford

It is widely agreed that walking and cycling are good for individual and public health. There is a lack of evidence about what works to promote active travel. This paper aimed to explain the variation in active travel into Glasgow, a post industrial city in the West of Scotland.

Factors influencing resident’ s estimate of traffic-related phenomena in their street

- Transport Policy---2012---Charlotte Wahl,Åse Svensson,Christer Hydén

This paper examines whether a resident's estimate of five traffic-related phenomena (accident frequency, incident frequency, difficulty of crossing the street, traffic flow, and speed level) in their neighborhood may depend on factors such as gender, age, how frequently they walk along the street or on characteristics of the street. The material consists of survey data from 919 residents living along four major arterial streets in Malmö, Sweden, where the respondents were instructed to make estimates with their specific street in mind. The results show that respondents who stated that they often walk along their street seemed to make higher estimates of the occurrence of the tested factors. When involving people in the planning process, this implies that it might be important to control for walking frequency when asking people about phenomena in their traffic environment. The results also indicate that the respondents were quite able to relate their estimates to the specific street.

The school run: Exploring carpooling as an intervention option in the Greater Toronto and Hamilton Area (GTHA), Canada

- Transport Policy---2012---Kelly Arbour-Nicitopoulos,Guy E.J. Faulkner,Ron N. Buliung,Jennifer Lay,Michelle Stone

The aims of this study were to identity the prevalence of carpooling as a school travel mode in the Greater Toronto and Hamilton Area (GTHA) and to examine attitudes toward automobile school travel and carpooling among adults who drive their children to school. Telephone interviews were conducted with 1,001 GTHA parents/guardians of elementary school-aged children. Analyses indicated that 1.7% of the sample used carpooling as the primary school travel mode in the a.m., while 33.8% of the sample drove their child to school in the a.m. One quarter (25%) of the total sample had participated in a carpool for school travel with neighbors or friends at times. The main reasons for automobile school travel were convenience and safety. Those drivers who indicated carpooling to be more convenient reported carpooling to be more appealing, to interfere less with their current household schedule, were more interested in carpooling, placed a greater importance on using an environment-friendly travel mode, and had a greater proportion of non-English speakers than drivers who indicated carpooling to be inconvenient. These findings confirm that carpooling is an under-utilized school travel mode, and that there may be some scope in intervening among parents/guardians who perceive carpooling to be potentially convenient.

Benchmarking sustainable urban mobility: The case of Curitiba, Brazil

- Transport Policy---2012---Hellem de Freitas Miranda,Antônio Nélson Rodrigues da Silva

Transportation planning is currently being confronted with a broader planning view, which is given by the concept of mobility. The Index of Sustainable Urban Mobility (I_SUM) is among the tools developed for supporting this new concept implementation. It is a tool to assess the current mobility conditions of any city, which can also be applied for policy formulation. This study focus on the application of I_SUM in the city of Curitiba, Brazil. Considering that the city is known worldwide as a reference of successful urban and transportation planning, the index application must confirm it. An additional objective of the study was to evaluate the index itself, or the subjacent assessment method and reference values. A global I_SUM value of 0.747 confirmed that the city has indeed very positive characteristics regarding sustainable mobility policies. However, some deficiencies were also detected, particularly with respect to non-motorized transport modes. The application has also served to show that a few I_SUM indicators were not able to capture some of the positive aspects of the city, what may suggest the need of changes in their formulation. Finally, the index application in parts of the city suggests that the city provides fair and equitable mobility conditions to all citizens throughout the city. This is certainly a good

attribute for becoming a benchmark of sustainable mobility, even if it is not yet the ideal model.

Urban mobility: A comparative analysis of megacities of India

- Transport Policy---2012---B. Reddy,P. Balachandra

The increasing reliance on motorized mobility in the cities is unsustainable considering the fast-depleting fossil fuel resources and the associated impact on global climate change. The consequences are more serious for India since it relies largely on imported crude oil for its mobility. To have a greater understanding of the urban transportation system, this paper presents trends and patterns of urban mobility and the consequent impacts on energy and environment in India. The analysis has been carried out for road transport across 23 metropolitan cities during the period 1981–2005. The study explores the underlying relationship among three variables—energy intensity, mode of transport and passenger kilometers traveled. Patterns of energy consumption and CO2 emissions, in private and public transport, are examined. The study makes policy recommendations to reduce transport energy use and emissions for achieving sustainable urban mobility.

The loss of road capacity and self-compliance: Lessons from the Cheonggyecheon stream restoration

- Transport Policy---2012---Jin-Hyuk Chung,Kee Yeon Hwang,Yun Kyung Bae

To restore the Cheonggyecheon stream in downtown Seoul, the urban expressway built over the stream was demolished and the number of lanes was decreased from four to two lanes in both directions. Because Cheonggyecheon street is an important link and major arterial connector of Central Seoul and the Eastern part of Seoul, many people thought that changes made to this major road would result in congestion problems. We performed this study to analyze the impacts of the reduction in vehicular capacity of a major street in a large city on commuters' travel patterns and behavior. We monitored traffic volume and travel speed to determine the impacts of the reductions using travel behavior surveys and by analyzing modal shift changes. We performed both short-term monitoring after the restoration work and then continued monitoring over a period of several years to determine the long-term impacts of the restoration project. Whereas travel speed declined and traffic volume increased immediately after the construction work, the number of subway passengers increased and the number of road trips decreased simultaneously. This implies that travelers change their behavior patterns and are self-compliant, even in response to major travel disturbances.

Regulatory and technology lead-time: The case of US automobile greenhouse gas emission standards

- Transport Policy---2012---Nicholas Lutsey

The automobile industry and regulatory agencies around the world are coping with the uncertainties of regulatory lead-time and technology deployment for increased vehicle efficiency and reduced greenhouse gas (GHG) emissions. The regulation of GHG emissions in the US, with adoption of 2016 standards and ongoing work toward 2025 standards, provides a rich case study to assess questions about the appropriate amount of lead-time to promote sustained long-term investment in vehicle efficiency technology. This analysis examines the milestones, phase-in, lead-time, investments, technology diffusion, and GHG emission progress-to-date toward 2016 standards in the US. The findings suggest that the 2016 rulemaking process establishes a strong model for regulatory lead-time, allowing for ample time for industry to make the necessary investments to meet their GHG reduction commitments by 2016. The 2025 rulemaking continues this strong precedent for extended regulatory lead-time and has led to near unanimous automaker support. The 13-year lead-time for 2025 standards is appropriate to help reduce technology investment risk and sustain long-term capital investments, and it is especially fitting for the difficult task of launching advanced electric-drive technologies

for deep long-term GHG emission cuts.

Driving licenses based on points systems: Efficient road safety strategy or latest fashion in global transport policy? A worldwide meta-analysis

- Transport Policy---2012---José I. Castillo-Manzano,Mercedes Castro-Nuño

One of the most popular coactive measures developed to prevent road traffic accidents in recent decades is the implementation of driving licenses based on points systems (PS) which penalize repeat offenders with suspension or withdrawal of their licenses. This paper analyzes their rapid spread worldwide through an in-depth review of the existing literature. A comprehensive meta-analysis of the effects of PS on road traffic accidents and the duration of these effects has been conducted. The findings show that the strong initial positive impact (15 to 20% reductions in accidents, fatalities and injuries) seems to wear off in under eighteen months. This limited effectiveness is related to the absence of complementary enforcement to back up these measures. Without them, points systems could turn into a boomerang road safety policy, and even be abandoned at a later date. The implications of the conclusions for legislation and future research are considered.

The Stockholm congestion charges—5 years on. Effects, acceptability and lessons learnt

- Transport Policy---2012---Maria Börjesson,Jonas Eliasson,Muriel B. Hugosson,Karin Brundell-Freij

Congestion charges were introduced in Stockholm in 2006, first as a trial followed by a referendum, then permanently from 2007. This paper discusses what conclusions can be drawn from the first five years of operation, until mid-2011. We show that the traffic reduction caused by the charges has increased slightly over time, once external factors are controlled for. Alternative fuel vehicles were exempt from the charges through 2008, and we show that this substantially increased the sales of such vehicles. We discuss public and political acceptability, synthesising recent research and Swedish experience. We conclude that objective and subjective effects on the traffic system, as well as general environmental and political attitudes, formed the basis of the strong public support, while institutional reforms and resolution of power issues were necessary to gain political support. Finally, we briefly discuss implications for the transport planning process in general.

Estimation of indirect cost and evaluation of protective measures for infrastructure vulnerability: A case study on the transalpine transport corridor

- Transport Policy---2012---Lorenzo Masiero,Rico Maggi

Infrastructure vulnerability is a topic of rising interest in the scientific literature for both the general increase of unexpected events and the strategic importance of certain links. Protective investments are extremely costly and risks are distributed in space and time, which poses important decision problems to the public sector decision makers.

Jobs/housing balance and employer-based travel demand management program returns to scale: Evidence from Los Angeles

- Transport Policy---2012---Jiangping Zhou,Yin Wang,Lisa Schweitzer

Research on environmental justice and social inclusion suggests that high-income wage earners may have better job access due to their greater choices in both housing and transportation markets. This study compares the jobs/housing balance and mode choice of different groups of employees of a large employer (27,113 employees) and those of the “reference groups” from comparable employees working for smaller employers in Los Angeles. Based on spatial and statistical analyses, this paper finds the following:

Evaluating the spatial equity of bus rapid transit-based accessibility patterns in a developing country: The case of Cali, Colombia

- Transport Policy---2012---Elizabeth Cahill Delmelle,Irene Casas

The development of Bus Rapid Transit (BRT) systems world-wide has witnessed tremendous growth in recent years, most notably in cities throughout the developing world. These large, city-wide transportation projects are often central to larger urban revitalization plans intending to foster economic growth and alter city images to both residents and to outsiders. Crucial to the success of such ambitions is a system that provides equitable access to all residents and one that provides access to a large number of urban opportunities. The purpose of this paper is to explore the spatial accessibility landscape created by newly implemented BRT system in Cali, Colombia in terms of both access to the system itself and access to three distinct activities around the city. In particular, the equitable distribution of accessibility patterns is explored in relation to neighborhood socio-economic strata. Findings indicate that walking access to the BRT system is greatest for middle income groups and most limited for neighborhoods in the highest and lowest socio-economic strata. Accessibility values to activities are largely bound to the spatial distribution pattern of activities; most equitable for intentionally dispersed recreation site, and least for spatially clustered hospitals.

Congestion charging and car use: A review of stated preference and opinion studies and market monitoring evidence

- Transport Policy---2012---Zheng Li,David Hensher

This paper reviews 20 published congestion pricing studies with a focus on the dimensions of the stated preference or opinion survey, especially the type of charging regime and the structure of the charge. The effectiveness and acceptability of different charging regimes, as well as behavioural responses such as changes in departure time, car use, mode, residential, and work location, are synthesised, and used to provide insights to enrich our understanding of the potential role that specific congestion pricing schemes might play in influencing behavioural change. Reviewed evidence from the monitoring of the behavioural responses associated with actual congestion charging schemes, such as reduction in car trips, shift in departure times and switch to public transport, shows that the evidence from stated preference studies aligns well with the real market evidence. We also provide recommendations on the design of future stated preference studies, emphasising the need to include a systematic treatment of all key themes identified in this paper.

Factors affecting future demand for electric vehicles: A model based study

- Transport Policy---2012---Simon Shepherd,Peter Bonsall,Gillian Harrison

This paper develops a system dynamics model of the UK take-up of electric vehicles over the next 40 years. The model extends previous work by Struben and Sterman (2008) to allow analysis of the UK market. The impact on uptake and CO2 emissions of factors such as subsidies, range, charge point availability, emission rates and a revenue preserving tax are considered. We show that subsidies have little impact on take-up under a traditional business as usual case. However, when we introduce a conditional marketing scenario, they play an important role in tipping the market into a successful trajectory. The sensitivity of the results to assumptions on word of mouth, average vehicle life and emissions rates are explored and we find that changing these can result in a greater impact on take-up and emissions than policy or vehicle attribute factors. Our results have important policy implications.

From barrier elimination to barrier negotiation: A qualitative study of parents' attitudes about active travel for elementary school trips

- Transport Policy---2012---Kelly Draper Zuniga

This paper examines parents' responses to key factors associated with mode choices for school trips. The research was conducted with parents of elementary

school students in Denver Colorado as part of a larger investigation of school travel.

To use or not to use? An empirical study of pre-trip public transport information for business and leisure trips and comparison with car travel

- Transport Policy---2012---Sendy Farag,Glenn Lyons

This quantitative study provides more insight into the relative strength of various factors affecting the use and non-use of pre-trip Public Transport (PT) information for business and leisure trips. It also illuminates comparing car with public transport and its consequences for mode choice. The factors affecting PT information use most strongly are travel behaviour and sociodemographics, but travel attitudes, information factors, and social surrounding also play a role. Public transport use and PT information use are closely connected, with travel behaviour having a stronger impact on information use than vice versa. Information service providers are recommended to market PT information simultaneously with public transport use.

Death by a thousand curb-cuts: Evidence on the effect of minimum parking requirements on the choice to drive

- Transport Policy---2012---Rachel Weinberger

Little research has been done to understand the effect of guaranteed parking at home—in a driveway or garage—on mode choice. The research presented here systematically examines neighborhoods in the three New York City boroughs for which residential, off-street parking is possible but potentially scarce. The research is conducted in two stages. Stage one is based on a Google Earth© survey of over 2000 properties paired with the City’ s tax lot database. The survey and tax lot information serve as the basis to estimate on-site parking for New York City neighborhoods. With parking availability estimated, a generalized linear model using census tracts as the unit of analysis, is used to estimate the maximum likelihood parameters that predict the proportion of residents who drive to work in the Manhattan Core.

Transport and social exclusion: Where are we now?

- Transport Policy---2012---Karen Lucas

The late 1990s and early 2000s witnessed a growing interest amongst UK academics and policy makers in the issue of transport disadvantage and, more innovatively, how this might relate to growing concerns about the social exclusion of low income groups and communities. Studies (predominantly in the United Kingdom) began to make more explicit the links policy between poverty, transport disadvantage, access to key services and economic and social exclusion (see for example Church and Frost, 2000; TRaC, 2000; Lucas et al., 2001; Kenyon 2003; Kenyon et al., 2003; Hodgson and Turner, 2003; Raje, 2003).

Urban transport, environmental justice and human daily activity patterns

- Transport Policy---2012---Philine Gaffron

Emissions from road transport such as noise, particles and gasses have been associated with issues of environmental justice in urban areas. To date, the majority of analyses of this issue have used income, education, employment situation or ethnicity as parameters for distinguishing socio-economic groups, which might be unequally affected by such emissions in their home. However, in addition to people’s residential locations, their daily patterns of time use in conjunction with traffic flows can also play a major role in determining their level of exposure to transport emissions. Through analysing time use surveys from Germany and the UK to establish human daily activity patterns in terms of time spent at home, this paper shows that the parameters age and gender are at least as important in identifying groups that might be disproportionately affected by road transport emissions in their homes in urban areas as are income, education and employment situation. The paper also sets the average time use patterns of different population groups in Germany

against representative traffic flows on main roads in Hamburg, Germany, to investigate how differences in time use might relate to variations in traffic patterns. The paper focuses on the residential location as the most common unit of EJ investigations and also the place, where people spend most of their time.

Influence of built environment and transportation access on body mass index of older adults: Survey results from Erie County, New York

- Transport Policy---2012---Daniel Baldwin Hess,Jessica Kozlowski Russell

Recent empirical research about the influence of built environments on individual health behaviors and health conditions focuses on people of all ages or youth subgroups (such as children and adolescents) but infrequently on older adults. To address the gap, the impact of built environment characteristics—such as population density, land use arrangements, and access to public transit—on body mass index (BMI) is assessed for 207 older adults (age 50 and older) in Erie County, New York. A particular focus of inquiry is how frequency of driving and access to public transportation —and the degree to which various urban forms provide support for these mode choices—relate to BMI for older adults. Socio-demographic data and information about individuals' health is collected using a random survey of older adults; data about the built environment is calculated for the surroundings of each respondent's home using Geographic Information Systems (GIS). Results from ordinary least squares regression models suggest that BMI of older adults may be more influenced by personal characteristics—age, sex, physical functionality—and neighborhood socioeconomic factors —share of population within the respondents' census tract that is white, and median household income— than by neighborhood land use and frequency of driving. Access to public transportation—measured by the density of nearby bus stops—exhibits an inverse and statistically significant relationship with BMI among older adults, suggesting that transportation access may play a greater role in the overall activity levels and BMI of older adults.

Getting the British back on bicycles—The effects of urban traffic-free paths on everyday cycling

- Transport Policy---2012---Tim Jones

The UK National Cycle Network (NCN) developed by the transport organisation, Sustrans, is a significant policy intervention aimed at encouraging cycling. Around half of the population is purported to live within one mile of the 20,000km Network. Traffic-free paths (separated from the public highway away from motor traffic) form about one third of the Network but account for around 80% of trips. The importance of NCN urban traffic-free paths in encouraging people to cycle is often assumed but despite large aggregate datasets characterising users, there is no research on the effects on the local communities which they serve. This paper presents research which aimed to identify the contribution of a typical section of NCN urban traffic-free path in encouraging cycling for everyday travel amongst a community living adjacent to this type of intervention.

Is it possible to achieve both a simple and efficient public transport zone fare structure? Case study Oslo

- Transport Policy---2012---Kjell Jansson,Truls Angell

In many urban areas in the world zone systems are used for public transport fares. Such systems may approximately accord with economically efficient pricing. The reason is that zones can vary with size and location so that prices can approximately reflect the social marginal costs of journeys.

An option generation tool for potential urban transport policy packages

- Transport Policy---2012---Anthony D. May,Charlotte Kelly,Simon Shepherd,Ann Jopson

Several studies have indicated that option generation – the development of a range of strategic policy options to tackle identified transport problems – is the weakest

link in current transport planning practice. Local authorities all too often limit themselves to pre-conceived solutions, focus on supply-side rather than demand-side polices, and are unaware of the potential of novel solutions. This is even more the case for the development of packages of policy instruments, in which each can be expected to support the others by making it more effective or easier to implement.

Modelling the impact of alternative pricing policies on an urban multimodal traffic corridor

- Transport Policy---2011---Giuseppe Inturri,Matteo Ignaccolo

This paper investigates the effects of alternative or joint schemes of road pricing and parking pricing to verify if private behaviour in operating parking facilities, road tolling and transit systems can lead to profitable results in the private sector and for public welfare. The evaluation is carried out using an idealised urban multimodal traffic corridor with some numerical examples that show the effects of different pricing policies. A Deterministic User Equilibrium assignment procedure is used to calculate certain performance indicators such as user travel costs, social costs and private profit. The results show that the system is highly sensitive to pricing policy and that a proper joint pricing of park-and-ride facilities, city centre parking and road tolls can be developed to simultaneously attain good private and social benefits.

Learning from accidents: Updates of the European regulation on the investigation and prevention of accidents and incidents in civil aviation

- Transport Policy---2011---Rosa María Arnaldo Valdés,Fernando Gómez Comendador

Civil aviation has a longstanding tradition of investigating accidents and reporting incidents, which contributes to making aviation one of the safest forms of transport. To make flying safer, independent investigation into accidents is essential as it the surest way of identifying the causes of an accident and answering the fundamental questions "What really happened?" and "What can be done to prevent similar incidents in the future?". The obligation to investigate accidents is enshrined in the Chicago Convention of 1944. Recognizing the importance of accident investigation, the European Union adopted Council Directive 94/56/EC establishing the fundamental principles governing the investigation of civil aviation accidents and incidents and later on Directive 2003/42/EC on occurrence reporting. They both significantly contributed to harmonization of accident prevention. But with air traffic steadily increasing, accidents do happen despite the best efforts of regulators and industry. The organization of the air transport sector is much more complex now than it was a decade ago. Today there is significant divergence in the investigating capacity of the EU Member States compared to 1994. Furthermore nowadays investigating air accidents take new kinds of expertise and more resources than a decade ago. At the same time there is a new legal and institutional environment in Europe derived from the adoption of European aviation safety rules. Also the organizational set-up has changed substantially with the establishment of the European Aviation Safety Agency (EASA), which is now responsible for certifying aircraft in the EU. The EU rules on investigating air accidents need to be updated to reflect the current realities of Europe's aviation market and the complexity of the global aviation industry. Accordingly, over the last few years the European Commission has been working on a Regulation on the investigation and prevention of accidents and incidents in civil aviation, with the intention of updating and replacing the existing Directive. With this new regulation the Commission aims to promote more efficient and independent inquiries into the causes of air accidents and also expects to strengthen the rights of the victims of air accidents. Today the end is in sight, once that the Commission and European Parliament have reached an agreement about the content and text of this new regulation. Reasons behind this new regulation are presented in this paper together with a detailed explanation of its main contents, an assessment of their impact and their expected benefits.

