Economics 2340: Transportation and Development

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Administration:

- **Instructor:** Gabriel Kreindler gkreindler@fas.harvard.edu
- **Teaching fellow:** Daniel Ramos Menchelli danielramos@g.harvard.edu
- **Lecture:** 9:00am - 10:15am eastern US time, Tuesday and Thursday

Attendance expectation:

Students are generally expected to attend the lectures on Zoom live if the time zone permits it. If you anticipate not being able to attend, please be in touch with Gabriel soon to discuss alternate arrangements. Lecture slides will be distributed before each class, and all Zoom lectures will be recorded.

Office Hours:

- Gabriel has office hour **sign-ups here**. You are encouraged to come to discuss the course, related questions, or research. Email Gabriel to find another time if necessary.
- Use the zoom link in the Calendly calendar invitation
- Please sign up for a 15- minutes office hours slot before September 16, in order for me to get a chance to meet you and discuss your interests and background.

- To set up office hours with Daniel, please send him an email.
- Daniel Zoom link: https://harvard.zoom.us/j/3895832471 (waiting room)

Section:

- The course will occasionally have a section. Daniel will use this time to answer questions, present related papers, and to work through practice problems.

Description:

How does spatial mobility affect firms, migrants, commuters and job-seekers? What barriers hamper mobility at these different scales? What are the equilibrium implications of changes in travel costs, for example due to infrastructure improvements? This course discusses recent research on the links between transportation and the economy, with a focus on developing countries. It focuses on the interplay between empirical evidence and quantitative models, and students will gain hands-on experience with both. The first part of the course introduces the workhorse models and empirical tools, which we then apply to topics in infrastructure, migration, urban traffic congestion, and urban mobility and labor markets.

Prerequisites:

Students must be pursuing a PhD in an economics-related field to enroll in the course. Prerequisites: graduate-level first year microeconomics sequence, graduate-level econometrics first-year sequence.

Auditing
Students not meeting the prerequisites are welcome to audit the course. Auditors are gently requested to also complete the course readings, failing which they are (even more gently) requested to not ask clarifying questions in class, since the lectures presume that students have prepared by completing the necessary readings.

Course Goals

1. Exposure to foundational and recent research related to transportation, mobility and urban economics in developing countries
2. Learn the workhorse empirical designs and quantitative general equilibrium models in spatial settings
3. Learn how to evaluate, design, and implement empirical designs and modeling choices in spatial settings
4. Design and present a research proposal, and give constructive feedback to others

Course requirements and grading

- (20%) Starred readings
    - See syllabus for starred readings before each lecture
    - Submit a short comment (~one paragraph) as Canvas assignment before 6pm (ET) on the day before the lecture (Monday, Wednesday)
    - Cover the following: Why is the paper important (or why not)? An overview of the core contributions of the paper. What do you think can be improved in the paper, are there any parts that are not convincing? Other comments (optional)

- (45%) Three problem sets

- (35%) Research proposal and presentation
    - Includes feedback on a peer's presentation

Topics:

Intro Lecture (L1)

1. Treb Allen, Cauê Dobbin, and Melanie Morten (2019), Border Walls

Part 1: Transportation Infrastructure and Economic Activity

Transport Infrastructure Networks. Empirical Evidence (L2)

1. ***Ben Faber (2014) *Trade Integration, Market Size, and Industrialization: Evidence from China's National Trunk Highway System*

2. Dave Donaldson (2018) Railroads of the Raj: Estimating the Impact of Transportation Infrastructure
3. Sam Asher and Paul Novosad (2018), Rural Roads and Local Economic Development
4. Lorenzo Casaburi, Rachel Glennerster and Tavneet Suri (2013), Rural Roads and Intermediated Trade: Regression Discontinuity Evidence from Sierra Leone
5. Marco Gonzalez-Navarro and Climent Quintana-Domeque (2016), Paving Streets for the Poor: Experimental Analysis of Infrastructure Effects
6. John Firth (2019), I've Been Waiting on the Railroad: The Effects of Congestion on Firm Production
7. Dave Donaldson and Robin Burgess (2012) Railroads and the Demise of Famine in Colonial India
8. Abhijit Banerjee, Esther Duflo, Nancy Qian (2020) On the road: Access to transportation infrastructure and economic growth in China, Journal of Development Economics, Volume 145
9. Niclas Moneke (2019) Can Big Push Infrastructure Unlock Development? Evidence from Ethiopia, working paper

Transport Infrastructure Networks. Models (L3 and half of L4)