Walking to transit: An unexpected source of physical activity

- Transport Policy---2011---Catherine Morency,Martin Trépanier,Marie Demers

Using data from a regional survey carried out in Montreal, this paper shows empirical evidence that modal shift from car to transit contributes to the volume of daily physical activity. First, the paper presents a method to calculate the walking distance related to transit trips, and a totally disaggregate trip assignment model. The walking distance involved in every transit trip is then associated to the individuals' characteristics to estimate the number of steps made by the population in the whole transit system. Results show that, in average, a transit trip involves 1250 steps, required to access and egress the network as well as to transfer between routes or modes. Thus, a round trip represents 2500 steps, which account for 25% of the recommended volume of physical activity per day. Hence, analysis shows that the volume of walking varies according to attributes of the traveler (general decrease with age, higher for men) and of the trip (study and work trip involve more steps, the use of train generates more steps). A regression model confirms that these variables significantly affect the number of steps involved in transit trips. Such positive outcome, for the traveler himself, is an innovative argument to promote the use of transit that is also aligned with current sustainable transportation goals.

Cost efficiency of African airports using a finite mixture model

- Transport Policy---2011---Carlos Barros

This paper evaluates the operational activities of African airports using a finite mixture model that allows us to control for unobserved heterogeneity. In doing so, a stochastic frontier latent class model, which allows for the existence of different technologies, is adopted to estimate cost frontiers. This procedure not only enables us to identify different groups of African airports analysed from Angola and Mozambique, but also permits the analysis of their cost efficiency. The main result is that three groups are identified in the sample, each equipped with completely different "technologies", suggesting that distinct business strategies need to be adapted to the characteristics of the airports. Some managerial implications are developed.

Empirical evidence from the Greater Toronto Area on the acceptability and impacts of HOT lanes

- Transport Policy---2011---Jeremy Finkleman,Jeffrey Casello,Liping Fu

This paper describes a study on willingness to pay (WTP) and public acceptability for High-Occupancy/Toll (HOT) lanes using empirical evidence from Toronto, Ontario, Canada. From a stated preference survey of more than 250 drivers, we estimate mean willingness to pay values under various trip conditions and for various traveler characteristics. The study provides statistically significant evidence on the relationships between willingness to pay and the improvement in travel speeds in HOT lanes, the length of the trip, and the urgency of on-time arrival. Furthermore, our study confirms several literature findings from previous studies on the relationship between travelers' willingness to pay and income as well as prior experience with HOT lanes. Some of the findings are qualitatively validated on the basis of the observed travel behavior in choosing tolled facilities over untolled facilities during periods of heightened congestion and urgency.

Exploring the effectiveness of bus rapid transit a prototype agent-based model of commuting behavior

- Transport Policy---2011---Simon McDonnell,Moira Zellner

The introduction of Bus Rapid Transit (BRT), typically involving the use of exclusive bus lanes and related bus priority measures, is increasingly advocated as a flexible and cost-effective way of improving the attractiveness of public transit in congested urban areas by reducing travel times and variability. These

schemes typically involve the reallocation of road space for exclusive use by buses, presenting commuters with potentially competing incentives: buses on BRT routes can run faster and more efficiently than buses running in general traffic, potentially attracting commuters to public transit and reducing congestion through modal shift from cars. However, a secondary impact may also exist; remaining car users may be presented with less congested road space, improving their journey times and simultaneously acting as an incentive for some bus-users to revert to the car. To investigate the potential for these primary and secondary impacts, we develop a prototype agent-based model to investigate the nature of these interactions and how they play out into system-wide patterns of modal share and travel times. The model allows us to test the effects of multiple assumptions about the behaviors of individual agents as they respond to different incentives introduced by BRT policy changes, such as the implementation of exclusive bus lanes, increased bus frequency, pre-boarding ticket machines and express stops, separately and together. We find that, under our assumptions, these policies can result in significant improvements in terms of individual journey times, modal shift, and length of rush hour. We see that the addition of an exclusive bus lane results in significant improvements for both car users and bus riders. Informed with appropriate empirical data relating to the behavior of individual agents, the geography and the specific policy interventions, the model has the potential to aid policymakers in examining the effectiveness of different BRT schemes, applied to broader environments.

Revisiting the cost of the Stockholm congestion charging system

- Transport Policy---2011---Carl J. Hamilton

In January 2006, a system for congestion charging was introduced in the city of Stockholm, Sweden. The charging scheme was run in the form of a full-scale trial for seven months, after which it was deactivated, awaiting its evaluation and an advisory public referendum. Several parties, including representatives of the scientific community as well as media and special interest groups, have analysed and evaluated the system. A recurring theme in several of these analyses is that the cost to build and operate the system was excessive, compared to costs for other road charging installations. This study revisits some of the key project participants and archive data, to provide a deeper understanding of what were the major cost drivers and whether lower cost can be achieved in future installations. The approach taken is to emphasise understanding of the particular circumstances rather than comparing aggregates with other seemingly similar systems. The main conclusions include the identification of a rational actor paying an insurance against unacceptable risk, the importance of the election cycle, and the interplay between risk, acceptance, performance, and cost. A conceptual model for this interaction is suggested.

Mexico's private toll road program reconsidered

- Transport Policy---2011---Samuel Carpintero,Jose A. Gomez-Ibañez

Mexico's private toll road program of 1989-1994 is famous both as one of the first and the most ambitious highway privatization programs among the developing countries and as one of the most dramatic failures. In just five years Mexico awarded 52 concessions totaling over 5300Â km of toll roads, but as early as 1993 many of the concessions had to be renegotiated and in 1997 the government was forced to takeover 23 of them at an immediate financial cost of billions of dollars. This paper reconsiders the Mexican program and, with the benefit of hindsight, argues that it does not deserve its bad reputation. Although Mexico made some important mistakes in the design of the concessions, many of the highways turned out to be socially worthwhile investments. Moreover, the restructuring of the concessions in 1993-1997 converted many of them into financially profitable projects over the long-term, while the 1997 bailout ended up costing the government little in budget terms.

Modeling politicians' preferences for road pricing policies: A regret-based and utilitarian perspective

- Transport Policy---2011---Caspar Chorus,Jan Anne Annema,Niek Mouter,Bert van Wee

This paper presents the results of a stated choice-study among Dutch local politicians in the context of road pricing policies. Politicians were asked to express their preferences for policy-options that differed in terms of (i) emissions reduction, (ii) congestion reduction, (iii) operational costs, (iv) acceptability among the general public and (v) acceptability among retailers. Utility-maximization-based and regret-minimization-based discrete choice models were estimated, and their results compared, on 238 stated choices made by members of Dutch city-councils. The estimated models allow for the evaluation of the popularity of different road pricing scenarios among Dutch local politicians, as a function of their performance in terms of the above-mentioned criteria.

Impacts of vehicle restrictions on urban transport flows: The case of Santiago, Chile

- Transport Policy---2011---Louis de Grange,Rodrigo Troncoso

Regression models are employed to quantify the effects of vehicle restrictions on private and public transport passenger flows in Santiago, Chile using trip flow data for cars, buses and the city's Metro rail system. Estimates are derived for the effects of two restrictions: a permanent measure applied from April through August 2008 to vehicles without catalytic converters and additional measures that banned the use of vehicles with catalytic converters between 7:30Â am and 9Â pm on days declared as environmental "pre-emergencies" due to high air pollution levels. The estimates show that the permanent restriction had no impact on the use of private cars while the additional restriction curtailed their use by 5.5%. Also, on pre-emergency days the flow of passengers to the Metro increased by about 3% while the bus network showed no statistically significant increase. The pre-emergency restrictions thus had an effect on the ridership of the Metro but not on the bus network as alternatives to the use of private cars.

High-speed rail and air transport competition in Western Europe: A supply-oriented perspective

- Transport Policy---2011---Frédéric Dobruszkes

Increasingly air transport growth raises the question of its impact on the environment. Public authorities and researchers are relying more and more on high-speed trains (HSTs), whose efficiency is supposed to lead to a modal shift from airplanes. However, most transport studies focus on the evolution of demand rather than supply, although it is basically the latter that determines environmental damage. In light of this fact, this paper aims to compare the overall dynamics in the supply of air transport in Europe compared to the HST supply and to examine empirically five city-pairs. The development of high-speed rail remains limited compared to the increase of air services. For a given city-pair, the decline in the number of flights depends on various conditions, including length of the HST journey and the strategies adopted by the airlines. Some carriers reduce their supply in terms of the number of seats but increase the number of flights in order to compete more effectively with the HSTs. Moreover, the competition between low-cost airlines and HSTs should be kept in mind and re-examined in a few years.

Crowding and public transport: A review of willingness to pay evidence and its relevance in project appraisal

- Transport Policy---2011---Zheng Li,David Hensher

This paper reviews public transport crowding valuation research, using a number of primary studies conducted in the UK, USA, Australia and Israel. We identify three measures used to value crowding (a time multiplier, a monetary value per time unit and a monetary value per trip), and associated ways of representing crowding in stated preference experiments. Although a number of different types of crowding in terms of location are identified, namely in-vehicle, access-way, entrance and

platform/station, the majority of reviewed studies investigate only in-vehicle crowding. Despite the different characteristics of the reviewed studies, they all report that crowding would increase the value of travel time savings, which can be viewed as an additional component of generalised time. This paper also comments on the role that the WTP for crowding reduction can play in project appraisal, and suggests some important avenues for future public transport crowding valuation research.

Carbon emission values in cost benefit analyses

- Transport Policy---2011---Svante Mandell

New infrastructure projects may affect CO2 emissions and, thus, cost benefit analyses for these projects require a value to apply for CO2. This may be based on the marginal social cost of emissions or on the shadow price resulting from present and future policies. This paper argues that both approaches are necessary, but for cost benefit analysis of infrastructure projects the latter should be the primary tool. A series of complications arise when applying this principle in practice. These are discussed in the paper. Even if the complications make the implementation of a shadow price approach difficult, we argue that the approach still is preferable to a social cost approach.

Pay to drive in my bus lane: A stated choice analysis for the proposed Lincoln Tunnel HOT lane into Manhattan

- Transport Policy---2011---Stephane Hess,Elizabeth R. Greene,C. Stacey Falzarano,Mark Muriello

This paper presents the findings from a stated choice (SC) analysis conducted in the context of proposed changes to the lane system in use for the Lincoln Tunnel crossing into Manhattan. Currently, the approach road (NJ 495) to the Lincoln Tunnel has six lanes, with three in each direction. During the weekday morning peak period, The Port Authority of New York and New Jersey (PANYNJ) operates a 2.5 miles exclusive bus lane (XBL) for traffic bound for Manhattan. The PANYNJ is considering creating, from existing lanes, a second XBL with the option for passenger vehicles to use it in return for an additional toll, in effect turning it into a high occupancy toll (HOT) lane. Such an approach to increase capacity and reduce congestion is unique nationally and this study looks at drivers' choices between using standard lanes, paying extra to drive on a HOT lane (the new XBL lane), switch to earlier or later departure times, or change their mode of travel. The analysis shows significant differences in the valuation of travel time savings between different population groups and also different departure time periods. The models also reveal a reluctance to change to other crossings, accept changes in departure time or switch to alternative modes.

A methodology based on the Analytic Hierarchy Process for the quantitative assessment of emergency preparedness and response in road tunnels

- Transport Policy---2011---Davide Manca,Sara Brambilla

The paper presents and discusses a methodology to judge the effectiveness of the preparedness activities in case of accidents in road tunnels by considering the system from several points of view (i.e. structural/technical, organizational/human, and contextual). Due to the different nature of the criteria involved in the assessment activity, we chose to apply the Analytic Hierarchy Process methodology (Saaty, T.L. (2006). Fundamentals of Decision Making and Priority Theory with the Analytic Hierarchy Process, RWS Publications, Pittsburgh) that allows comparing and appraising quantitatively variables that are incommensurable and that may originate from distinct and separate areas. The paper identifies the hierarchic structure necessary to measure both the performance of the emergency response system for road tunnel accidents and the weights for assessing their relative importance. Finally, the methodology is applied to a case study on a transnational road tunnel between Italy and France to show a feasible evaluation of the sensitivity of the structure to the input variables in or-

der to find the most valuable enhancing and improving actions.

Vessel and voyage determinants of tanker freight rates and contract times

- Transport Policy---2011---Amir Alizadeh,Wayne K. Talley

The behavior of shipping freight (charter) rates and the timing of shipping contracts affect the transportation costs of charterers and the operating cash flows of shipowners. Although the literature has established macroeconomic determinants of shipping freight rates, there has been no systematic investigation of microeconomic determinants of freight rates and the delivery time of chartered ships (the laycan period) in the tanker market. Therefore, the aim of this paper is to investigate the importance of vessel and contract specific factors in the determination of tanker freight rates and laycan periods in shipping contracts. Individual tanker shipping contracts from January 2006 to March 2009 are used to estimate freight rates and laycan periods using a system of simultaneous equations. The estimation results suggest that the duration of the laycan period is an important determinant of the shipping freight rate and vice versa. Other determinants of freight rates include the vessel's hull type, fixture deadweight utilization ratio, vessel age, and voyage routes. Determinants of the laycan period include the former determinants as well as the Baltic Dirty Tanker Index and its volatility.

Congestion pricing, transit subsidies and dedicated bus lanes: Efficient and practical solutions to congestion

- Transport Policy---2011---Leonardo J. Basso,Cristian Guevara,Antonio Gschwender,Marcelo Fuster

We analyze urban congestion management policies through numerical analysis of a simple model that: allows users to choose between car, bus or an outside option (biking); consider congestion interactions between cars and buses; and allow for optimization of frequency, vehicle size, spacing between stops and percentage of capacity to be dedicated to bus lanes. We compare resulting service levels, social welfare and consumer surplus for a number of different policies and find that: (i) dedicated bus lanes is a better standalone policy than transit subsidization or congestion pricing. The latter is marginally better than subsidization but has a negative impact in consumer surplus. (ii) Efficient transit subsidies are quite large since in many cases first-best transit price is negative; establishing dedicated bus lanes or implementing congestion pricing render subsidies unnecessary for high demand levels. (iii) Both subsidization and dedicated bus lanes would count with public support while congestion pricing would probably encounter opposition. (iv) Transit subsidies and/or congestion pricing do not induce large changes on optimal bus size, frequency, circulation speeds and spacing between stops in mixed-traffic conditions: dedicated bus lanes do. (v) In all cases analyzed, revenues from congestion pricing are enough to cover transit subsidies; the optimal percentage of capacity that should be devoted for bus traffic is around one third.

Socioeconomic differences in public acceptability and car use adaptation towards urban road pricing

- Transport Policy---2011---Tina Gehlert,Christiane Kramer,Otto Anker Nielsen,Bernhard Schlag

Urban road pricing is regarded as an effective instrument to reduce traffic congestion and environmental-related problems in metropolitan areas. Whereas the overall impact of urban road pricing on car use adaptation and public acceptability is known, there are only inconsistent results concerning the socioeconomic differences in the response towards road pricing. However, this knowledge is necessary for the development of urban road pricing packages. This paper uses a segmentation approach to identify groups of car users with a similar background in relevant socioeconomic variables and compares their responses towards road pricing. Three groups are identified: young families, suburban families, and singles and couples. These

groups indeed differ in their car use adaptation towards urban road pricing as well as in their preferred revenues use. While all three groups significantly reduced their private car use, the young families reduced their car use most, followed by the group of singles and couples. Complementary measures are discussed that are believed to facilitate car use adaptation of each group in response towards urban road pricing.

Achieving sustainable urban transport mobility in post peak oil era

- Transport Policy---2011---Md Aftabuzzaman,Ehsan Mazloumi

Peak oil is the term used to describe the point at which global oil production will peak and thereafter start to decline. Recognising that transport uses a significant portion of global energy, the shortage of fossil fuel in post peak oil era will pose a global challenge in the transport sector. The paper presents an assessment of international research to illustrate the possible time frame of peak oil. It investigates the key implications of the oil shortage that threaten to render the urban transport system of Australia ineffective. Synthesis of documented research evidence suggests three major implications in the urban transport sector: (1) a reduction of mobility for individuals, (2) an increase of transport disadvantage, and (3) a disruption of urban freight movement. In addition, the paper explores strategies to cope with the devastating effects of the shortage of the fossil fuel in the post peak oil era. A number of strategies to achieve sustainable mobility in the future urban transport system are presented. These strategies are summarised into three main themes: (1) a mode shift to alternate transport modes, (2) an integration of land use and transport planning, and (3) a global technical effort for alternate fuels and vehicles. It is expected that a concerted global effort in this regard can have a far-reaching effect in achieving sustainability in urban transport mobility.

Children's active travel and independent mobility in four countries: Development, social contributing trends and measures

- Transport Policy---2011---Aslak Fyhri,Randi Hjorthol,Roger L. Mackett,Trine Nordgaard Fotel,Marketta Kyttä

In many countries a decline in children's active and independent mobility, like walking and cycling is registered. In this paper the development of children's mobility in Denmark, Finland, Great Britain and Norway is compared to examine differences and similarities in these countries. Accessible data are used, which implies that not all of them are directly comparable, but they are employed as indicators of development. The trends are the same in these four countries, an increase in car use and decrease in bicycling and walking. Distance to school has increased, both as a result of bigger units and more children in private schools. Traffic is an important reason for taking children to school by car, but convenience for the parents is also part of it. Organized leisure activities has also contributed to less walking and cycling, in addition to more time pressure in families, increased access to car(s) and easier access to parents as a 'transport service' by the help of the mobile phone. The measures that different countries use in trying to meet the challenges of children's mobility tend to focus on the school trip and most often on traffic safety, both at national and local levels.

The effects of rational and habitual factors on mode choice behaviors in a motorcycle-dependent region: Evidence from Taiwan

- Transport Policy---2011---Ching-Fu Chen,Wen-Tai Lai

This paper aims to explore the effects of rational and habitual factors on mode choice behaviors in a motorcycle-dependent region. Both a discrete choice model and theory of planned behavior (TPB) are employed to examine mode choice behaviors. A sample was obtained from two major cities in Taiwan to examine the contextual effect of public transport development.

The empirical results reveal that psychological (rational and habitual) factors have stronger influences on mode choice behaviors than socio-economic factors, and furthermore that habitual factors explain traveler mode choice behaviors better than rational ones. The contextual effect with regard to public transport development is found to be significant for motorcyclists' mode choice behaviors. The practical implications of the results of this study are discussed.

How vehicle ownership affect time utilization on study, leisure, social activities, and academic performance of university students? A case study of engineering freshmen in a rural university in Thailand

- Transport Policy---2011---Thirayoot Limanond,Sajjakaj Jomnonkwao,Duangdao Watthanaklang,Vatanavongs Ratanavaraha,Siradol Siridhara

This study aims to investigate how the ownership of a private vehicle influences time utilization of university students, and whether it impacts their academic performance. This research analyzes travel/activity patterns of 130 engineering freshman students at a rural university in Thailand. An analysis of travel/activity data shows that vehicle ownership seems to play an important role in university student's time utilization on various activities. It was found that those students who own a vehicle tend to spend less time for academic purposes, and more on leisure and social activities than non-owner students. Nevertheless, a further study using regression analysis on academic performance shows that the ownership of a vehicle does not seem to have a significant impact on the grade point average of students, once the cognitive ability and gender are accounted for. The findings imply that campus policies/measures that restrict the ownership or usage of a private vehicle in rural universities would improve the campus learning environment by influencing university students to put more attention on school-related activities, but such policies do not seem to impact on the academic performance of the college students.