1. ***Dave Donaldson, Richard Hornbeck (2016) *Railroads and American Economic Growth: A "Market Access" Approach*
2. Stephen Redding and Matthew Turner (2015) Transportation Costs and the Spatial Organization of Economic Activity
3. Nathaniel Baum-Snow, J. Vernon Henderson, Matthew A. Turner, Qinghua Zhang, Loren Brandt (2018) Does Investment in National Highways Help or Hurt Hinterland City Growth?
4. Tristan Reed and Alexandr Trubetskoy (2020) Assessing the Value of Market Access from Belt and Road Projects, working paper

Transport Infrastructure Networks. Models and Empirics (half of L4)

1. ***Kirill Borusyak and Peter Hull (2020) *Non-Random Exposure to Natural Experiments: Theory and Applications*
2. Barrios, Thomas, Rebecca Diamond, Guido W. Imbens, and Michal Kolesár.(2012) Clustering, spatial correlations, and randomization inference. Journal of the American Statistical Association 107, no. 498 (2012): 578-591.

Topics: Forward-looking Infrastructure; Optimal Transportation Networks (L5)

1. ***Clare Balboni (2019), In Harm's Way? Infrastructure Investments and the Persistence of Coastal Cities
2. Marta Santamaria (2019), The Gains from Reshaping Infrastructure: Evidence from the division of Germany

3. Treb Allen and Costas Arkolakis (2019), The Welfare Effects of Transportation Infrastructure Improvements
4. Pablo D. Fajgelbaum, Edouard Schaal (2019), Optimal Transport Networks in Spatial Equilibrium

Part 2: Cities

Transport Infrastructure and City Structure - Empirics (L6)

1. ***Mariaflavia Harari (2020), Cities in Bad Shape: Urban Geometry in India, American Economic Review
2. Nathaniel Baum-Snow (2007), Did Highways Cause Suburbanization?
3. Nathaniel Baum-Snow, Loren Brandt, J. Vernon Henderson, Matthew A. Turner, and Qinghua Zhang (2017), Roads, Railroads, and Decentralization of Chinese Cities
4. Marco Gonzalez-Navarro and Matthew A. Turner (2018) Subways and urban growth: Evidence from Earth
5. Glaeser, Edward L. & Kahn, Matthew E. & Rappaport, Jordan, 2008. Why do the poor live in cities: The role of public transportation, Journal of Urban Economics, vol. 63(1), pages 1-24.
6. Alberto F. Ades and Edward L. Glaeser (1995) Trade and Circuses: Explaining Urban Giants, The Quarterly Journal of Economics, vol. 110(1), pp. 195-227.

Transport Infrastructure and City Structure - Models (L7)

1. ***Nick Tsivanidis (2019), Evaluating the Impact of Urban Transit Infrastructure: Evidence from Bogotá's TransMilenio
2. Román David Zárate (2020) Factor Allocation, Informality and Transit Improvements: Evidence from Mexico City

Urban traffic congestion: empirical evidence (L8)

1. ***Prottoy A. Akbar, Victor Couture, Gilles Duranton, Adam Storeygard (2018) Mobility and Congestion in Urban India
2. Duranton, G., & Turner, M. A. (2011). The fundamental law of road congestion: Evidence from US cities. The American Economic Review, 101(6), 2616-2652.
3. Rema Hanna, Gabriel Kreindler and Ben Olken (2017), Citywide effects of high-occupancy vehicle restrictions: Evidence from "three-in-one" in Jakarta, Science, Vol. 357 (6346).
4. Amanda Ang, Peter Christensen, and Renato Vieira (2020) Should Congested Cities Reduce their Speed Limits? Evidence from Sao Paulo, Brazil
5. Lucas Davis (2008), The Effect of Driving Restrictions on Air Quality in Mexico City, Journal of Political Economy, 2008, 116(1), 38-81.

6. Yizhen Gu, Elizabeth Deakin, Ying Long (2017), The effects of driving restrictions on travel behavior evidence from Beijing, Journal of Urban Economics, Volume 102, Pages 106-122.
7. Daniel Mangrum and Alejandro Molnar (2018) The marginal congestion of a taxi in New York City
8. Michael Anderson, Fangwen Lu, Yiran Zhang, Jun Yang, and Ping Qin (2016) Superstitions, Street Traffic, and Subjective Well-Being.Journal of Public Economics. 142: pp. 1–10.

Urban traffic congestion: equilibrium models (L9)

1. ***Gabriel Kreindler (2020), The Welfare Effect of Road Congestion Pricing: Experimental Evidence and Equilibrium Implications
2. Jeffrey Brinkman (2016) Congestion, Agglomeration, and the Structure of Cities
3. Prottoy A. Akbar and Gilles Duranton (2018), Measuring the cost of congestion in a highly congested city: Bogotá
4. Jun Yang, Avralt-od Purevjav, Shanjun Li (2020) The Marginal Cost of Traffic Congestion and Road Pricing. American Economic Journal: Economic Policy, 12(1): 418-453.