Identifying sources of systematic variation in direct price elasticities from revealed preference studies of inter-city freight demand

- Transport Policy---2011---Zheng Li,David Hensher,John Rose

Freight demand elasticity studies vary significantly in terms of the demand measure, data type, estimation method, commodity type, etc. This wide variation makes it difficult to compare empirical estimates when the differences may arise in part from the methods and data used. In this paper we conduct a comparative analysis to identify systematic sources of influence on direct price elasticity estimates in the context of freight transport, distinguishing between road, rail, and sea transport, using published direct price elasticities from 12 elasticity-derivative studies from five countries. The study focuses on revealed preference elasticities defined by the freight rate for tonnes and tonne kilometres of inter-city freight movements. Systematic sources that explain differences in direct price elasticities include the demand elasticity measure, mode, commodity class, model estimation form, country, and temporal nature of data (e.g., cross-section). Analysts can utilise the model outputs to adjust the empirical evidence from specific studies to control for differences that impact on the behavioural implications of comparative evidence.

A multilayer model to simulate cruising for parking in urban areas

- Transport Policy---2011---Mariano Gallo,Luca D'Acierno,Bruno Montella

In this paper we propose an assignment model on urban networks to simulate parking choices; this model is able to simulate the impact of cruising for parking on traffic congestion. For simulating parking choice and estimating the impact of cruising on road congestion we propose a multi-layer network supply model, where each layer simulates a trip phase (on-car trip between the origin and destination zone, cruising for parking at destination zone and walking egress trip). In this model the cruising time is explicitly simulated on the network. The proposed model is tested on a trial network and on

a real-scale network; numerical tests highlighted that the proposed model is able to simulate user parking choice behaviour and the impact of cruising for parking upon road congestion, particularly when the average parking saturation degrees exceed 0.7.

Distributional effects of public transport policies in the Paris Region

- Transport Policy---2011---Benjamin Bureau,Matthieu Glachant

This paper examines the distributional effects of alternative scenarios of urban public transport policies in the Paris Region using disaggregated data from the Global Transport Survey 2001-2002. We study two types of scenarios: fare adjustments, as in previous work, but also speed increase scenarios. We find that reducing public transport fares is progressive. Increasing the speed of public transport is also progressive whatever the mode. The most progressive option is to increase the speed of buses in the suburbs, while targeting the metro or the suburban rail are the least progressive alternatives. More generally, low-income individuals benefit more from fare reductions than from increases in public transport speed.

Understanding bus rapid transit route ridership drivers: An empirical study of Australian BRT systems

- Transport Policy---2011---Graham Currie,Alexa Delbosc

Bus Rapid Transit (BRT) systems are an increasingly popular public transport option internationally. They provide rail-like quality for bus services for a fraction of the cost of fixed rail. Many claims of high and increasing ridership have resulted from BRT system development; however, it is unclear exactly which aspects of BRT system design drive this. This paper explores whether BRT design features, among other influences, significantly increase ridership above and beyond the impact of service levels. It does so using a series of regression models undertaken on 77 BRT and non-BRT bus routes in Australia which is known for its diversity in BRT route design. Explanatory variables used included service level, frequency, speed, stop spacing, share of segregated right of way, vehicle accessibility, employment and residential density, car ownership levels and BRT infrastructure quality. Five models explored the role of these variables. Two models found that service level dominates predictions of boardings per route km although they suffer from endogeneity. Further models control for this influence by modelling boardings per vehicle km. Overall results suggest that some BRT infrastructure treatments such as right of way have a significant impact on ridership but the influence of infrastructure is within the context of high service levels. The role of accessible vehicles has also been highlighted in this research, although more research is needed to clarify this influence. The paper concludes with a discussion of the various influences on ridership and recommendations for existing policy and future research.

Demand and operating cost forecasting accuracy for toll road projects

- Transport Policy---2011---Morten Welde

Inaccurate forecasts represent a major source of risk in road and toll projects because they could result in financial difficulties or even bankruptcy. This paper focuses on demand and operating cost forecasting accuracy for Norwegian toll projects by comparing the forecasted and actual levels of traffic and operating costs. The differences among the types of projects and the effects of project size, time and demand ramp-up are also examined. Our study finds that traffic forecasts for Norwegian toll projects are fairly accurate, on average. However, a majority of the investigated projects experienced overestimation, and a huge general error in the forecasts suggests that this is also a source of risk that merits greater scrutiny. Inaccuracies are common among all project types and sizes. Operating costs are frequently underestimated; on average, these costs are about 30% higher than estimated.

A note on the relationship between obesity and driving

- Transport Policy---2011---Sheldon H. Jacobson,Douglas M. King,Rong Yuan

Vehicle travel and obesity rates in the United States have surged in recent decades. This paper contributes to the mounting evidence of a link between them by drawing attention to a very close relationship between trends in miles driven per licensed driver and adult obesity rates six years later. It also presents evidence on why the effect might be expected to be lagged by six years. A simple model is produced, which predicts reductions in obesity rates over the next few years. If these reductions come about, the model will be seen to offer a powerful insight into the relationship between driving and obesity. If the relationship is more than coincidental, it has implications for transport policy and supports the development of a multi-pronged, interdisciplinary approach to tackle increased driving and obesity.

Exploring the relative influences of transport disadvantage and social exclusion on well-being

- Transport Policy---2011---Alexa Delbosc,Graham Currie

This paper explores the separate and combined effects of transport disadvantage and social exclusion on well-being using an empirical analysis of data from a travel and disadvantage survey in Victoria, Australia. Previous research explores the impact of transport on social exclusion but does not study the downstream impacts on well-being. To explore this relationship measures of subjective well-being are compared across four groups: (i) people who are neither transport disadvantaged nor socially excluded, (ii) transport disadvantaged only, (iii) socially excluded only and (iv) both transport disadvantaged and socially excluded. The paper explores which component aspects of social exclusion and transport disadvantage have the greatest impact on well-being and which social groups are most likely to face transport disadvantage and social exclusion together. The paper concludes with a commentary on how the findings might be used to better target policy interventions meant to improve well-being.

Substituting a tramway to a bus line in Paris: Costs and benefits

- Transport Policy---2011---Prud'homme, Rémy,Martin Koning,Pierre Kopp

In Paris, an old bus line on the Maréchaux Boulevards has been replaced by a modern tramway. Simultaneously, the road-space has been narrowed by about a third. A survey of 1000 users of the tramway shows that the tramway hardly generated any shift from private cars towards public transit mode. However, it did generate important intra-mode transfers: from bus and subway towards tramway, and from Maréchaux boulevards towards the Périphérique (the Paris ring road) for cars. The various benefits and costs of these changes are evaluated. The welfare gains made by public transport users are more than compensated by the time losses of the motorists, and in particular, by the additional cost of road congestion on the Périphérique. The same conclusion applies with regard to CO2 emissions: the reductions caused by the replacement of buses and the elimination of a few cars trips are less important than the increased pollution caused by the lengthening of the automobile trips and increased congestion on the ring road. Even if one ignores the initial investment of 350Â M[euro], the social impact of the project, as measured by its net present value is negative. This is especially true for suburbanites. The inhabitants (and electors) of Paris pocket the main part of the benefits while supporting a fraction of the costs.

Kids and cars: Environmental attitudes in children

- Transport Policy---2011---Helen Kopnina

This article aims to supplement scarce research on the children's attitudes to cars and the environment. Assuming that attitudes to cars develop in childhood, this article draws upon the writing assignments and interviews exploring the upper-elementary school children's attitudes to cars. The study was conducted in

Amsterdam, The Netherlands, between January and December 2010. Briefly examining existing research on children's environmental attitudes in general, and in relation to cars in particular, the author argues that in-depth qualitative research is essential to the understanding of the factors that explain present attitudes and perhaps predicting the behavior of the future users of the means of transportation. In conclusion, the author makes a recommendation for the development of a curriculum addressing the development of children's awareness of sustainable transportation.

Measuring the potential implications of introducing a cap and share scheme in Ireland to reduce green house gas emissions

- Transport Policy---2011---David McNamara,Brian Caulfield

This paper examines some of the potential impacts of introducing a cap and share scheme in Ireland. Under such a scheme a cap or limit is placed on national CO2 emissions and individuals are allocated an annual CO2 allowance. The research presented in this paper focuses on travel-to-work trips specifically. CO2 emissions for these annual work trips are calculated and a cap is determined based on these results. Cap levels are set based on average emissions and a 20% reduction in average emissions as per Ireland's reduction targets. A national and Dublin only cap are examined and the results are presented as a means of comparison. Binary logistic models are used to determine the socio-economic characteristics of individuals who fall above and below the cap. The results demonstrate the importance of car ownership, journey distance, mode choice and household composition in determining whether a commuter is above or below the cap. Many commuters who fall above the cap are likely drive to work over long distances, have dependent children in their household and own more than one car.

Assessment of non-recurrent traffic congestion caused by freeway work zones and its statistical analysis with unobserved heterogeneity

- Transport Policy---2011---Younshik Chung

Freeway work zones with patching, paving, lane marking, debris removing, and weeding cause temporary capacity reduction in the freeway and may lead to non-recurrent traffic congestion. Such non-recurrent traffic congestion amounts to 10% of total traffic congestion in the U.S. and 31% in Germany. Non-recurrent traffic congestion has been estimated by using the capacity and the number of closed lanes in work zones and the upstream traffic demand of work zones. However, the number of the closed lanes may be insignificant due to operational strategies such as using the shoulder area and composing additional lanes by temporarily reducing the existing lane width to mitigate traffic congestion. Therefore, the objective of this study is to develop a method to quantify non-recurrent traffic congestion caused by freeway work zones based on traffic flow data and spatio-temporal work zone information. In addition, to demonstrate the efficacy of the developed method, a case study is conducted based on one-year historical traffic data and work zone data on major freeways in Korea. Then, multivariate statistical analysis with unobserved heterogeneity is performed to describe factors of non-recurrent traffic congestion caused by work zone activities. Due to the fact that a work zone project is usually implemented according to schedule, such negative impact as non-recurrent traffic congestion is inevitably produced. Thus, the results can be practical for the performance evaluation of congestion management programs for work zone by quantifying non-recurrent traffic congestion. Additionally, the results from the statistical analysis can be potentially useful in developing a forecasting model for providing travelers with traffic information such as an alternative route to escape non-recurrent traffic congestion by freeway work zones.

Travel using managed lanes: An application of a stated choice model for Houston, Texas

- Transport Policy---2011---Sunil Patil,Mark Burris,W. Shaw

Managed lane (ML) travel adds flexibility, but also complexity, to travel choices. Stated choice models (SCMs) are often used for modeling complex transportation

choices such as these in an effort to predict demand for these travel options. The design methods for SCMs have evolved from simple orthogonal designs to more sophisticated designs such as D-efficient design that can increase efficiency in estimation. We used three different survey design strategies to produce the stated preference portion of surveys, which were used to elicit travel choices for a sample of Houston travelers. Apart from the D-efficient design we also used random and adaptive random designs to generate attribute levels. There were observable differences in choice behavior depending on what design strategy was used. These differences appear to influence estimates of the value of travel time savings (VTTS) obtained from the random parameter logit (RPL) models estimated using these data. This, in turn, would greatly impact the percentage of travelers predicted to use the MLs. The adaptive random strategy was superior to the other design methods in several categories, and it had similar efficiency to the D-efficient design. However, the mean of VTTS estimate obtained from a D-efficient design was closer to what is typically found in the literature. The difference was considerable and could greatly influence traffic and revenue estimates for the MLs, illustrating the importance of the survey design strategy.

The regionalization of rail transport in France. An analysis of the interplay between actors (from the late 1990s through the 2000s)

- Transport Policy---2011---Marianne Ollivier-Trigalo,Sylvain Barone

In France, owing to the railway regionalization process, regional "governments" are finding themselves increasingly involved in transport policy-making. Based on a multidisciplinary comparative study conducted in six French regions, this paper aims to analyze the ways in which regional rail policies are constructed by examining, in particular, the way they are generated as a result of interactions between different institutional actors. These interactions are linked to tensions in three main areas: the financing of transport investments, the financing and nature of rail services and regional governance. We examine these tensions by referring to three configurations of actors: the first includes the Regions and the State, the second, the Regions and the rail actors, and the third, the Regions and other local authorities. Finally, we discuss our findings, emphasizing what they teach us about the regionalization process in France.

The unpredicted rise of motorcycles: A cost benefit analysis

- Transport Policy---2011---Pierre Kopp

This article examines the consequences, for Paris, of the increase in two-wheel motor vehicle (2WMV) traffic (measured in vehicle/km). Our study reveals that, between 2000 and 2007, the subway's (Métro) share in total inner-Paris travel increased by 13.6%, the RER's share by 10.3% and the SNCF's share by 20.5%. These three means of transport account for 58% of daily travel. On the other hand, the bus share has decreased by 16% and that of cars by 23.7%. Private motor vehicles represent 37.3% of total travel. Looking at road traffic, where public transport (buses) and private motor transport compete for the use of limited road space, private motor vehicles account for 91.5% and public transport 8.5% of total travel. The 2WMV share in Paris traffic increased by 36% between 2000 and 2007, with 2WMVs now accounting for a share twice as large as that of buses. A survey has shown that 100 million additional passenger kilometres were made by 2WMV in 2007 compared to 2000. 53% of this increase comes from people shifting to 2WMV from public transport and 26.5% from private cars. The remaining 20% is attributable to the increased use of 2WMVs by those already owning such vehicles in 2000. Is the growth in the share of 2WMV traffic in Paris beneficial to the community? This shift in the means of transport generates time savings of [euro]293 million and increases owners' vehicle usage costs by [euro]49 million. The cost of accidents is increased by [euro]49 million and the negative consequences in terms of pollution are estimated at [euro]22.6 million. The welfare impact of the government revenue change is negative and equal to [euro]4.7 million. In total, the

gain for the community is therefore around [euro]168 million. Accident costs are the key issue. The fact that there are on average 21 2WMV fatalities in Paris (average 2006-2007) for a means of transport accounting for 16% of passenger/km made every day in Paris offers a striking contrast to the 6 (average 2006-2007) fatalities concerning cyclists which account for a mere 0.1% of trips. The massive shift to 2WMV has taken place without any public policy support. Public policy could easily further improve the 2WMV cost-benefit balance by taking measures that would decrease the number of accidents.

Teen travel in the Greater Toronto Area: A descriptive analysis of trends from 1986 to 2006 and the policy implications

- Transport Policy---2011---Reihane Marzoughi

This paper extends research on urban form and travel behavior beyond adult travel by examining teen travelers aged 13-19 in the Greater Toronto Area. Data from the Transportation Tomorrow Survey (TTS) survey are used to study four main research questions: (1) How has teen mode choice changed from 1986 to 2006? (2) How do these choices vary as teens transition from the 13-15 age group to being of driving age (16-19)? (3) How do these choices vary across the different urban and suburban regions of the GTA? (4) What are some of the differences between teen travel and adult travel? Results show that in general, active transportation has decreased, while auto-passenger mode shares have increased across the region. The younger group walks more and the older group takes transit more for both school and discretionary travel. Jurisdictions with better transit supply and orientation have higher transit mode shares for school trips, but discretionary trips have very low transit mode shares. Walk mode shares for both school and discretionary travel are similar across all jurisdictions, regardless of whether they are urban or suburban. In contrast to adult travel in the GTA, built form characteristics and transit supply do not appear to have a direct relationship with teen mode choice. Urban form appears to exert an indirect influence on teen travel.

Shaping carpool policies under rapid motorization: the case of Chinese cities

- Transport Policy---2011---Rui Wang

Rapid motorization and fuel cost hike over the past few years have made carpool a new mode of travel in Chinese cities. But transportation policy makers have been rather ambivalent, if not indifferent, about carpool. Unlike cities in highly motorized societies, little is known about carpooling behavior in emerging economies such as China. This paper provides an initial discussion of carpooling in China by exploring a series of questions. What are the current practice and issues of carpool in Chinese cities? How do carpools in China compare with those in the motorized Western cities? Can carpools help Chinese cities mitigate the negative impacts of rapid motorization? Are foreign policies such as High-Occupancy-Vehicle (HOV) lanes transferable to China? Acknowledging the social benefits of voluntary carpooling, this paper argues: (1) bus lanes may be a better choice than HOV lanes when converting general motor vehicle lanes; (2) policies subsidizing carpoolers cannot be justified on either efficiency or equity grounds because a marginal carpooler is more likely transitioning from a transit user or non-motorized traveler than from a driver. Policy suggestions are proposed to Chinese decision makers.

The unexpected ”yes”: Explanatory factors behind the positive attitudes to congestion charges in Stockholm

- Transport Policy---2011---Jonas Eliasson,Lina Jonsson

Several authors have argued that acceptability for road pricing is likely to increase with familiarity. The experiences in Stockholm, where a trial period with congestion charges changed the public opinion from negative to positive, support this hypothesis. Analysing acceptability and attitudes in Stockholm allows us to study a situation where the population is in fact familiar with congestion charges, and explore what the decisive factors for acceptability are in such a situation. By analysing a survey collected after the referendum

and the subsequent reintroduction of the charges, we analyse the prerequisites to achieve acceptability given that the public is familiar with congestion charges. As expected, low car dependence and good transit supply are associated with high acceptability. But the two most important factors turn out to be beliefs about the charges' effectiveness, and general environmental attitudes. The importance of beliefs and perceptions of the effects of the charges underscores the importance of both careful system design and careful evaluation and results communication. The strong connection between environmental concerns and positive attitudes to congestion charges underscores the importance of considering and "marketing" the charges' environmental effects. In Stockholm, the politicians' decision to "re-label" the congestion charges to "environmental charges" and emphasising their positive effects on air quality may very well have had a positive impact on acceptability.

Erratum to "Generic functions of railway stations--A conceptual basis for the development of common system understanding and assessment criteria" [Transp. Policy 18 (2010) 446-455]

- Transport Policy---2011---Stefan Zemp,Michael Stauffacher,Daniel J. Lang,Roland W. Scholz

2011

Policy transfer and learning in the field of transport: A review of concepts and evidence

- Transport Policy---2011---Greg Marsden,Dominic Stead

This paper presents a state-of-art review of why and how policies and policy lessons in the transport planning arena are transferred between cities. It begins by drawing on literature from the fields of political science, public administration, organisational learning and management to outline a conceptual framework for policy transfer and learning. This framework is then used to structure a review of policy transfer literature in the fields of transport and planning policy. Although there is only a limited amount of literature on policy transfer in this field, the findings suggest that transport has much in common with other areas of public policy in terms of the main aspects and influences on policy transfer. As well as being part of a process for introducing new ideas into countries or cities, policy transfer in the transport sector (as in other areas of public policy) can also be a highly politicised process that seeks to justify preferred solutions. Little is known about the relative importance of different parts of the transfer process or the extent to which learning about policies in other areas can influence the effectiveness of policy design in the transport arena and/or policy outcomes. The paper concludes with some research and methodological recommendations that may help to answer these questions. It is suggested that policy transfer concepts can be important to both practitioners and researchers in the transport arena, particularly given the pressures to seek solutions to accelerate progress to a more sustainable future.

How do cities approach policy innovation and policy learning? A study of 30 policies in Northern Europe and North America

- Transport Policy---2011---G. Marsden,K.T. Frick,A.D. May,E. Deakin

This paper reports on a study of current practice in policy transfer, and ways in which its effectiveness can be increased. A literature review identifies important factors in examining the transfer of policies. Results of interviews in eleven cities in Northern Europe and North America investigate these factors further. The principal motivations for policy transfer were strategic need and curiosity. Local officials and politicians dominated the process of initiating policy transfer, and local officials were also the leading players in transferring experience. A range of information sources are used in the search process but human interaction was the most important source of learning for two main reasons. First, there is too much information available through the Internet and the search techniques are not seen to be wholly effective in identifying the necessary information. Secondly, the information available on websites,

portals and even good practice guides is not seen to be of mixed quality with risks of focussing only on successful implementation and therefore subject to some bias. Officials therefore rely on their trusted networks of peers for lessons as here they can access the 'real implementation' story and the unwritten lessons. Organisations which have a culture that is supportive of learning from elsewhere had strong and broad networks of external contacts and resourced their development whilst others are more insular or inward looking and reluctant to invest in policy lessons from elsewhere. Solutions to the problems identified in the evidence base are proposed. City to city policy transfer is a very active process in the field of transport. Not enough is yet understood about its benefits or the conditions under which it is most effective. Such understandings should help to promote and accelerate the uptake of effective and well matched policies.

Urban transport policy transfer: "bottom-up" and "top-down" perspectives

- Transport Policy---2011---Paul Timms

The paper provides insights into the urban transport policy transfer process, focusing particularly on the transfer of the transport policy within the EU. The themes of the paper are structured according to five of the "Dolowitz and Marsh questions": what is transferred?; why do actors engage in policy transfer?; who are the key actors involved in the policy transfer process?; from where are the lessons drawn?; and what restricts or facilitates the policy transfer process? The methodological approach taken for considering each question involves two steps. Firstly, a "bottom-up" step considers the views of policy transfer from a "city perspective", for which use is made of results from interviews recently carried out within the EU project "Transport Research Knowledge Centre" (TRKC). These interviews were intended to ascertain the information needs of seven "representatives" of European cities, all of whom were involved in the Cities Reference Group of the EU project "Citymobil". These seven cities have widely varying characteristics in terms of size and geographical location (across Europe). By discussing information needs, the interviewees provided many insights into the transport policy transfer process. Secondly, a "top-down" step considers the policy transfer questions from an "EU perspective'; use here is made of various transport policy documents published by the European Commission (EC). For each of the five questions, "bottom-up" and "top-down" perspectives are examined and compared. The final section of the paper draws conclusions, providing a number of recommendations to both city authorities and the EU on how urban transport policy transfer might be enhanced in the future.

Transport policy in Australia--Evolution, learning and policy transfer

- Transport Policy---2011---David J. Bray,Michael A.P. Taylor,Derek Scrafton

Urban transport policy in Australia has changed markedly over the period since the first generation of modern urban transport strategies were published in the 1960s. This is illustrated through a review of 43 transport strategies published for the five largest cities (Sydney, Melbourne, Brisbane, Perth and Adelaide) in Australia between 1965 and 2010. The review is complemented with observations from a survey of public servants in the policy and strategy divisions of state and territory transport agencies. The results of this research are examined using the Dolowitz-Marsh framework, considering the need to seek policy transfer, who is involved, what is transferred, from where policy lessons are learnt, the degree of transfer, constraints to policy learning and demonstration that transfer has occurred. The evidence for policy transfer and learning is mixed. Transport policy adopted by the states of Australia for their respective capital cities has been remarkably similar between the cities and has changed in a similar way over time, indicating the almost seamless transfer of concepts. Less positively, there is little published evidence that the performance of previous strategies has been critically examined and lessons learned, and that the approaches adopted in strategies are superior to alternative approaches and are able to achieve the objectives set for them.

First steps towards cross-national transfer in integrating mobility management and land use planning in the EU and Switzerland

- Transport Policy---2011---Tom Rye,Janina Welsch,Aljaz Plevnik,Roberto de Tommasi

This paper is based on research carried out in an EU Framework project, concerning the better integration of mobility management (MM) with land use planning. The objective of the paper is to analyse how, and how far, policies in this field of action can transfer from one member state to another, and to compare this to the theory of policy transfer put forward by Dolowitz and Marsh (2000), using their theory as an analytical framework, but also informing that theory. After providing a definition of this form of integration, the paper explains how far MM and land use planning are currently integrated in the EU member and other states covered in the research (Sweden, Germany, Spain, Lithuania, Poland, Slovenia, Switzerland, the UK, as well as Ireland and the Netherlands). It then presents the results of planning simulation workshops in five of these countries, where a group of planning professionals from each state considered real development sites and how MM could be integrated with the development. It shows that there is scope for transfer but concludes that barriers such as language, differing planning traditions, and the problem of transferring a new policy idea within a country will limit the scope of policy transfer significantly. Nonetheless, it sees a role for EU projects of this nature in encouraging initial consideration of new policy ideas.

Policy transfer and the introduction of road pricing in Valletta, Malta

- Transport Policy---2011---Maria Attard,Marcus Enoch

Charging motorists to pay for driving at times and/or in places where there is insufficient capacity to meet the level of demand has long been recognised by transport economists as an efficient way to address traffic congestion. However, only a few locations have actually decided to use this mechanism, with Valletta one of the more recent cities to introduce such a scheme. This paper aims to present a case study of road pricing in Valletta and the role played by policy transfer in its introduction. To do this, it applies data gathered from existing literature, in-depth interviews and direct observation with those involved in the policy development. Experience of road pricing was gained from London, Durham, Edinburgh and Stockholm. One of the major barriers to policy transfer was felt to be the unique geography of the island however international events, local conditions and a political champion driving change were critical factors to the successful implementation of the road pricing scheme. Policy transfer was deemed useful in terms of policy development, relations with stakeholders, scheme design and administrative approaches. This paper concludes by identifying the contributions of the case study of Valletta to the policy transfer literature.

Some lessons from incentive theory: Promoting quality in bus transport

- Transport Policy---2011---Manuel González-Díaz,Ángeles Montoro-Sánchez

While service quality is an important problem in bus transport services, few transport authorities have considered the solution of modifying their concession contracts. This paper proposes imitating market-oriented solutions from private franchise chains to increase the service quality offered by transport operators, solutions that include the threat of losing rents or quasi-rents to stop franchisee opportunism. The study bases its arguments on the complementarities between different control mechanisms and the similarities between franchise and concession contracts. Similarly, the paper proposes linking the renewal of concession contracts to the administrative reputation of operators (measured by customer feedback on service quality). The study also provides details on the implementation of such an incentive system.

Transportation security and the role of resilience: A foundation for operational metrics

- Transport Policy---2011---Andrew Cox,Fynnwin Prager,Adam Rose

This paper presents operational metrics to determine a passenger transportation system's resilience to terrorism. The metrics range from those specific to the number of trips to more holistic measures that include the contribution of these trips directly and indirectly to economic activity. These metrics can aid decision-makers in rendering more informed judgments about resource allocation and how to design a portfolio of security and recovery strategies. The paper also provides a framework for evaluating transportation risk, including the important role of perceptions in potentially amplifying these risks. It provides a range of strategies to promote resilience as well. Resilience of a transportation system is then quantified using the real-world case of the 2005 London subway and bus bombings. In terms of ordinary resilience, we find that 77.4 percent of total journey reductions on attacked modes were offset by increases in substitute modes for the 4 months following the attacks. We also estimate that 76.9 percent of total journey reductions on attacked modes were the result of a "fear factor," as opposed to capacity reductions. The paper concludes with a set of proposed prospective resilience measures to evaluate the potential resilience of a transportation system. These metrics are based on the vulnerability, flexibility, and resource availability to cope with a terrorist attack or natural disaster.

Behavioral intentions of public transit passengers--The roles of service quality, perceived value, satisfaction and involvement

- Transport Policy---2011---Wen-Tai Lai,Ching-Fu Chen

Understanding the behavioral intentions of public transit passengers is important, because customer loyalty is seen as a prime determinant of long-term financial performance. This study highlights such behavioral intentions and explores the relationships between passenger behavioral intentions and the various factors that affect them. Apart from the factors recognized by past studies, such as service quality, perceived value, and satisfaction, this study addresses the importance of the involvement of public transit services in passenger behavioral intentions. By using passenger survey data from the Kaohsiung Mass Rapid Transit (KMRT), a newly operating public transit system in Taiwan, we apply the structural equation modeling technique to analyze the conceptualized relationship model. The findings reveal that all causal relationships are statistically significant. Managerial implications are discussed.

Errors in variables in multinomial choice modeling: A simulation study applied to a multinomial logit model of travel mode choice

- Transport Policy---2011---Bharat P. Bhatta,Odd I. Larsen

Modeling travel demand is a vital part of transportation planning and management. Level of service (LOS) attributes representing the performance of transportation system and characteristics of travelers including their households are major factors determining the travel demand. Information on actual choice and characteristics of travelers is obtained from a travel survey at an individual level. Since accurate measurement of LOS attributes such as travel time and cost components for different travel modes at an individual level is critical, they are normally obtained from network models. The network-based LOS attributes introduce measurement errors to individual trips thereby causing errors in variables problem in a disaggregate model of travel demand. This paper investigates the possible structure and magnitude of biases introduced to the coefficients of a multinomial logit model of travel mode choice due to random measurement errors in two variables, namely, access/egress time for public transport and walking and cycling distance to work. A model was set up that satisfies the standard assumptions of a multinomial logit model. This model was estimated on a data set from a travel survey on the assumption of correctly measured variables. Subsequently random

measurement errors were introduced and the mean values of the parameters from 200 estimations were presented and compared with the original estimates. The key finding in this paper is that errors in variables result in biased parameter estimates of a multinomial logit model and consequently leading to poor policy decisions if the models having biased parameters are applied in policy and planning purposes. In addition, the paper discusses some potential remedial measures and identifies research topics that deserve a detailed investigation to overcome the problem. The paper therefore significantly contributes to bridge the gap between theory and practice in transport.

Safety and travel time in cost-benefit analysis: A sensitivity analysis for North Rhine-Westphalia

- Transport Policy---2011---Christian Holz-Rau,Joachim Scheiner

Decisions on large-scale infrastructure concepts are frequently based on cost benefit analysis (CBA). Using 431 road projects evaluated in the integrated transport planning process in North Rhine-Westphalia, Germany (IGVP NRW) this paper examines the evaluation dimensions traffic safety (fatalities) and travel time in private passenger transport. The unit values of traffic fatalities and travel time are varied, and the effects of the variations on the rank order of the projects are examined. Target conflicts between safety and travel time are studied as well as the contribution of these two dimensions to the total benefit values. The sensitivity analysis shows that the evaluation results are fairly stable against variations in unit values of travel time and fatalities. The relevance of traffic safety in terms of its contribution to total benefit as well as in terms of the unit value appears to be relatively minor. The unit value of travel time is higher than that of lifetime. Some projects turn out as feasible in the evaluation even though they are likely to increase the number of fatalities. The paper therefore suggests the higher weighting of traffic safety in CBA.

An exploratory analysis of relationships between socioeconomic, land use, activity participation variables and travel patterns

- Transport Policy---2011---C.S. Pitombo,E. Kawamoto,A.J. Sousa

This paper aims to find relations between the socioeconomic characteristics, activity participation, land use patterns and travel behavior of the residents in the São Paulo Metropolitan Area (SPMA) by using Exploratory Multivariate Data Analysis (EMDA) techniques. The variables influencing travel pattern choices are investigated using: (a) Cluster Analysis (CA), grouping and characterizing the Traffic Zones (TZ), proposing the independent variable called Origin Cluster and, (b) Decision Tree (DT) to find a priori unknown relations among socioeconomic characteristics, land use attributes of the origin TZ and destination choices. The analysis was based on the origin-destination home-interview survey carried out in SPMA in 1997. The DT application revealed the variables of greatest influence on the travel pattern choice. The most important independent variable considered by DT is car ownership, followed by the Use of Transportation "credits" for Transit tariff, and, finally, activity participation variables and Origin Cluster. With these results, it was possible to analyze the influence of a family income, car ownership, position of the individual in the family, use of transportation "credits" for transit tariff (mainly for travel mode sequence choice), activities participation (activity sequence choice) and Origin Cluster (destination/travel distance choice).

Automobile use, fuel economy and CO2 emissions in industrialized countries: Encouraging trends through 2008?

- Transport Policy---2011---Lee Schipper

Car use and fuel economy are factors that determine oil demand and carbon dioxide (CO2) emissions. Recent data on automobile utilization and fuel economy reveal surprising trends that point to changes in oil demand and CO2 emissions. New vehicle and on-road fleet fuel economy have risen in Europe and Japan since

the mid 1990s, and in the US since 2003. Combined with a plateau in per capita vehicle use in all countries analyzed, these trends indicate that per capita fuel use and resultant tail-pipe CO2 emissions have stagnated or even declined. Fuel economy technology, while important, is not the only factor that explains changes in tested and on-road fuel economy, vehicle efficiency and transport emissions across countries. Vehicle size and performance choices by car producers and buyers, and driving distances have also played significant roles in total fuel consumption, and explain most of the differences among countries. Technology applied to new vehicles managed to drive down the fuel use per unit of horsepower or weight by 50%, yet most of the potential fuel savings were negated by overall increased power and weight, particularly in the US. Similarly, the promise of savings from dieselization of the fleet has revealed itself as a minor element of the overall improvement in new vehicle or on-road fuel economy. And the fact that diesels are driven so much more than gasoline cars, a difference that has increased since 1990, argues that those savings are minimal. This latter point is a reminder that car use, not just efficiency or fuel choice, is an important determinant of total fuel use and CO2 emissions. We speculate that if the upward spiral of car weight and power slows or even reverses (as has been observed in Europe and Japan) and the now mandatory standards in many countries have the intended effect that fuel use will remain flat or only grow weakly for some time. If real fuel prices of 2008, which rivaled their peaks of the early 1980s, fell back somewhat but still remain well above their early 2000 values. If the prices remain high, this, combined with the strengthened fuel economy standards, may finally lead to new patterns of car ownership, use and fuel economy. However, if fuel prices continue their own stagnation or even decline after the peaks of 2008 and car use starts upward, fuel use will increase again, albeit more slowly.

Heavily regulated, but promising prospects: Entry in the German Express Coach Market

- Transport Policy---2011---Matthias Walter,Fabian Haunerland,Robert Moll

Domestic express coach services in Germany have long been heavily restricted by regulation, although offerings comparable to countries like, for example, Great Britain or Sweden bear substantial opportunities for competition, the environment, and mobility. In this paper, we motivate market entry in the German express coach market for local public and integrated transport companies by high profitability rates in other countries and the availability of bus facilities and skills. This is followed by the evaluation of supply and demand. Supply is represented by an analysis of external and internal costs showing that express coaches have significant cost advantages that are intensified by the possible internalization of external costs. Demand is represented by a survey of customers that is evaluated with a conjoint analysis. Our results suggest a market share for express coach services in Germany of at least 5.3%.

Measuring the quality of port hinterland accessibility: The Ligurian case

- Transport Policy---2011---Claudio Ferrari,F. Parola,E. Gattorna

Traditionally, distance was considered the parameter that could better reflect the economic influence of a seaport on land. Containerisation and intermodality progressively eroded such a paradigm and currently distance became only one of the factors across the overall "equation". In this respect, a fundamental role is played by the effectiveness of inland connections. The better the connection of a port to the various inland markets, the bigger the potential to enlarge its overall captive area. Furthermore, the higher the "frictions" (bottlenecks, delays, etc.) for reaching the hinterland, the lower the inland traffic flows. The major purpose of the paper is to measure container traffic diversion from Ligurian ports (Genoa, La Spezia and Savona) to the main Italian and European competitors. The

application of a gravity model will reveal the current role of distance in drawing hinterland market share among the selected ports. Moreover, for evaluating the unexploited potentialities of Ligurian ports, we compared real traffic flows with the outcomes of a spatial interaction model, reassigning inland container flows to the different sampled ports. The calculation of the traffic delta through a gap analysis, allowed measuring the "frictions" thwarting the connectivity between the Ligurian ports and the sampled hinterland regions. Finally, the paper discusses the nature and the reasons for the above traffic diversion.

Contribution to the study of PPP arrangements in airport development, management and operation

- Transport Policy---2011---Carlos Cruz,Rc Marques

Following the liberalization wave in the airline sector, airports have been gradually taken out of the public sphere and open to the private initiative. This phenomenon is generally referred to as privatization, but not all the cases consist of, in fact, a full divestiture of assets. Although infrastructure management is undertaken by the private sector during a pre-defined period, usually 30 years or more, the property remains public or is transferred to the public domain after that period. This is a form of Public-Private Partnership (PPP) where two different models can be found: institutionalized PPP or a typical contractual regime, such as the concession arrangements. PPP options have been a "hot" topic over the last decade, but few studies can be found in the literature on the PPP projects development in airport systems, for example, as far as risk sharing is concerned. This paper looks at recent developments in airport "privatization", distinguishing privatizations from PPP arrangements, through a case study approach, and establishing a comparative analysis of different PPP models used for airport management. Some comments are made about the Portuguese model and the announcement of future privatization.

Travel and activity time allocation: An empirical comparison between eight cities in Europe

- Transport Policy---2011---Charles Raux,Tai-Yu Ma,Iragaël Joly,Vincent Kaufmann,Eric Cornelis,Nicolas Ovtracht

A study of daily time allocation to travel and out-of-home activity is conducted across eight European cities over three countries: France (Lyon, Grenoble, Strasbourg and Rennes), Switzerland (Geneva, Bern and Zurich) and Belgium (Brussels), based on individual travel survey data collected between 1997 and 2006. The effects of socio-demographic, spatial context, transport availability and city-specific variables are investigated thanks to the Cox proportional hazard model. The results indicate that socio-demographic characteristics and city (or country) specific effect play a major role while residential density and proximity to high level road or public transport networks have a very limited impact on time budgets for travel and out-of-home activities.

A fuel surcharge policy for reducing road traffic greenhouse gas emissions

- Transport Policy---2011---Mariano Gallo

This paper proposes a car pricing policy based on fuel surcharges in substitution of car ownership taxes for reducing greenhouse gas emissions by cars. The aim of the proposed policy is to change some (fixed) costs of car use that are not perceived at each trip into (variable) costs. The amount of fuel surcharges and the effects of their application on fuel consumption and on GHG emissions are estimated by a model that is able to relate gasoline and diesel consumption with fuel prices. The effects of the proposed policy on fuel consumption and on GHG emissions are estimated for Italy. The results show that car users prefer to shift towards more efficient fuel vehicles than to public transport, producing a significant, but less than expected, reduction of GHG emissions.

Rarely enjoyed? A count data analysis of ridership in Germany's public transport

- Transport Policy---2011---Manuel Frondel,Colin Vance

Focusing on adult members of German households, this paper investigates the determinants of public transit ridership with the aim of quantifying the effects of fuel prices, fares, person-level attributes, and characteristics of the transit system on transport counts over a five-day week. The reliance on individual data raises several conceptual and empirical issues, the most fundamental of which is the large proportion of zero values in transit counts. To accommodate this feature of the data, we employ modeling procedures referred to as zero-inflated models (ZIMs), which order observations into two latent regimes defined by whether the individual never uses public transport. Our estimates reveal fuel prices to have a positive and substantial influence on transit ridership, though there is no evidence for a statistically significant impact of the fare.

A structural model of mode-activity choice: The case of commuter rail in a medium-size metropolitan area

- Transport Policy---2011---Ryoichi Sakano,Julian Benjamin

Commuters in a medium size city may change how they travel from day to day during the week. A structural equations model is developed to examine commuter's planning decisions about activities and modes during a work day. The model is applied to the problem of selecting commuter rail in the Piedmont Triad region of North Carolina. On a typical weekday, a commuter's mode choice is affected by activities at the destination. However, when the commuter is faced with a mix of travel modes over time, the mode choice becomes a significant predictor of non-work/school activities.