Public transportation: empirical evidence (L10)

1. ***Arya Gaduh, Tadeja Gracner, and Alex Rothenberg (2020), Life in the Slow Lane: Unintended Consequences of Public Transit in Jakarta
2. Hadia Majid, Ammar Malik, and Kate Vyborny (2018), Infrastructure investments, public transport use and sustainability: Evidence from Lahore, Pakistan
3. Yizhen Gu, Chang Jiang, Junfu Zhang, and Ben Zou (2019), Subways and Road Congestion
4. Marco Gonzalez-Navarro and Matthew A. Turner (2018), Subways and urban growth: Evidence from earth
5. Nicholas Gendron-Carrier, Marco Gonzalez-Navarro, Stefano Polloni and Matthew A. Turner (2018) Subways and urban air pollution
6. Erin Kelley, Gregory Lane and David Schönholzer (2018), The Impact of Monitoring Technologies on Contracts and Employee Behavior: Experimental Evidence from Kenya's Matatu Industry

Urban Mobility Barriers: Safety (L11)

1. ***Girija Borker (2017), Safety First: Perceived Risk of Street Harassment and Educational Choices of Women
2. Erica Field and Kate Vyborny (2020), Transport, urban labor markets, and women's mobility: Experimental evidence from urban Pakistan

3. Billy Jack and James Habyarimana (2015), Results of a large-scale behavioral intervention on road safety in Kenya
4. Florence Kondylis, Arianna Legovini, Astrid Zwager, Luiza Andrade, and Kate Vyborny (2020) Demand for Safe Spaces: Avoiding Harassment and Stigma

Urban Mobility, Search and Labor Market Outcomes (L12)

1. ***Sandra Sequeira and Abhijit Banerjee (2020) Spatial Mismatches and Imperfect Information in the Job Search
2. Simon Franklin (2018) Location, Search Costs and Youth Unemployment: Experimental Evidence from Transport Subsidies, Economic Journal 128 (614), 2353-2379.
3. Girum Abebe, Stefano Caria, Marcel Fafchamps, Paolo Falco, Simon Franklin and Simon Quinn (2020) Anonymity or Distance? Job Search and Labour Market Exclusion in a Growing African City

Urban Informal Settlements (L13)

- Simon Franklin (2019), The demand for government housing: evidence from a lottery for 200,000 homes in Ethiopia
- Sharon Barnhardt, Erica Field, and Rohini Pande (2017) Moving to Opportunity or Isolation? Network Effects of a Randomized Housing Lottery in Urban India, American Economic Journal: Applied Economics, Vol. 9, No. 1, January 2017, (pp. 1-32)
- Mariaflavia Harari and Maisy Wong (2019) Slum Upgrading and Long-run Urban Development: Evidence from Indonesia, working paper
- Benjamin Marx, Thomas Stoker, and Tavneet Suri (2013), The Economics of Slums in the Developing World, Journal of Economic Perspectives, Vol. 27, No. 4 (pp. 187-210)
- Benjamin Marx, Thomas Stoker, and Tavneet Suri (2019) There is No Free House: Ethnic Patronage in a Kenyan Slum, American Economic Journal Applied Economics, Vol. 11 (4), 26-30.
- Michael Gechter and Nick Tsivanidis (2020) Spatial Spillovers from Urban Renewal: Evidence from the Mumbai Mills Redevelopment, working paper
- J Vernon Henderson, Tanner Regan, Anthony J Venables (2020) Building the City: From Slums to a Modern Metropolis, forthcoming Review of Economic Studies
- Tanu Kumar (2020), The human capital effects of subsidized government-constructed homes in urban India

Spatial Externalities and Health (L14)

- ***Raymond Guiteras, James Levinsohn, Ahmed Mushfiq Mobarak (2019), Demand Estimation with Strategic Complementarities: Sanitation in Bangladesh
- Raymond Guiteras, James Levinsohn, Ahmed Mushfiq Mobarak (2015), Encouraging sanitation investment in the developing world: A cluster-randomized trial, Vol. 348, Issue 6237, pp. 903-906

- Nava Ashraf, Edward Glaeser, Abraham Holland and Bryce Millett Steinberg (2017), Water, Health and Wealth
- Devoto, Florencia, Duflo, Esther, Dupas, Pascaline, Pariente, William and Pons, Vincent. (2011), Happiness on Tap: Piped Water Adoption in Urban Morocco. American Economic Journal: Economic Policy
- Remi Jedwab and Dietrich Vollrath (2020) The Urban Mortality Transition and Poor Country Urbanization, forthcoming in the American Economic Journal: Macroeconomics
- Andrew Gelman (2000), Should we take measurements at an intermediate design point? Biostatistics, 1, 1, pp. 27–34