Generic functions of railway stations--A conceptual basis for the development of common system understanding and assessment criteria

- Transport Policy---2011---Stefan Zemp,Michael Stauffacher,Daniel J. Lang,Roland W. Scholz

The redevelopment of railway stations calls for the integration of many different objectives. Two crucial challenges thereby are the development of a common system understanding among the multiple stakeholders with potentially conflicting interests and the structured definition of comprehensive assessment criteria. Defining the functions of the system railway station, i.e. discussing what the system should do, can support solving these challenges. Based on a review of Swiss railway stations in a transdisciplinary research project applying four focus groups (n=38), 28 expert interviews and two expert workshops, we present a structured framework of five generic functions of railway stations and their interdependencies. The five generic functions are: linking catchment area and transport network, supporting transfer between modes of transport, facilitating commercial use of real estate, providing public space, and contributing to the identity of the surrounding area. Potential conflicts between functions are identified. They concern the competition of multiple functions for space, for customer attention or for revenues as well as increasing system complexities with station size. We illustrate how the framework of functions can be used to foster a common system understanding and to develop assessment criteria. Although elaborated from a Swiss perspective the framework is perceived adaptable to railway stations of other countries.

Evaluating alternative concepts of bus-based park and ride

- Transport Policy---2011---Stuart Meek,Stephen Ison,Marcus Enoch

Whilst it has been used since the 1960s, the UK government have promoted bus-based Park and Ride (P&R) particularly heavily over the last 20 years as a tool to deal with traffic congestion and air pollution. There

has long since been a view however that P&R in its current guise may actually be exacerbating the problems of traffic congestion, fuel use and emissions instead of mitigating them. This paper aims to reconsider this proposition whilst also testing a range of alternative forms of car-bus interchange in the context of traffic reduction, drawing on evidence from a large survey of P&R users in Cambridge, UK. Overall the results suggest that while current P&R significantly increases the vehicle miles travelled by its users, some of the alternative models presented potentially offer considerable improvements.

Selling sustainable mobility: The reporting of the Manchester Transport Innovation Fund bid in UK media

- Transport Policy---2011---Geoff Vigar,Andrew Shaw,Richard Swann

This paper examines how complex transport projects are reported in the media using the Transport Innovation Fund bid for Greater Manchester as a case study. It demonstrates how projects are simplified and distorted in the media in a systematic way. Such distortion is explained by a scheme's perceived newsworthiness, its complexity and the contemporary nature of news media production. The paper has implications for future research in this area and the implementation of sustainable transport policy. It urges transport professionals to both better understand, and engage directly with, the media if they are to maximise the benefits of efforts to shape travel behaviour.

The development of a benchmarking tool for monitoring progress towards sustainable transportation in New Zealand

- Transport Policy---2011---Theunis F.P. Henning,Sugandree Muruvan,Wanhua A. Feng,Roger C. Dunn

Creating and maintaining a safe and sustainable transport system is a common challenge for road authorities around the world. The New Zealand government has taken this challenge one step further by incorporating it into country's legislation. As a consequence all road land transport authorities are committed to implementing initiatives to respond to both the challenge and the legislation. A benchmarking process for the transport sector is one of these initiatives on a national level. Benchmarking is a well known and utilised technology for the measuring of performance for infrastructure, for example within the water provision sector in England. This paper presents the development of a national benchmarking process for the transport sector of New Zealand. This development is part of a strategy to encourage road land transport authorities to improve the performance of transport in achieving sustainability and environmental targets. The development involved a literature review, proof of concept and the full implementation stage. A total of nine key performance indicators were developed to indicate the status of transport sector performance. The project and its outcomes are considered to be of benefit to road land transport authorities across the world who wish to develop a benchmark process of their own.

Why did the chicken cross the road, and what's funny about it? The role of transportation cartoons in social experiences

- Transport Policy---2011---Ilan Salomon,Rachel Singer

This article samples a number of transport related situations that cartoonists sketch in the media, thereby taking a stand and offering solutions regarding transportation issues. We discuss the relationship that is created by the cartoonists and ultimately involves both the general public and transportation professionals. Our analysis offers insight into popular perceptions of transportation experiences through social commentary, transmitted as graphic humor, regarding common situations, which are observed in transport systems. A theory and qualitative research based approach is used to address the complex connections between our daily responses and transportation contexts. An analysis of topical components of transportation systems and experiences as perceived by users and policymakers

utilize the representations by cartoonists. By examining how the issues interrelate, we built a storyline that presents observations and critiques.

Are intrazonal trips ignorable?

- Transport Policy---2011---Bharat P. Bhatta,Odd I. Larsen

Intrazonal trips are not always included in model estimation because they do not appear on a network in centroid-to-centroid travel. It is also presumed that their exclusion does not affect model results. This paper tests the above presumption by examining the assumptions of ignorable missingness. The results indicate that omitting intrazonal trips in model estimation results in biased sample. Consequently, parameter estimates get biased. The paper also compares the results of travel mode choice models by excluding and including the intrazonal trips in model estimation.

Estimating welfare changes from efficient pricing in public bus transit in India

- Transport Policy---2011---Kaushik Deb,Massimo Filippini

Three different and feasible pricing strategies for public bus transport in India are developed in a partial equilibrium framework with the objective of improving economic efficiency and ensuring revenue adequacy, namely average cost pricing, marginal cost pricing, and two-part tariffs. These are assessed not only in terms of gains in economic efficiency, but also in changes in travel demand and consumer surplus. The estimated partial equilibrium price is higher in all three pricing regimes when compared to the current price. As a result, consumer surplus falls in all three cases. The price increase is much larger with average cost pricing compared to marginal cost pricing or two-part tariffs, and hence a larger fall in demand and consumer surplus occurs due to average cost pricing. While there is a gain in economic efficiency from marginal cost pricing and two-part tariffs, this improvement comes at the expense of reduced public bus transit demand and consumer surplus, given the price inelastic public bus transit demand estimated for India. Given the mobility needs and the developmental concerns of a growing economy such as India, the challenge for policy makers is to balance the gains in economic efficiency in the public bus transit sector against other social, political, and developmental goals.

PM, NOx and CO2 emission reductions from speed management policies in Europe

- Transport Policy---2011---L. Int Panis,C. Beckx,S. Broekx,I. De Vlieger,L. Schrooten,B. Degraeuwe,L. Pelkmans

Speed reduction measures rank among the most common schemes to improve traffic safety. Recently many urban streets or entire districts were converted into 30 kph zones and in many European countries the maximum permissible speed of trucks on motorways is under discussion. However, besides contributing to traffic safety, reducing the maximum speed is also seen as beneficial to the environment due to the associated reduced fuel consumption and lower emissions. These claims however are often unsubstantiated. To gain greater insight into the impact of speed management policies on emissions, this paper examines the impact on different traffic types (urban versus highway traffic) with different modelling approaches (microscopic versus macroscopic). Emissions were calculated for specific types of vehicles with the microscopic VeTESS-tool using real-world driving cycles and compared with the results obtained using generalized Copert-like macroscopic methodologies. We analyzed the relative change in pollutants emitted before and after the implementation of a speed reduction measure for passenger cars on local roads (50-30 kph) and trucks on motorways (90-80 kph). Results indicate that emissions of most classic pollutants for the research undertaken do not rise or fall dramatically. For the passenger cars both methods indicate only minor changes to the emissions of NOx and CO2. For PM, the macroscopic approach predicts a moderate increase in emissions whereas microscopic results indicate a significant decrease. The effects of specific speed reduction schemes on PM emissions from trucks are ambiguous but lower maximums speed for

trucks consistently result in lower emissions of CO2 and lower fuel consumption. These results illustrate the scientific uncertainties that policy makers face when considering the implementation of speed management policies.

Understanding the urban travel attitudes and behavior of Tbilisi residents

- Transport Policy---2011---Inga Grdzelishvili,Roger Sathre

In recent decades the public transport network in Tbilisi, Georgia has decayed, while the number of private automobiles has increased dramatically. This study seeks to expand our understanding of the Tbilisi population's urban transport attitudes and behavior. It elaborates on the perceived strengths, weaknesses, and potentials of the public transport system, and seeks to understand the reasons for the increased use of private automobiles. A questionnaire survey was conducted among Tbilisi car drivers (n=159) and public transport users (n=163). The results show that most of the survey respondents preferred to use a private car and avoid using public transport. Particularly important factors include time issues such as schedules and frequency, plus comfort and safety issues. Tbilisi residents value their time and want to use it efficiently. Changing residents' travel behavior will require making the public transport options competitive with the perceived advantages of the car. The study offers recommendations for more effective urban transport policy, including incentives to encourage greater use of public transport in Tbilisi.

The paradox of intensification

- Transport Policy---2011---Steve Melia,Graham Parkhurst,Hugh Barton

Urban intensification as part of a smart growth strategy can facilitate low-energy transport modes and reduce overall car use, with benefits to the global environment, but evidence suggests the effect will be less than proportional. Hence, in locations where intensification occurs, greater concentrations of traffic tend to occur, and this worsens local environmental conditions. This phenomenon is defined below as the 'paradox of intensification'. The consequent challenges for planners and policymakers, which arise, are considered. The analysis suggests that a compromise involving limited intensification would merely redistribute the balance between the two sets of problems: global and local. It is concluded that urban intensification should be accompanied by more radical measures to constrain traffic generation within intensified areas.

Understanding and managing anti-social behaviour on public transport through value change: The considerate travel campaign

- Transport Policy---2011---Stephen Moore

This article explores anti-social behaviour on public transport, regarded as a major problem by most transport authorities in Britain. It has been estimated that a passenger increase of more than 11.5% in Britain could be achieved if public concerns over anti-social behaviour could be allayed. The article starts by noting that combating anti-social behaviour has generally been seen as the remit of police and enforcement officers. However, research carried out for Transport for London indicates that for the majority of the travelling public, the forms of anti-social behaviour, which concerns them is more likely to be low-level behaviour, ranging from groups of young people behaving boisterously to people eating food or talking loudly on mobile phones. Using the 'problem solving approach' structure, the article then examines the process by which Transport for London has partially 'uncoupled' anti-social behaviour from criminal activities and then treated the two issues as related but distinct. As a result, a series of policing and enforcement initiatives have been introduced to prevent crime, but a different, unique approach has been taken towards controlling anti-social behaviour. Rather than being tackled as a form of low level criminality, anti-social behaviour is viewed as the outcome of clashing values about appropriate behaviour on public transport. Therefore, the answer to anti-social behaviour lies in minimising these values clashes, rather than concentrating on enforce-

ment against perpetrators. The article describes the resulting large-scale media campaign--the Considerate Traveller Campaign, which was launched in 2008 with the aim of increasing tolerance and consideration for others. The article concludes with a summary of the early evaluation of the campaign, which suggests that it is having some positive effect in changing values and argues that in the longer run, it may be possible to amend the behaviour on public transport without relying so heavily on enforcement measures.

An stated preference analysis of Spanish freight forwarders modal choice on the south-west Europe Motorway of the Sea

- Transport Policy---2011---María Feo,Raquel Espino,Leandro García

This paper aims to contribute towards the design of effective freight transport policy by means of empirical analysis. In order to do so, a stated preference survey is undertaken to model the modal choice between door-to-door road transport and short sea shipping in the Motorway of the Sea of south-west Europe. The proposed analysis will provide policymakers with the necessary tool to identify the critical areas that should be addressed by future policy action in order to boost short sea shipping on Spain's Mediterranean coast. By applying the proposed method, we will be able to obtain estimates of the subjective values of transport attributes - value of time, value of reliability and value of frequency - in freight transport, values for which barely any empirical evidence on a national scale exists. Quantifying such values is a key part of the cost benefit analyses performed when evaluating transport projects.

Exploring transport to arts and cultural activities as a facilitator of social inclusion

- Transport Policy---2011---Victoria Johnson,Graham Currie,Janet Stanley

This paper explores the relationship between travel and social inclusion in relation to a relatively rarely examined group of travel destinations--arts and cultural activities. This paper examines travel behaviour to arts and cultural activities and how this relates to social inclusion. Research literature associated with these issues is examined and then an analysis of a household travel survey in Melbourne, Australia, is undertaken to explore how travel to arts and cultural activities varies by income, car ownership and location. The paper outlines a range of evidence linking participation in arts and cultural activities and positive outcomes for social inclusion. Arts and cultural activities do not fit well into traditional household travel survey definitions of trip purposes. There is also no definitional difference between travel to activities and 'participation' or 'attendance' in arts and cultural activities. This is unfortunate since social outcomes may vary by participation or attendance. Travel survey analysis shows that like other activities trip rates to arts and cultural activities increase with income. However higher participation is demonstrated for zero- and one-car households, which contrasts with previous research of work, education and social travel. Higher participation is also demonstrated for those living in inner parts of the city. The paper suggests that most travel to arts and cultural activity is quite localised and hence much travel may be led by the diversity and range of local opportunities provided. These are particularly high in inner parts of the city. A high share of travel is also demonstrated for older people, who are thought to have the time and desire for greater participation in arts and cultural activities.

Evaluating transport user benefits and social surplus in a transport market--The case of the Norwegian ferries

- Transport Policy---2011---Finn Jørgensen,Terje Andreas Mathisen,Berner Larsen

The article first infers how consumer surplus in a market is linked to revenue under different assumptions about fare elasticity and when using different types of demand functions. This information is added to producer surplus in order to derive social surplus. The method, thus, produces a simple approach for authori-

ties to assess social surplus in a market and its benefits to the users. A modified exponential demand function is applied to calculate consumer surplus and social surplus for 97 ferry services in Norway regulated by the state. The calculations are based on empirical data concerning ferry fare, revenue data at service level and reasonable assumptions about fare point elasticity for services covering different distances. In 2007, these services generated welfare for the users (consumer surplus) and the society (social surplus) amounting to about 5.8 billion NOK and 4.3 billion NOK, respectively. Consumer surplus and social surplus varied considerably amongst the services. Only 3 of the 97 services operate with positive profits and, hence, without subsidies. About 21 of the services contribute negatively to social surplus. Many of these unprofitable services are the only transport alternatives in rural areas and could be argued to continue operation according to politically decided regional measures. Implicitly, maintaining all these 21 services means that the welfare for the people in these areas is valued as up to four times greater than the welfare of the people in the rest of society.

The impacts of road tolling: A review of Norwegian experience

- Transport Policy---2011---Henning Lauridsen

Road tolling has been used extensively for funding of national roads in Norway since 1982. The article, which is primarily based on review of literature, identifies the impacts of tolling in four key policy areas: economic efficiency, regional development, regional redistribution and democracy. Toll financing may change the ranking of projects but does hardly reduce construction costs. The recurrent budget has been quite stable and toll revenues therefore represent net additional resources for road investment. Regionally, tolling has led to a shift of road investments to more central areas. Tolling has increased local political influence compared to national influence.

Effectiveness of an empty container repositioning policy with flexible destination ports

- Transport Policy---2011---Dong-Ping Song,Jing-Xin Dong

This paper considers an empty container repositioning policy with flexible destination ports. The policy only specifies the direction of the empty flows, whereas ports of destinations are not determined in advance and empty containers are unloaded from vessels as needed. Interviews with industries show its application in practice, but little research has been reported on its effectiveness. The purpose of the paper is to formulate this policy mathematically and evaluate its effectiveness via simulation. Numerical experiments demonstrate that the new policy outperforms the conventional policy significantly in situations where trade demands are imbalanced and container fleet sizes are within a reasonable range.

Bus rapid transit impacts on land uses and land values in Seoul, Korea

- Transport Policy---2011---Robert Cervero,Chang Deok Kang

Bus rapid transit (BRT) has gained popularity as a cost-effective alternative to urban rail investments; however, relatively little is known about its impacts on land-use changes and land values. This paper examines the land-market effects of converting regular bus operations to median-lane bus services in Seoul, Korea, one of the densest, most congested cities in the world. Multilevel models reveal BRT improvements prompted property owners to convert single-family residences to higher density apartments and condominiums. Land price premiums of up to 10% were estimated for residences within 300 m of BRT stops and more than 25% for retail and other non-residential uses over a smaller impact zone of 150 m. The research findings underscore the importance of introducing zoning and other land regulatory changes prior to the initiation of BRT improvements as well as applying value-capture tools to help finance investments and redress inequities.

Increased coordination in public transport--which mechanisms are available?

- Transport Policy---2011---Claus Hedegaard Sørensen,Frode Longva

After several years of New Public Management reforms within public transport, coordination seems to receive increased attention. With examples of actual as well as suggested changes taken from Denmark, Sweden and the UK the aim of the article is to analyse and classify the mechanisms utilized and suggested to increase coordination between core stakeholders within passenger railway services and bus services. Four distinctive mechanisms of coordination are suggested, namely organisational coordination, contractual coordination, partnership coordination and discursive coordination. Each coordination mechanism has its strengths and failures. The article also debates to what extent the mechanisms conflict with three core characteristics of New Public Management: Unbundling of the public sector into corporatized units; more contract-based competitive provision; and greater emphasis on output controls.

Making public transport financially sustainable

- Transport Policy---2011---Ralph Buehler,John Pucher

Over the past two decades, Germany has improved the quality of its public transport services and attracted more passengers while increasing productivity, reducing costs, and cutting subsidies. Public transport systems reduced their costs through organizational restructuring and outsourcing to newly founded subsidiaries; cutting employee benefits and freezing salaries; increasing work hours, using part-time employees, expanding job tasks, and encouraging retirement of older employees; cooperation with other agencies to share employees, vehicles, and facilities; cutting underutilized routes and services; and buying new vehicles with lower maintenance costs and greater passenger capacity per driver. Revenues were increased through fare hikes for single tickets while maintaining deep discounts for monthly, semester, and annual tickets; and raising passenger volumes by improved quality of service, and full regional coordination of timetables, fares, and services. Those efforts by public transport agencies were enhanced by the increasing costs and restrictions on car use in German cities. Although the financial performance of German public transport has greatly improved, there are concerns of inequitable burdens on labor, since many of the cost reduction measures involved reducing wages or benefits of workers.

Autos, transit and bicycles: Comparing the costs in large Chinese cities

- Transport Policy---2011---Rui Wang

This study compares the full costs of seven passenger modes in the large Chinese cities facing the difficult yet crucial choice among alternative passenger transportation systems. The seven modes are evaluated at varied traffic volumes in hypothetical radial and circumferential commuting corridors. Using detailed estimates of private and social costs, the full cost of each mode is minimized by optimizing infrastructure investment and operation plans. On all corridors and across different scenarios, commuting by one or more forms of bus transit or bicycle costs less than automobile or rail. Nonetheless, in circumferential corridors, rail can be almost as cost-effective as bus under certain conditions, and bicycle can be less cost-effective than bus in some cases. Unlike results from similar studies conducted in the US, automobile commuting does not cost less than bus transportation at low traffic volumes.

Performance analysis of rail transit investments in Turkey: Istanbul, Ankara, Izmir and Bursa

- Transport Policy---2011---Özge Özgür

Rail transit investments require the highest amount of investment costs of all modes. Considering the high cost involved, it is particularly important that their performance justifies this high cost and that expectations from these investments are met. Therefore, in the world, it has become an important field of research to study the gap between the expectations from and

outcomes of these investments in order to assess the performances. In Turkey, there is a growing interest in constructing rail transit systems in the cities. However, there has been a limited number of studies on the performance of these investments. It is not clear with what expectations these systems are built or whether these expectations are met. There seems to be an urgent need to study these rail investments, with a particular focus on their planning/investment objectives and outcomes. This paper compares the expectations with the actual outcomes. A sample group was selected among the cities currently operating rail transit systems: Istanbul, Ankara, Izmir and Bursa. Semi-structured interviews were made with the officers and planners that have involved in the planning or implementation phase of the systems. As the primary indicators of performance, cost and ridership forecast and outcome data are collected and considered in the comparison. It is found that systems performed rather poor in terms of expectations, such as attaining ridership forecasts, being built within budget etc. Hence there is a gap between expectations and outcomes.

Transportation uncertainty and international trade

- Transport Policy---2011---Xiaoyun Liu,Xian Xin

This paper uses a numerical framework to demonstrate that uncertainty in the arrival time of foreign goods can substantially reduce the demand for foreign goods. It further reveals that the impacts of falling transport costs and shipment time on international trade growth could be discounted, if uncertainty arises in the arrival time of the imported goods. This in turn suggests that reduced uncertainty, which is possibly the results of transportation improvements, might have contributed to the growth experienced in world trade growth over the past several decades. Thus, neglecting the roles of improvements in international transportation arrangements and reduced uncertainty will lead to underestimating the contribution of transportation improvements to trade growth.

Travel behavior of university students who live on campus: A case study of a rural university in Asia

- Transport Policy---2011---Thirayoot Limanond,Tanissara Butsingkorn,Chutima Chermkhunthod

With their irregular class schedules and considerable freedom in the campus environment, university students are an example of a social group that tends to have complex and unique travel behavior. This study examined travel patterns of 130 students who study and live on campus in a rural university of Thailand. All survey participants completed a travel diary for seven consecutive days in a typical school week. Other than overall travel patterns, such as trip generation, mode split, distance traveled, and travel time, this study also investigated the differences in traffic patterns of four student groups, categorized by their gender and whether they own a private vehicle or not. It was found that students of both genders appeared to have similar travel patterns in all aspects. Whether they own a private vehicle does not appear to impact daily trip generation nor the total distance traveled of the students, but it does have an effect on the travel modes used by students. Those students who own a private vehicle mostly rely on driving the vehicle, while those who do not own a vehicle rely on three modes of travel: primarily being a passenger on or in a friend's private vehicle, and to a lesser extent, driving a friend's vehicle, and taking a bus (the only form of public transport on the campus). The results indicate a high social interdependency among university students, which makes the development of a model to simulate travel behavior of university students a complicated task.

A methodology for evaluating transit service quality based on subjective and objective measures from the passenger's point of view

- Transport Policy---2011---Laura Eboli,Gabriella Mazzulla

In this paper a methodology for measuring transit service quality is proposed. The methodology is based

on the use of both passenger perceptions and transit agency performance measures involving the main aspects characterizing a transit service. The combination of these two types of service quality measurement fulfils the need to provide a reliable as possible measurement tool of the transit performance. Considering passenger perceptions is fundamental because the customer's point of view is very relevant for evaluating the performance of a transit service. At the same time, the use of a more objective measurement provided by the transit agency can be a useful solution for obtaining a more comprehensive service quality measurement. The proposed procedure is applied to a real case study of a suburban bus line; a series of subjective and objective indicators are calculated on the basis of users' perception about the service and measurements provided by the transit agency.

Selecting container port via a fuzzy ANP-based approach: A case study in the Marmara Region, Turkey

- Transport Policy---2011---Semih Onut,Umut R. Tuzkaya,Erçin Torun

In this case study, a real world problem of a production firm in the Marmara Region, Turkey was considered. In the current situation, the firm works with different third-party logistics firms and uses different ports each time. However, they have some quality problems and decided to work with a logistics firm by using the most convenient port alternative. A number of conflicting qualitative and quantitative criteria exist for evaluating alternative ports. Qualitative criteria are often accompanied by ambiguities and vagueness. To cope with this problem, the fuzzy analytic network process (FANP) method is used in this study. First, we defined the region specific criteria consisting of the twenty sub-criteria under the six main criteria clusters that influence the selection of container port. Then seven alternative container ports located in the Marmara Sea were determined. The results showed that the most convenient district for the container port is Istanbul District, which is one of the biggest economical centers in Eastern Europe.

Enhancing Park and Ride with access control: A case study of Southampton

- Transport Policy---2011---Nick Hounsell,Birendra Shrestha,Jinan Piao

Implementing and promoting more sustainable forms of urban transport are key policies of Local Authorities throughout the UK. Park and Ride (P&R) is one such system implemented widely in the UK, especially in historic towns and cities with limited road and parking space in the centre. Some cities (e.g. Rome and London) have also implemented forms of 'access control' to reduce congestion and/or pollution in central areas. This paper describes a feasibility analysis of a unique application studied for potential implementation in Southampton--the integration of P&R with access control on a key corridor in Eastern Southampton where traffic demand is likely to increase significantly in the coming years because of new housing developments. The system concept is a P&R facility with express buses to the City centre, keeping the corridor free-flowing for these buses (and other traffic) using a combination of bus lanes and access control. Following an outline of the policy context and system design, this paper then describes the corridor and network modelling undertaken to predict the impacts of the scheme and alternatives of it. This has been based mainly on the CONTRAM dynamic traffic assignment model, which covers the whole of Southampton and its surrounding motorway network. The assessment of the benefits of the various options in this scheme showed that the combination of P&R with signalised access control was the best option to improve the movement of people on the corridor. The paper concludes with a discussion of potential issues for implementation, including the need for complimentary measures and a consistent policy framework.

Exploring the trip chaining behaviour of public transport users in Melbourne

- Transport Policy---2011---Graham Currie,Alexa Delbosc

This paper explores trip chaining behaviour of Mel-

bourne residents using evidence from a household travel survey. The research literature has suggested that trip-making behaviour has grown increasingly complex as modern life has become busier and people grow time-poor. Complex trip chains have been said to require flexible travel modes, and for this reason some research has suggested that public transport is limited in this regard compared to the private car. Results of this study show that between 1994 and 1999 the complexity of trip chains was relatively stable and the complexity of chains was found to be larger for rail and tram than for car-based trips. Disaggregate analyses compare the complexity of chains based on work versus non-work chains, the purpose of stops on the chain, and whether the chain entered the central city of Melbourne or not. Overall these findings suggest a less bleak outlook for public transport ridership in a travel future which is said to be becoming more complex.

Perspectives and images of cycling as a barrier or facilitator of cycling

- Transport Policy---2011---Michelle Daley,Chris Rissel

The public images of cycling can act as barriers or facilitators of cycling. This qualitative study explored images and perceptions of cycling, their potential influence on cycling and whether these views differed between regular, occasional and non-riders. Seventy participants (24 males and 46 females) were recruited. Of these, 22 were classified as non-riders, 23 were occasional riders and 25 were regular riders. Twelve focus groups were held in inner Sydney during October and November 2005. Data were audio taped, transcribed and thematically analysed. Themes linked to images of cycling included: 'clean and green'; 'healthy and fun'; 'dangerous' and 'serious business'. Themes linked to images of cyclists included: 'risk takers and law breakers' and 'status and sub-cultures'. Discussion centred on the low social status of riding over other transport modes, the relative acceptability of different riding sub-cultures, the 'green' image of cycling transport and the status associated with the riders clothing and bicycle choice, especially lycra and its 'serious and sporty' connotation. While 'cycling' was generally viewed as a positive, environmentally friendly activity, the actions of some 'cyclists' were disliked, which influenced views about cycling, particularly among non-riders. A cycling acceptability hierarchy emerged; with recreational riding at the top, followed by cycling for sport and exercise, with transport/commuter cycling towards the bottom. Bicycle couriers were viewed least favourably. A common perception among non-riders was the latter two groups were rule breakers and risk takers, while regular riders felt unfairly judged by this stereotype. While there was greater acceptance of recreational riding, riding for transport was not viewed as a mainstream activity. There is a need to improve the public acceptability of cycling and change public norms so it is seen as an everyday activity that can be undertaken by almost anyone, without the need for special clothing, expensive equipment or limited to purpose built facilities.

The quality of service desired by public transport users

- Transport Policy---2011---dell'Olio, Luigi,Angel Ibeas,Patricia Cecin

This article describes the methodology used to study the quality of service desired by users of a public transport system. The desired quality is different from the perceived quality because it does not represent the daily experiences of the users, but rather what they desire, hope for or expect from their public transport system. This is why it is important to study the desired quality, knowledge of which gives local authorities the background information for personalised marketing policies based on the user's requirements rather than their daily perceptions. The methodology goes through several stages, such as the use of focus groups to choose the most important variables for the users, the design and use of unlabelled stated preferences surveys and the calibration of discrete choice models. All of these help determine the weight of the most relevant variables. The analysis is carried out with different categories of users and potential users (those people not currently using public transport). Waiting time, cleanliness and

comfort are shown to be the public transport variables that users most valued, but the degree to which they are valued varies according to the category of user. Variables such as driver kindness, bus occupancy and journey time are generally given less weight. The first two vary little by user category, but some variability appears for journey time. For potential users the more important variables when defining expected quality from public transport are waiting time, journey time and above all, level of occupancy. They consider the other variables to be of little importance when defining an efficient public transport service. In order to improve service quality and attract more passengers to public transport in general, the application of this methodology provides the authorities and operating companies with useful information to plan personalised marketing policies specifically directed at different categories of users and potential users of public transport.

Behaviour theory and soft transport policy measures

- Transport Policy---2011---Sebastian Bamberg,Satoshi Fujii,Margareta Friman,Tommy Gärling

The aim is to propose a theoretical grounding of soft transport policy measures that aim at promoting voluntary reduction of car use. A general conceptual framework is first presented to clarify how hard and soft transport policy measures impact on car-use reduction. Two different behavioural theories that have been used to account for car use and car-use reduction are then integrated in a self-regulation theory that identifies four stages of the process of voluntarily changing car use: setting a car-use reduction goal, forming a plan for achieving the goal, initiating and executing the plan, and evaluating the outcome of the plan execution. A number of techniques are described that facilitate the different stages of the process of voluntary car-use reduction and which should be used in personalized travel planning programs.

Transport appraisal and Monte Carlo simulation by use of the CBA-DK model

- Transport Policy---2011---Kim Bang Salling,Steen Leleur

This paper presents the Danish CBA-DK software model for assessment of transport infrastructure projects. The assessment model is based on both a deterministic calculation following the cost-benefit analysis (CBA) methodology in a Danish manual from the Ministry of Transport and on a stochastic calculation, where risk analysis is carried out using Monte Carlo simulation. Special emphasis has been placed on the separation between inherent randomness in the modeling system and lack of knowledge. These two concepts have been defined in terms of variability (ontological uncertainty) and uncertainty (epistemic uncertainty). After a short introduction to deterministic calculation resulting in some evaluation criteria a more comprehensive evaluation of the stochastic calculation is made. Especially, the risk analysis part of CBA-DK, with considerations about which probability distributions should be used, is explained. Furthermore, comprehensive assessments based on the set of distributions are made and implemented by use of a Danish case example. Finally, conclusions and a perspective are presented.

Built environment effects on leisure travel for children: Trip generation and travel mode

- Transport Policy---2011---Jen-Jia Lin,Tzu-Pen Yu

This study empirically analyzed the effects of built environment on leisure travel among children. Students of three elementary schools, namely Yangmingshan, Sanyu and Shilin, all located in the Shilin District of Taipei, were chosen to provide sample data. The negative binomial regression model and multinomial logit model were used to analyze trip generation and travel mode, respectively. This study reached the following empirical findings: (1) mixed land use, employment density, walkway quality, leisure facility supply and leisure travel distance encouraged generation of leisure

trips for children; (2) intersection density, building density, employment density and walkway quality encouraged a child to use transit systems or non-motorized travel modes for leisure travel; and (3) vehicle density and leisure travel distance discouraged walking and biking but encouraged the use of transit systems for leisure travel involving children. Local government can use the empirical findings of this study to develop urban planning strategies to encourage children to perform leisure activities outside the home using transit systems or non-motorized travel modes.

The determinants of mode of transport to work in the Greater Dublin Area

- Transport Policy---2011---Nicola Commins,Anne Nolan

Rapid economic and demographic change in the Greater Dublin Area over the period 1996-2006, with associated increases in car dependence and congestion, has focused policy on encouraging more sustainable forms of travel. In this context, knowledge of current travel patterns and their determinants is crucial. Here we concentrate on travel for a specific journey purpose, namely the journey to work. Using data on the full population of working individuals from the 2006 Census of Population, we analyse the influence of travel and supply-side characteristics, as well as demographic and socio-economic characteristics on the choice of mode of transport to work in the Greater Dublin Area. The results indicate that household composition, public transport availability, journey time and work location are particularly significant in explaining the choice of mode of transport to work.

Sustainable Bus Rapid Transit initiatives in India: The role of decisive leadership and strong institutions

- Transport Policy---2011---Raj V. Ponnaluri

The Government of India's Jawaharlal Nehru National Urban Renewal Mission is instrumental in providing policy, financial, and institutional support to meet the growing needs of urban agglomerations (UAs). In addition to discussing the recently implemented Delhi Bus Rapid Transit (BRT) system and the Indore Busway project, which served to renew the nation's interest in public transport, this work presents a case brief from three UAs for which the author prepared detailed project reports on the BRT systems. This paper highlights the role of leadership and institutions in the successful completion of feasibility studies (Visakhapatnam and Vijayawada), the process delays (Hyderabad), planned implementation (Visakhapatnam), full-scale operationalization (Indore), and the problems caused by quick deployment (Delhi), the last of which has led to a national debate on BRT viability in India. In conclusion, this work brings to the fore the felt need for a decisive leadership and strong institutions in evolving sustainable public transport solutions.

Competitive advantage analysis and strategy formulation of airport city development--The case of Taiwan

- Transport Policy---2011---Kung-Jeng Wang,Wan-Chung Hong

In the past decade, the focus of international airport development has shifted from a transportation hub towards a multi-functional aero metropolis. An airport city serves not only as an index of a country's performance in development, but also plays the role as impetus of national industries and a gateway to economic globalization. Through literature review, secondary data analysis and interviews with focus groups and experts, this paper explores development features, operation strategies and competitive advantages of various airport cities in newly industrialized economies. This research also proposes a novel approach to strategy formulation, which utilizes the theory of competitive advantage of nations (a revised diamond model), SWOT analysis and strategy matching using the TOWS matrix and competitive benchmarking. The case study of Taoyuan International Airport illustrates the applicability of the proposed approach in systematic competitive analysis and strategy formulation of airport city development. The strategic planning put forward not only

provides practical reference for systematic operation of related units, but also inspires a new research model and direction of study for airport city development.

Conceptualising convenience: Transportation practices and perceptions of inner-urban high density residents in Brisbane, Australia

- Transport Policy---2011---Laurie Buys,Evonne Miller

High-density living in inner-urban areas has been promoted to encourage the use of more sustainable modes of travel to reduce greenhouse gas emissions. However, previous research presents mixed results on the relationship between living in proximity to transport systems and reduced car-dependency. This research examines inner-city residents' transportation practices and perceptions, via 24 qualitative interviews with residents from high-density dwellings in inner-city Brisbane, Australia. Whilst participants consider public transport accessible and convenient, car use continues to be relied on for many journeys. Transportation choices are justified through complex definitions of convenience containing both utilitarian and psycho-social elements, with three key themes identified: time-efficiency, single versus multi-modal trips, and distance to and purpose of journey, as well as attitudinal, affective and symbolic elements related to transport mode use. Understanding conceptions of transport convenience held by different segments of the transport users market, alongside other factors strongly implicated in travel mode choice, can ensure targeted improvements in sustainable transport service levels and infrastructure as well as information service provision and behavioural change campaigns.

Evidence on users' attitudes towards road user charges--A cross-sectional survey of six Norwegian toll schemes

- Transport Policy---2010---James Odeck,Anne Kjerkreit

Attitudes towards road user charges have in the last decade become a focus of interest for researchers and planners in a number of disciplines including economics, transport planning and environmental sciences. Most of the literature has been based on single and/or hypothetical schemes and has a number of limitations, such as the potential differences in attitudes that might depend on whether users have actually experienced the gains of tolling are not considered. This paper gives further insight into user attitudes towards road user charges and overcomes some of the limitations observed in the literature. In particular, we examine attitudes towards six different Norwegian toll schemes with different characteristics and at different stages of implementation. The results show the following: (i) road users think negatively of tolls irrespective of the type of scheme or stage of charging; (ii) negative attitudes are highly correlated with the level of information given to users on the intentions of the tolling prior to implementation and (iii) toll levels significantly impact attitudes. Further, it is shown that attitudes vary significantly with socioeconomic characteristics. These findings demonstrate that governments need marketing strategies that clearly explain the benefits to users beforehand. Some of these strategies are proposed.

Distributional impacts of changing from a gasoline tax to a vehicle-mile tax for light vehicles: A case study of Oregon

- Transport Policy---2010---B. Starr McMullen,Lei Zhang,Kyle Nakahara

A vehicle-miles traveled (VMT) tax is frequently mentioned as viable alternative to a fuel tax for collecting highway users fees from light vehicles. Both a static model and a regression based model are used here to assess the distributional impacts of a switch from a fuel tax to a VMT tax for the state of Oregon. The VMT tax is found to be slightly more regressive than the fuel tax and rural households are found to actually benefit relative to urban households under a VMT tax. Two alternative VMT structures that might increase incentives to use more fuel efficient vehicles are provided, but both are found to be even more regressive than a flat VMT tax.

An assessment of the free and secure trade (FAST) program along the Canada-US border

- Transport Policy---2010---Susan L. Bradbury

Several new programs were introduced under the Smart Border Action Plan of 2001 to ensure both secure and efficient trade across the Canada-US border. This article evaluates just how well one of the programs, Free and Secure Trade (FAST), has succeeded in expediting shipments and reducing delays at the border. The results of this study indicate that the FAST program has reduced the average border wait time at four of the five busiest crossing ports. However, the benefits associated with the FAST program are unevenly distributed among the ports, determined by the ability to accommodate infrastructure improvements, and firms, with larger trucking companies and exporters reaping the benefits and small and medium-sized trucking firms and exporters burdened by costs and often unable to capitalize on the program's benefits. Recommendations for program improvement include: greater regulatory cooperation between Canada and the US to reduce costly duplication and paperwork, and providing tax incentives or subsidies to small and medium-size firms as a means to increase the participation rate in the program.

Examining individuals preferences for hybrid electric and alternatively fuelled vehicles

- Transport Policy---2010---Brian Caulfield,Séona Farrell,Brian McMahon

This paper examines individuals motivations when purchasing vehicles, focusing upon what factors would encourage individuals to purchase hybrid electrical vehicle (HEV) or alternatively fuelled vehicle (AFV). AFVs in this paper refer to any cars run on alternatives to petrol and diesel. This research attempts to ascertain whether reductions in fuel costs, vehicle registration tax (VRT), or green house gas emissions would encourage individuals to purchase a HEV or an AFV instead of a conventional vehicle. VRT is an Irish tax that is levied on the purchase of new vehicles. One of the motivations to conduct this research was to examine a new car tax and VRT scheme introduced by the Irish government in 2008. This new policy rewards the purchase of environmentally friendly cars, with lower VRT and car tax rates. To understand individuals' perceptions of these new taxes a survey was sent to recent customers of a car company in Ireland. The survey asked respondents about their recently purchased vehicle and how important they considered vehicle attributes such as environmental performance, fuel cost, and safety, before making their car purchase. The survey also contained a number of stated preference experiments that were designed to ascertain what factors influence individuals' decisions when purchasing their new car. The results showed that respondents did not rate green house gas emissions or VRT as crucial attributes when purchasing a new vehicle. The vehicle attributes that respondents rated most highly were reliability, automobile safety, fuel costs, and the cost price. The majority of respondents agreed that HEVs and AFVs are better for the environment, cheaper to run than conventional vehicles and would be the vehicle of choice in ten years time.

Modelling user perception of bus transit quality

- Transport Policy---2010---dell'Olio, Luigi,Angel Ibeas,Patricia Cecín

This article evaluates how bus users perceive the quality of their public transport service. In particular it looks at how perception of quality varies according to the available information. The experiment compares an overall evaluation of service quality before and after making passengers reflect on the importance of certain fundamental system variables which they may not have previously considered. Focus groups were used to individualise the most relevant variables. A quality survey was carried out both on-board buses and at bus stops and the overall service quality was related to the aforementioned variables using ordered probit models. The perception of quality is shown to change with the category of user and that there tends to be more criticism towards variations in overall quality until the users are stimulated into thinking more deeply about other

influential variables. The application of this methodology may provide operating companies with valuable information for planning marketing policies aimed at different categories of user, in order to improve the service quality and attract more passengers to using public transport.

Vehicle ownership and usage charges

- Transport Policy---2010---Subhashini Muthukrishnan

We present a simple model to study the welfare effects of a shift from ownership to usage taxes for cars. We consider a model in which a single representative consumer derives utility from consuming two goods--consumption of motor vehicle kilometers, and an aggregate consumption good treated as numeraire. We characterize the optimal consumption of car kilometers by a representative car user and find that a shift from ownership towards usage taxes is not necessarily welfare-improving: while a revenue-neutral shift makes the representative car user worse off; a utility-neutral shift leads to a significant loss of revenue to the government. An empirical analysis based on Singapore data is also consistent with our theoretical results.

How can our cars become less polluting? An assessment of the environmental improvement potential of cars

- Transport Policy---2010---Guillaume Leduc,Ignazio Mongelli,Andreas Uihlein,Françoise Nemry

This paper presents a systematic overview of the environmental impacts of new average diesel and petrol cars from a life cycle perspective. An analysis of different technical and non-technical improvement options that could be achieved at each stage of a car's life cycle was performed. The consequences of the adoption of these options on the environment were estimated. The results show that some of the options analysed could have a major positive impact on the vehicle efficiency and induce large improvements of the environmental profile of passenger cars. The highest improvements are achievable through more efficient power trains (including hybrid car), and through lightweight cars. For some options, burden shifts from one car life cycle phase to another, or from one environmental problem to another, can occur. The results show that besides the purely technological options, those that imply behavioural changes by the driver may also reduce the environmental burden substantially.

Exploring impacts of countdown timers on traffic operations and driver behavior at a signalized intersection in Bangkok

- Transport Policy---2010---Thirayoot Limanond,Pramuk Prabjabok,Kraisi Tippayawong

This study aims to explore the impact of the countdown timer at various stages of the signal cycle, using two approaches: a traffic analysis and a public opinion survey conducted in Bangkok. The traffic analysis made a comparison of traffic characteristics during an off-peak day time at a selected intersection when the countdown timer was in operation against when it was switched off. A public opinion survey was conducted on more than 300 local regular drivers who are familiar with the technology. It was found that the presence of the countdown timers at the intersection would help to reduce the start-up lost time at the beginning of the green phase by 22%, and reduce the number of red-light violations during the beginning of the red phase by 50%. Furthermore, more than half of the local drivers reported that the timers help to relieve the frustration caused by stopping for uncertain amounts of time during the red phase. However, the timer was also found to slightly reduce the saturation flow rate during the green phase. The public opinion survey showed that the majority of the local drivers were favorable towards the system, and would support the municipality installing such devices on the street network.

Post-construction evaluation of traffic forecast accuracy

- Transport Policy---2010---Pavithra Parthasarathi,David Levinson

This research evaluates the accuracy of demand forecasts using a sample of recently-completed projects in Minnesota and identifies the factors influencing the inaccuracy in forecasts. Based on recent research on forecast accuracy, the inaccuracy of traffic forecasts is estimated as the difference between forecast traffic and actual traffic, standardized by the actual traffic. The analysis indicates a general trend of underestimation in roadway traffic forecasts with factors such as roadway type, functional classification and direction playing an influencing role. Roadways with higher volumes and higher functional classifications such as freeways are underestimated compared to lower volume roadways and lower functional classifications. The comparison of demographic forecasts shows a trend of overestimation while the comparison of travel behavior characteristics indicates a lack of incorporation of fundamental shifts and societal changes.

Measuring traveler involvement in urban public transport services: The case of Kaohsiung

- Transport Policy---2010---Chien Hung Wei,Chen Yuan Kao

The city of Kaohsiung has been urgently reducing its rates of ownership and usage of privately owned motor vehicles. The most important strategy undertaken thus far has been to build mass rapid transit systems. This study aims to apply the Involvement Theory to construct an inventory to measure level of travelers' involvement in public transport services. The results indicate that the number of low involvement travelers is the critical factor that determines whether the new public transport system can effectively operate. They also provide authorities with precise marketing strategies targeting different groups in order to allow the new public transport systems to sufficiently meet public needs.

Sustainable transport challenges in a suburban university: The case of the Autonomous University of Barcelona

- Transport Policy---2010---Carme Miralles-Guasch,Elena Domene

This paper provides detailed accounts of the transport patterns at the Autonomous University of Barcelona (UAB), including its motivations, barriers and user preferences, and explores the main transport challenges faced by the UAB campus. This suburban university is an important transport activity generator in the Barcelona Metropolitan Region, which is committed to achieving sustainable transportation. Results have been obtained through a personal survey (n=5525) of members of the university community. These show that the main limitations for changing travel mode from private means to non-motorised or public modes of transport are: the lack of adequate infrastructure, the marginal role of walking and cycling as a means of transport, and the longer time involved using public transport.

Barrier-free outdoor environments: Older peoples' perceptions before and after implementation of legislative directives

- Transport Policy---2010---Hanna Wennberg,Christer Hydén,Agneta Ståhl

An increased focus on international and national levels of society to meet the transportation needs of older people and people with disabilities is realized through legislation, directives and guidelines on accessibility. This paper examines effects of removing physical barriers according to current Swedish governmental accessibility directives on older peoples' perceptions of outdoor environments (usability) and on their mobility and perceived safety as pedestrians. This paper also focuses on municipal planners' views on the implementation of improved accessibility. A before-after study, using both qualitative and quantitative methods, is conducted. The results from the questionnaires show that older peoples' overall satisfaction with the outdoor environment has increased after implementation; however no differences are found if physical barriers specifically are considered. Older peoples' mobility is also unchanged; nevertheless, fewer respondents are stating difficulties in walking due to barriers in the outdoor environments as reason to avoid outdoor mobility. Problems do remain after implementation, for

example concerning safety/security-related issues and inaccessible entrances and indoor environments.

The effects of removing the Trondheim toll cordon

- Transport Policy---2010---Solveig Meland,Terje Tretvik,Morten Welde

This article presents the effects of removing the Trondheim toll cordon, which was closed after nearly 15 years of operation on December 31, 2005. The traffic levels, measured as vehicles per hour, in 2006 are compared to traffic levels in 2005. The evaluation also covers the effect on the retail market and possible environmental effects. We also seek to investigate what the traffic levels would have been today if the cordon had still been in operation. We find that the closing of the Trondheim toll cordon has lead to increased traffic levels in the peak hours, with an average increase of 11.3% in the former charging hours of 06:00-18:00. On an average, the hours between 14:00 and 18:00 experienced an increase in traffic of 15.5%, whilst traffic in the evenings and nights decreased. Model results suggest that the removal of the toll cordon has caused the private car to increase its modal share at the expense of passengers per car, public transport and cycling/walking. The increase in the total number of trips would have been more uniformly distributed among the alternatives if the toll cordon had still been in operation.

Highway maintenance marginal costs: What if the fourth power assumption is not valid?

- Transport Policy---2010---Shadi B. Anani,Samer M. Madanat

Highway maintenance marginal costs have been estimated in the literature using the perpetual overlay indirect approach. This approach uses the equivalent single axle load (ESAL) as the unit for traffic loading, which implies that pavement deterioration caused by an axle is proportional to the fourth power of the axle weight. This paper answers the following question: how inaccurate are maintenance marginal cost estimates when a highway agency uses ESAL? We find that the inappropriate use of ESAL does not affect the sum of maintenance marginal cost prices paid by all vehicles (at current equilibrium); however, it impacts distribution among vehicles, which reduces equity and efficiency.

Perceptions of representatives of public, private, and community sector institutions of the barriers and enablers for physically active transport

- Transport Policy---2010---Rachel Cole,Matthew Burke,Eva Leslie,Maria Donald,Neville Owen

Active transport bridges many shared concerns in the public health and transport sectors. To positively affect opportunities for active transport, public health and transport professionals are engaging with other sectors, including urban planning, housing, recreation, retail, education, and employer groups. A first step in such inter-sectoral collaboration is to understand the perceptions of key players in all of these sectors. This paper describes the results of structured interviews with senior and middle-level administrators from public, private, and community groups in a rapidly developing region in Queensland, Australia, to assess the perceived barriers and enablers to active transport. Key themes emerged relating to infrastructure delivery, public transport services, walk- and cycle-friendly community attributes, political leadership and government coordination, and societal travel norms and culture. There were also themes relating to limits due to resources and limited relevant technical expertise, institutional and practitioner cultures, and agencies not identifying with their roles in active transport. Policies and cross-government initiatives were seen to hold promise, including economic incentives and built environment guidelines, campaigns targeting public attitudes and opinions, and community participation in policy-making. These elements are potential keys to positively promoting comprehensive active transport initiatives among gatekeepers and leaders across different sectors.

Is practice aligned with the principles? Implementing New Urbanism in Perth, Western Australia

- Transport Policy---2010---Ryan Falconer,Peter Newman,Billie Giles-Corti

New Urbanism is a recent American reform approach to urban development, which attempts to reduce car dependence through traditional design qualities such as connected streets with paths, higher density and mix with local centres. The Western Australian State Government has developed 'Liveable Neighbourhoods', which is a context-specific design code based on new Urbanist principles. This design code has been applied in the development of several dozen new neighbourhoods in Perth over the last decade. This paper shows that these developments do create more local walking but are no different to conventional suburban development in their regional car dependence. The causes of this are pursued in terms of a gap between principles and practice.

Productivity changes in Portuguese bus companies

- Transport Policy---2010---Carlos Barros,Nicolas Peypoch

This paper proposes a framework for benchmarking Portuguese bus companies and the rationalisation of their operational activities, using the Luenberger productivity indicator. A key advantage of this method is that it allows for both input contraction and output expansion in determining relative efficiencies and productivity changes. For comparative purposes, a Malmquist index is also estimated. The Malmquist index overvalues the Luenberger productivity indicator. Results indicate that public bus companies have similar efficiency to private bus companies. Several interesting and useful managerial insights and policy implications arise from the study.

The Multi-Actor Multi-Criteria Analysis (MAMCA) application in the Flemish long-term decision making process on mobility and logistics

- Transport Policy---2010---Cathy Macharis,Astrid De Witte,Laurence Turcksin

The Multi-Actor Multi-Criteria Analysis (MAMCA) is a methodology to evaluate different policy measures whereby different stakeholders' opinions are explicitly taken into account. This paper describes the MAMCA methodology and how it has been used in the "Flanders in Action Process". One of the objectives of this process is to turn Flanders into a top region in terms of mobility and logistics by attracting logistic activities with a large added value, realizing fluent and widely accessible mobility, a huge increase in traffic safety and a decrease of the environmental impact of transport. As there are a wide range of actors with different interests involved in this process, the MAMCA methodology was applied to evaluate a set of possible policy measures being proposed to reach this objective. An important advantage of this methodology is that it is able to support the decision maker in his final decision as the inclusion of different points of view leads to a general prioritisation of the proposed policy measures.

E-tail versus retail: The effects on shopping related travel empirical evidence from Israel

- Transport Policy---2010---Orit Rotem-Mindali

E-commerce, like many other information technology (IT)-based activities, also offers the potential substitution of telecommunications for travel, resulting in a trade-off between virtual and physical travel. The aim of this paper is to explore whether and how the increasing opportunities for purchasing and information gathering offered by information technologies affect shopping-related travel. The paper will attempt to explore the question of substitution by modelling output of consumer decisions on mode of purchase. Then, this will be combined with clustering the population according to their affinity to IT and finally by identifying the differences in the socio-economic attributes of the different clusters.

Is there a case for replacing parking charges by road user charges?

- Transport Policy---2010---Peter Bonsall,William Young

The price of parking is often considered an important tool with which to influence transport choice but, since many local authorities have limited control over off-street charges and since parking charges have no direct impact on through traffic, its influence on overall travel demand may be limited. Road user charges, on the other hand, do appear to offer an effective means of influencing overall demand. The problem is that public acceptance of such charges is low unless some obvious "carrot" can be identified. This paper explores the possibility that the removal of parking charges might be that "carrot". Our analysis suggests that, although the removal of parking charges would reduce revenues and dilute the reduction in demand caused by the introduction of road charges, the combined effect might, in certain circumstances, be more beneficial to the local economy and might still yield a net increase in revenue. Given the incidence of impacts, it also appears that a combined scheme would be more equitable and might stand a greater chance of achieving public acceptance than a more conventional road charging scheme. The paper identifies the circumstances in which a combined scheme might work well and outlines the detailed analysis that would be necessary to confirm this.

Design speeds and acceleration characteristics of bicycle traffic for use in planning, design and appraisal

- Transport Policy---2010---John Parkin,Jonathon Rotheram

This paper reports the results of a study of a cohort of cyclists to determine their speed and acceleration characteristics relative to gradient and other influencing factors in order to supply data for planners, designers and appraisers of cycle infrastructure schemes. A cohort of everyday cyclists was supplied with a global positioning system device and a heart rate monitor and asked to collect data from their journeys in Leeds, UK. The analysis determines the cyclists' speeds and accelerations at every point on their journey and elevation data, corroborated by mapping information, was used to determine the gradient. Two linear regression models of speed and acceleration were estimated and show that the influence of a downhill gradient on speed is less pronounced than the effect of an uphill gradient. The results indicate an eighty-fifth percentile speed on the flat of 22Â kph, and for a downhill gradient of 3%, 25Â kph. The power required to cycle has been estimated and shows that cyclists deliver around 150Â W on the flat, but that this rises to around 250Â W climbing hills. Mean acceleration on the flat is 0.231Â m/s2 and the average power output over the acceleration phase, which is of mean duration 26Â s, is approximately 120Â W. Air resistance accounts for approximately 70% of the resistive force when cycling at design speed. It is recommended that designers adopt 25Â kph as a design speed for gradients less than 3%, but that consideration should be given to design speeds of up to 35Â kph for steeper gradients. Free-flow speeds in this range should be used when modelling mode and route choices and in benefit appraisal.

Environmental footprint of road freight: Case studies from Switzerland

- Transport Policy---2010---L.D. Poulikakos,K. Heutschi,M. Arraigada,P. Anderegg,P. Soltic

Current Swiss policy aiming to reduce the environmental footprint of heavy vehicles is presented. The environmental footprint of 46 heavy vehicle cases defined as dynamic load, noise, vibration and gaseous emissions is measured based on criteria set by the European project Eureka Logchain footprint. These parameters were measured for freight vehicles selected from the traffic stream and were compared to the criteria set up as a result of current Swiss policy. Results show that parameters that are currently controlled and their reduction encouraged such as gaseous emissions, axle loads and gross weight are indeed below or close to acceptable limits. However, other important parameters such as tyre pressure and noise remain higher than acceptable limits. In order to encourage

the operation of vehicles with a low total environmental footprint parameters need to be set and controlled systematically.

European Transport Conference Best Paper on Planning for Sustainability Award 2008--Introduction to the Papers

- Transport Policy---2010---Robin Hickman,Peter Endemann,Michael Bach

2010

Apportioning aviation CO2 emissions to regional administrations for monitoring and target setting

- Transport Policy---2010---F.R. Wood,A. Bows,Kym Anderson

Delivering reductions in greenhouse gas emissions from the aviation sector requires support and action from all tiers of government. There has been considerable focus on the policies that can be implemented at international and national levels; however, sub-national bodies can also play an important and influential role. In order to identify what this role may be, it is important for sub-national governments to have an understanding of the size of their potential emissions responsibility. At present there is no widely accepted methodology for the apportionment of either international or domestic aviation emissions to sub-national levels. This paper assesses a number of existing consumer- and producer-based CO2 apportionment regimes that could be used to allocate the emissions from aviation to regional and other sub-national levels. This is followed by the presentation of a new hybrid consumer-producer apportionment regime applicable to aviation. This new approach is designed to provide an emissions baseline for a region that reflects its share of responsibility for the UK's aviation emissions as both a producer of emissions and consumer of the services provided by aviation.

Why we fail to reduce urban road traffic volumes: Does it matter how planners frame the problem?

- Transport Policy---2010---Aud Tennøy

If the objective of reducing urban road traffic volumes and GHG emissions from traffic is to be achieved, the way in which land use and transport systems in cities are planned and developed needs to change. Despite apparent agreement that this should be done and how it could be done, cities continue to be planned and developed in ways that cause and allow growth in urban road traffic volumes. In this paper we ask how planners frame the 'transport problem', and how their framing of the problem affects urban planning, the resulting plans and developments and the urban road traffic volumes. The discussions are based on findings from a case study, a survey and interviews with planning practitioners.

Regional traffic impacts of logistics-related land use

- Transport Policy---2010---Tina Wagner

The outsourcing of logistics activities to logistics service providers leads to a demand for new logistics-related land development. At the moment (minimising) regional traffic generation is not a major decision criterion for site selection and development. For a sound traffic impact assessment, information on trip generation of logistics facilities like transfer depots, distribution centres and warehouses is necessary. Surveys conducted in the case study region Hamburg, Germany, provide such information. Applying the survey results, different logistics land use development scenarios are assessed in this paper. The results show that strategic location of logistics areas can reduce traffic and traffic impacts.

Data-driven reduction targets for a highway safety plan

- Transport Policy---2010---Young-Jun Kweon

A safety plan or policy should have traffic safety targets. Setting the targets is challenging but is possible through data-driven approach. This paper describes a study that forecast fatalities and injuries under three scenarios, examined the probabilities of meeting different reduction targets, and proposed realistic targets

for Virginia's safety plan. The study combined statistical forecasting approach, inputs from safety experts, and reported effects of safety improvement measures to come up with ambitious yet achievable targets. Realistic targets for the safety plan in Virginia by 2010 are a 10% reduction in fatalities and a 5% reduction in injuries. These targets assume enactment of a primary safety belt law and deployment of crash countermeasures comparable to 20-30% engineering treatments.

Application of system dynamics for evaluating truck weight regulations

- Transport Policy---2010---Wen Hang,Xuhong Li

In the situation of prevailing overweight transportation and difficult enforcement in China, this paper develops a methodological framework for truck weight regulation evaluation using System Dynamics. Composed of five interrelated subsystems, the framework is able to capture the highway, vehicle and freight variables that influence the effect of TWR and transportation efficiency over time. It specifically describes the development and use of the Truck Weight Regulation Evaluating Model for the highway freight system in Anhui province, China. The simulation results show that, among three policy alternatives, the moderate policy approach is the most appropriate option to solve the social and economic problems arising from overweight transportation in Anhui. In addition, some suggestions of TWR policy in China are also made in this paper.

Influence of reference points in ex post evaluations of rail infrastructure projects

- Transport Policy---2010---Nils O.E. Olsson,Hans Petter Krane,Asbjørn Rolstadås,Mads Veiseth

The paper study the effect of different reference points in time regarding the 'before' and 'after' situation and how this may influence the ex post evaluation. Four Norwegian railway projects are analysed ex post. We have found that the choice of reference points that are chosen to represent the situation before and after a project, respectively, will often have a major impact on the result of an evaluation. In fact, the studied projects can be presented as either successes or failures, depending on the choice of reference years. The parameters used in this comparison are punctuality, frequency, travel time, and number of travellers. Four projects have been studied. Four parameters for each project generate a total of 16 indicators. By selecting certain years as reference years, 11 of the 16 indicators can be presented as either an increase or decrease. Stakeholders with a biased agenda towards certain projects can actually pick reference years to present the outcome of projects in a way that that fit their agenda. It is recommended that more than one measurement approach is applied in ex post evaluations.

Productivity growth and biased technological change in Japanese airports

- Transport Policy---2010---Carlos Barros,Shunsuke Managi,Yuichiro Yoshida

In this paper, the productivities of Japanese airports over the period of 1987-2005 are analyzed using the Malmquist index, and technological bias is investigated. During this period, airports on average became less efficient and experienced technological regress. Our results indicate that the traditional growth accounting method, which assumes Hicks neutral technological change, is not appropriate for analyzing changes in productivity for Japanese airports.

New York City's congestion pricing experience and implications for road pricing acceptance in the United States

- Transport Policy---2010---Bruce Schaller

Public acceptance is widely recognized as a major barrier to widespread adoption of road pricing in the United States and internationally. Using New York City as a case study, this paper analyzes how Mayor Michael Bloomberg's 2007 congestion pricing proposal gained widespread public support but was ultimately blocked in the State Legislature. The paper assesses the implications of New York's experience for pursuing congestion pricing and mileage-based taxes in the

United States. A central conclusion from this analysis is that gaining approval of pricing will require changing how motorists view the effect of pricing on them personally. Given the power of even small groups of auto users to block pricing through the political process, pricing proposals need to be perceived as benefiting drivers individually and not simply society at large. The paper discusses approaches to road pricing in light of New York City's experience.

Airport slot allocation: a time for change?

- Transport Policy---2010---Michael A. Madas,Konstantinos G. Zografos

The increasing imbalance between airport capacity and traffic resulted in exceptional congestion and delays drawing the attention of aviation policy makers towards airport demand management for the allocation of scarce airport slots. Attempts to bring forward airport demand management measures in the form of airport slot allocation were not widely adopted and have not flourished in practice. This paper aims: (i) to apply a methodological framework for the selection of the most suitable slot allocation strategy for various types of airports, (ii) to explore potential impacts such that measures or strategies can bring about, and (iii) to assess the suitability of the existing airport pricing scheme and the potential implementation of a new policy regime aiming to bridge the gap between growing traffic and scarce airport capacity.

Measuring the structural determinants of urban travel demand

- Transport Policy---2010---Stéphanie Souche-Le Corvec

To be best prepared for tomorrow's cities we need to forecast urban travel demand. To this end, this study calibrates an urban travel demand model, which uses the principal structural variables that have been identified in the literature. It uses a robust econometric method, which has been little applied in the sphere of transportation. The results show that two variables stand out from the others: the user cost of transport - by private car and public transport - and urban density. It is surprising, but explicable with the available data, that the demand functions estimated for a given country are independent from the group of countries to which it belongs.

Causal nexus between the transport and logistics sector and trade: The case of Australia

- Transport Policy---2010---Hong-Oanh Nguyen,Jose Tongzon

Although a number of studies have already been conducted on the economic impact of the development of the transport and logistics sector and international trade, these are regarded as two separated topics, and little has been done so far to study in depth the relationship between them. This paper seeks to shed light on this issue in the context of Australia. To this end, the vector autocorrelation (VAR) framework is employed to explore the causal relationship between Australia-China trade and the development of the Australian transport and logistics sector. This framework is then extended to allow for the effect of Australia's trade with the US, Japan, the rest of the world and other variables. Based on the analysis results, implications for the transport and logistics sector are discussed.

Shaping urban transport policies in China: Will copying foreign policies work?

- Transport Policy---2010---Rui Wang

After decades of rapid economic growth, Chinese cities now face serious urban transport challenges, such as congestion, air pollution, energy shortage, and global climate change. Efficient and equitable urban transport policies are essential to China's sustainable development, in which urbanization plays a critical role. Can Chinese cities solve these challenges by copying or modeling the policies of other nations? This paper argues that understanding the unique contexts of Chinese cities is necessary for predicting whether policies implemented elsewhere will perform well in China. The study explores four examples of hotly contested urban transport policies. The previous experience of each

policy is compared with its likely efficiency and distributional consequences in China. Specific attention is paid to how the policy context - the spatial and institutional characteristics of the Chinese cities - can affect the adoption of foreign urban transport policies in China. Suggestions regarding the four policies are proposed to policy makers, followed by conclusions and discussions.

US immigrants and bicycling: Two-wheeled in Autopia

- Transport Policy---2010---Michael Smart

Immigrants to the United States--particularly new immigrants--are more likely than the native born to travel by bicycle. This paper explores the extent to which the use of bicycles by immigrants can be explained by variables such as income, age, automobile availability, and neighborhood characteristics. Results from multinomial logistic mode choice models suggest that, even after controlling for these factors, a large and significant "immigrant effect" remains. The effect size is large for all immigrant groups by sending country, though some immigrant groups--such as those from East and Southeast Asia--are more likely than are others to use bicycles after controlling for other factors. Several avenues for further research are introduced, and policy implications are discussed.

Willingness to spend and road pricing rates

- Transport Policy---2010---Paolo Ferrari

Using a theoretical model of urban transport system the paper examines the influence of distribution of willingness to spend within the urban population on road pricing rates. It shows that the rates that must be imposed in an urban area in order to maintain pollutant concentration and congestion due to traffic within acceptable levels is heavily dependent on the distribution of the urban population's willingness to spend. This fact severely limits the reliability of any method for calculating road pricing rates based on theoretical analysis, so that an experimental approach seems necessary. The paper shows that a relation exists between the toll rate per kilometer of trip and the average traffic congestion, which is typical of each urban area and can be determined experimentally by successively imposing three different rates and measuring the corresponding congestion levels. The relation can then be used to determine the pricing scheme when the purpose of road pricing is to maintain both the congestion and the environmental effects due to urban traffic below acceptable thresholds. An example shows how the model can help policymakers in decision-making processes.

Are batteries ready for plug-in hybrid buyers?

- Transport Policy---2010---Jonn Axsen,Kenneth S. Kurani,Andrew Burke

The notion persists that battery technology and cost remain as barriers to commercialization of electric-drive passenger vehicles. Within the context of starting a market for plug-in hybrid electric vehicles (PHEVs), we explore two aspects of the purported problem: (1) PHEV performance goals and (2) the abilities of present and near-term battery chemistries to meet the resulting technological requirements. We summarize evidence stating that battery technologies do not meet the requirements that flow from three sets of influential PHEV goals due to inherent trade-offs among power, energy, longevity, cost, and safety. However, we also show that part of this battery problem is that those influential goals are overly ambitious compared to goals derived from consumers' PHEV designs. We elicited PHEV designs from potential early buyers among U.S. new car buyers; most of those who are interested in a PHEV are interested in less technologically advanced PHEVs than assumed by experts. Using respondents' PHEV designs, we derive peak power density and energy density requirements and show that current battery chemistries can meet them. By assuming too aggressive PHEV goals, existing policy initiatives, battery research, and vehicle development programs mischaracterize the batteries needed to start commercializing PHEVs. To answer the question whether batteries are ready for PHEVs, we must first answer the question, "whose PHEVs?"

Traveler segmentation strategy with nominal variables through correspondence analysis

- Transport Policy---2010---Marco Diana,Cristina Pronello

Travel research is increasingly exploring the role of qualitative elements in mobility behaviors, beyond customarily considered factors such as the socioeconomic status of travelers or the characteristic and performances of transport systems. More recent travel surveys are thus increasingly collecting non-metric information through categorical variables such as opinions, which is difficult to exploit with the most widely used analytical tools. The present paper assesses the potential of a nonparametric analysis technique little used in transport research, namely correspondence analysis, in order to define a set of different customer profiles regarding stated mode choices. Data coming from an attitudinal travel survey administered to a representative sample of the population of the city of Novara (Italy) are used to this effect. The resulting clusters are quite informative and policy relevant, mainly because they are based on a variety of metric and nominal variables which would be less easy to consider when using more standard multivariate techniques such as cluster analysis, and also because not all the observation need to be forcedly classified. A simple modal choice modeling exercise illustrates how the derived market segments can provide guidance to improve the results of a standard quantitative analysis, while keeping a low computational complexity. Our study shows the usefulness of the proposed methodology in a transport policy decision-making context.

Accounting for differences in modelled estimates of RP, SP and RP/SP direct petrol price elasticities for car mode choice: A warning

- Transport Policy---2010---David Hensher,Zheng Li

Using a sample of 245 direct petrol price elasticities of car travel collected from 52 published mode choice studies, a random coefficient regression model is estimated to account for heterogeneity in the influence of the type of data used in the various studies (RP, SP and a combination of RP/SP). The focus on the type of data is designed to highlight a concern that has emerged in the way that an increasing number of researchers and consultants derive elasticities from stand-alone stated preference studies, and apply them. It is well known that this is not valid without model calibration (usually via the mode-specific constants), since the elasticity formula uses the probability of an alternative being chosen. To understand the extent of possible behavioural response bias when calibration is ignored is important, signalling a possible adjustment process to correct for the absence of calibration relative to calibrated RP and or RP/SP derived elasticities.

A restatement of the case for speed limits

- Transport Policy---2010---Rune Elvik

This paper provides a restatement of the case for speed limits. The paper argues that driver speed choice cannot be granted any normative status (i.e. be regarded as optimal from a societal point of view) unless it is "objectively" rational, even if it can be reasonably interpreted as "subjectively" rational. A distinction between "subjective" and "objective" rationality is very rarely made in modern analyses relying on the theory of rational choice, but it makes sense with respect to the choice of speed. Studies that have assessed which impacts of speed drivers consider, whether drivers correctly assess these impacts, and how drivers coordinate their choice of speed with other drivers are reviewed. It is concluded that driver speed choice is not "objectively" rational. It is concluded that the lack of rationality in driver speed choice implies that this choice needs to be regulated by means of speed limits.

High-speed rail in Taiwan: New experience and issues for future development

- Transport Policy---2010---Yung-Hsiang Cheng

This study aims to identify some possible issues and challenges for Taiwan's High Speed Rail (HSR) system, which was constructed and is operated under

a Build-Operate-Transfer (BOT) model. The operational experiences in the initial stage for equivalent systems in Japan, France, Germany, and elsewhere are introduced herein. This study first presents Taiwan's HSR system development and conducts an ex post cost-benefit analysis of this transportation system. Second, unsatisfied ridership is examined to look for possible solutions to increase it. Third, the paper examines the impact of HSR on the intercity transportation market. Finally, the integration between HSR and various existing transportation modes is discussed. Several policy suggestions are included, which are useful for the decision makers of transportation systems' entrepreneurs, the central government, and the local authorities to derive a comprehensive post-HSR planning strategy for a more integrated transportation system.

'Devolution' of transport powers to Local Government: Impacts of the 2004 Traffic Management Act in England

- Transport Policy---2010---Paul E. Canning,Emma E. Hellawell,Susan J. Hughes,Birgitta C.M. Gatersleben,Christopher J. Fairhead

The concept of 'Devolution'--the transfer of powers away from the Central Government to more local bodies of Government, has been used across many different areas of policy and by many different national governments. This paper examines the devolution of transport powers to the existing Local Traffic Authorities in England via the 2004 Traffic Management Act. The paper first presents a summary of how several different nations have undertaken this process of devolving transport powers and responsibilities to either new or existing bodies. It then presents research from an electronic survey concerning how English Local Traffic Aut'horities are choosing to use some of the new powers available to them and their opinion on complementary areas of transport policy. Research is also presented from structured telephone interviews, concerning how individual Local Authorities perceive the efficacy and equity of the new legislation. Overall, the results show that only some of these new powers are likely to be used by English Local Authorities, with limited variation in how different types of LTA are choosing to implement these new powers. The structured telephone interviews provided some evidence that rural Authorities in particular are more dissatisfied with the legislation and consider some of the measures unhelpful. The results provide some insights on the formulation of devolved policy applicable to existing Local Government bodies and the varying benefits that can be perceived to apply to different types of Local Authority. Conclusions are drawn on some of the practical difficulties arising from the English experience, and lessons of relevance are drawn for other nations considering a similar devolution of transport powers.

Walking accessibility to bus rapid transit: Does it affect property values? The case of Bogotá, Colombia

- Transport Policy---2010---Ramon Munoz-Raskin

This research sheds light on the relation of bus rapid transit and residential property values within walking distance to the system. The case study was Bogotá's Transmilenio (Colombia). This research conducted a city-wide econometric hedonic analysis with 2000 to 2004 Department of Housing Control data across different walking distances, subsystems (trunk, feeder), socio-economic strata and time. The main results showed that, with respect to the value of properties in relation to proximity, the housing market places value premiums on the properties in the immediate walking proximity of feeder lines. The analysis by socio-economic strata showed that middle-income properties were valued more if they fell closer to the system, while there were opposite results for low-income housing. Finally, analysis across time reflects slight average annual increases in property values correlated with the implementation of the system in two specific areas analyzed. Throughout the paper, the author acknowledges some of the challenges of using hedonic modeling for property value impact assessments and emphasizes that the interpretation of the results are case specific.

Travel behavior of immigrants: An analysis of the 2001 National Household Transportation Survey

- Transport Policy---2010---Gil Tal,Susan Handy

The purpose of this paper is to examine the relationships between travel behavior and immigrant status. The National Household Travel Survey (NHTS) allows us to explore the relationships between travel behavior and characteristics that are usually hard to discern in surveys with smaller samples. The correlation between travel behavior and immigrant characteristics such as place of birth and year of immigration in the US was tested while controlling for spatial and socio-demographic variables. The effects of place of birth and year of arriving to the US were found to be significant for some places of birth and for immigrants who entered the US in recent years. Understanding the differences in travel behavior and the possible explanations for these differences can help in modeling travel demand, finding policies best suited to meeting the travel needs of foreign-born communities, and addressing environmental justice concerns.

Using optimization to program projects in the era of communicative rationality

- Transport Policy---2010---Michael B. Lowry

This paper presents an innovative approach to transportation programming in which optimization is a catalyst for public participation. Public participation is central to the paradigm shift that has occurred in transportation planning toward "communicative" methods. A case study is presented in which 133 public participants deliberated over a programming decision involving a local transportation tax. The paper explains how the problem was formulated for deliberation and describes the participatory benefits of providing an optimization tool. Participant feedback suggests the tool helped motivate, structure, and inform the deliberation.

Rail access charges and the competitiveness of high speed trains

- Transport Policy---2010---Marta Sánchez-Borràs,Chris Nash,Pedro Abrantes,Andrés López-Pita

This paper examines rail access charges for high speed trains on new high speed lines in Europe and the impact these have on the market position of high speed rail. It examines the latest evidence on the marginal infrastructure and external costs of high speed rail, finding that the best evidence is that these are both not more than 2Â [euro]/train-km. However, current legislation states that environmental costs should not be charged for unless they are charged for on competing modes. Mark ups based on Ramsey pricing principles might reasonably raise prices by 100-200%, given that infrastructure charges are only a part of the final price of rail. The paper then examines the actual prices charged in the main European countries operating high speed trains and the impact these are likely to have on traffic levels and mode split. It is found that mark ups often exceed even the optimal Ramsey levels, with a significant impact on rail volumes and market share. It is concluded that, whilst it is not surprising that governments wish to recover some of the construction costs of new high speed rail lines from users, they should consider carefully whether the level of charges is actually significantly reducing traffic on and benefits from these lines.

Transport and climate change: Simulating the options for carbon reduction in London

- Transport Policy---2010---Robin Hickman,Olu Ashiru,David Banister

Transport is a major user of carbon-based fuels, and it is increasingly being highlighted as the sector which contributes least to CO2 emission reduction targets. This paper reports on the findings of the VIBAT London study (www.vibat.org) which considers the role of the transport sector in reducing CO2 emissions in London. The analysis develops a transport and carbon simulation model (TC-SIM) for London. Within

this, users are able to consider the implementation of a series of potential policy packages--low emission vehicles, alternative fuels, pricing regimes, public transport, walking and cycling, strategic and local urban planning, information and communication technologies, smarter choices, ecological driving and slower speeds, long distance travel substitution, freight transport and international air. They can select variable levels of application to help achieve headline CO2 emission reduction targets. The roles of carbon rationing and oil prices are also considered. TC-SIM can be played in different user modes: as 'free riders', 'techno-optimists', 'enviro-optimists', 'complacent car addicts' and other typical travel market segments, including a 'free role'. Game playing or scenario testing such as this helps to highlight perceived levels of homogeneity of views within certain cohorts, the development of entrenched positions and the likely success in achieving objectives. The paper develops various policy packages, scenarios and pathways aimed at reducing transport CO2 emissions. It argues that strategic CO2 emission reduction targets are very ambitious relative to current progress, and that we need to act more effectively across a wide range of policy mechanisms, with a 'high intensity application' of many of the options, to get near to achieving these targets. A critical issue here will be in communicating and gaining greater 'ownership' of future lifestyle choices with stakeholders and the public, and participation tools such as TC-SIM could become increasingly important in this area.

Walking school buses in the Auckland region: A longitudinal assessment

- Transport Policy---2010---Damian Collins,Robin A. Kearns

This article examines the development of walking school buses (WSBs) in Auckland, New Zealand, drawing on five annual surveys. Longitudinal analysis reveals sustained growth in the number of routes, and in levels of participation, although activity remains concentrated in the wealthiest neighbourhoods. Parent coordinators identify four key benefits to WSBs: the sense of community, opportunity for exercise/health promotion, reduction in car use and local congestion, and reduced injury risk for child pedestrians. We contend that this form of supervised walking challenges some of the social practices associated with automobile dependence at the same time as it reinforces others.

'60-20 emission'--The unequal distribution of greenhouse gas emissions from personal, non-business travel in the UK

- Transport Policy---2010---Christian Brand,John M. Preston

Relatively little is known about the composition of greenhouse gas emissions from personal, non-business travel at the disaggregate levels. This paper aims to give insights into the distribution of emissions amongst the UK population. When including non-carbon climate effects air travel dominates overall greenhouse gas emissions. There is a huge range in emissions, with the highest 20% of emitters producing 61% of emissions. This '60-20 emission' rule is surprisingly similar across units and scale of the analysis. Disaggregated data tell a different story than aggregated data. While income, working status, age and car ownership are significantly related to overall emissions, factors related to accessibility, household location and gender are not.

Impacts of free concessionary travel: Case study of an English rural region

- Transport Policy---2010---Stuart Baker,Peter White

Concessionary fares are offered to those aged 60 and over for bus travel in Britain. This study examines the effects of replacing a half-fare concession in England by free travel in April 2006. Aggregate data are used to examine trends; in addition, a large sample was obtained of pass holders in the Salisbury area, which enables a clear distinction to be drawn between increased travel by those who already held a half-fare pass, and travel by those taking up the pass for the first time. These data are then used to derive fare elasticities, and compare the characteristics of new passholders and those previously holding a half-fare

pass. Comparisons are made with studies elsewhere. Overall policy implications are reviewed.

Estimating marginal external costs of transport in Delhi

- Transport Policy---2010---Akshaya Kumar Sen,Geetam Tiwari,Vrajaindra Upadhyay

This paper develops the model and methodology to estimate the marginal external cost of urban road transport, which is necessary for analysing optimal urban transport prices. Four major marginal external costs analysed in this paper include the marginal external costs for congestion, air pollution, road accidents and noise. The paper estimates the marginal external costs for cars and buses in peak and off-peak periods for Delhi urban agglomeration for the year 2005.

Including aviation emissions in the EU ETS: Much ado about nothing? A review

- Transport Policy---2010---Annela Anger,Jonathan Köhler

The European Community, motivated by the rapid growth of the aviation industry and related impacts on climate change, has decided to include aviation in the European Emissions Trading Scheme (EU ETS). Mitigation policies such as the EU ETS are considered to be necessary in order to change travel behaviour and induce operational and technological changes in the aviation industry that will result in lower environmental impacts. This paper reviews the available impact assessments of the proposed emissions trading scheme for airlines published between 2005 and 2009. It analyses the methods used and finds that the models used are often over-simplified, omitting important variables or that the reliability and robustness of the modelling results are reduced by linking models that are based on different assumptions. The paper also summarises the possible environmental (CO2 emissions) and economic (air fares, demand for airline services, supply of airline services, competitiveness, GDP, carbon price) impacts in the studies reviewed for the year 2020. Overall, the effects are found to be small: for example, CO2 emissions are expected to decline by a maximum of 3.8% and the maximum impact on GDP in the EU was found to be -0.002%. The reasons for these insignificant impacts are analysed in this paper; it is also found that there are some positive aspects of including aviation in the EU ETS.

Toward a global low carbon fuel standard

- Transport Policy---2010---Daniel Sperling,Sonia Yeh

A new policy instrument, known as a low carbon fuel standard (LCFS), is a promising approach to decarbonize transportation fuels. An LCFS has several important features: it applies a lifecycle carbon intensity standard, incorporates market mechanisms by allowing credit trading and targets all transport fuels. A harmonized international framework is needed that builds on newly enacted LCFS policies adopted in California and the European Union.