Cities and the Environment (L15)

1. Rema Hanna and Paulina Oliva (2015), The Effect of Pollution on Labor Supply: Evidence From a Natural Experiment in Mexico City, Journal of Public Economics.
2. Stephen Heblich, A. Trew and Y. Zylberberg (2020) East Side Story: Historic Pollution and Neighborhood Segregation
3. Eric Dodge and Rohini Pande (2016) What is causing Delhi's air pollution?
4. Joshua Dean (2020), Noise, Cognitive Function, and Worker Productivity, working paper
5. Nicholas Gendron-Carrier, Marco Gonzalez-Navarro, Stefano Polloni and Matthew A. Turner (2018) Subways and urban air pollution
6. Eva Arceo Rema Hanna Paulina Oliva (2015), Does the Effect of Pollution on Infant Mortality Differ Between Developing and Developed Countries? Evidence from Mexico City, The Economic Journal, Volume 126, Issue 591.
7. Joshua S. Apte, Kyle P. Messier, Shahzad Gani, Michael Brauer, Thomas W. Kirchstetter, Melissa M. Lunden, Julian D. Marshall, Christopher J. Portier, Roel C.H. Vermeulen, and Steven P. Hamburg (2017) High-Resolution Air Pollution Mapping with Google Street View Cars: Exploiting Big Data, Environ. Sci. Technol. 51, 12, 6999–7008

Part 3: Migration

Migration: Empirical evidence on barriers and effects (L16)

1. ***Melanie Morten and Jaqueline Oliveira. (2018). The Effects of Roads on Trade and Migration: Evidence from a Planned Capital City. NBER Working Paper 22158
2. G. Bryan, S. Chowdhury and A. M. Mobarak (2014). Under-Investment in a Profitable Technology: The Case of Seasonal Migration in Bangladesh, Econometrica, Volume 82, Issue 5.
3. Travis Baseler (2019), Hidden income and the perceived returns to migration: Experimental evidence from Kenya
4. Clément Imbert and John Papp (2019), Costs and Benefits of Rural-Urban Migration: Evidence from India

5. Kaivan Munshi and Mark Rosenzweig (2016), Networks and Misallocation: Insurance, Migration, and the Rural-Urban Wage Gap

Migration: Interpreting empirical evidence (L17)

1. Hicks, Joan Hamory, Marieke Kleemans, Nicholas Y. Li, and Edward Miguel. (2020). Reevaluating Agricultural Productivity Gaps with Longitudinal Microdata, forthcoming Journal of the European Economic Association
2. Lagakos, S. Marshall, A. M. Mobarak, C. Vernot and M. Waugh (2020), Migration Costs and Observational Returns to Rural-Urban Migration in the Developing World
3. Doug Gollin, Martina Kirchberger, and David Lagakos (2020) Do Urban Wage Premia Reflect Lower Amenities? Evidence from Africa
4. David Lagakos (2020) Urban-Rural Gaps in the Developing World: Does Internal Migration Offer Opportunities? Journal of Economic Perspectives

Migration: General equilibrium models (L18)

1. ***D. Lagakos, A. M. Mobarak, M. E. Waugh (2020). The Welfare Effects of Encouraging Rural-Urban Migration
2. Gharad Bryan, and Melanie Morten, (2019). The Aggregate Productivity Effects of Internal Migration: Evidence from Indonesia
3. Klaus Desmet, David Krisztian Nagy, Esteban Rossi-Hansberg (2018), The Geography of Development

New data sources (L19)

1. Joshua Blumenstock, Guanghua Chi, Xu Tan (2019) Migration and the Value of Social Networks
2. Blumenstock, JE (2012). Inferring Patterns of Internal Migration from Mobile Phone Call Records, Information Technology for Development, 18(2), 107-125 [pdf]
3. Shaun Larcom, Ferdinand Rauch, Tim Willems (2017) The Benefits of Forced Experimentation: Striking Evidence from the London Underground Network
4. Gabriel Kreindler and Yuhei Miyauchi (2020), Measuring Commuting and Economic Activity inside Cities with Cell Phone Records
5. Konstantin Büchel, Maximilian V. Ehrlich, Diego Puga and Elisabet Viladecans (2020) Calling from the outside: The role of networks in residential mobility
6. Panle Jia Barwick, Yanyan Liu, Eleonora Patacchini, Qi Wu (2019) Information, Mobile Communication, and Referral Effects

Environment and Migration (L20)

- **Guest lecture**: Ghaurav Khana, UCSD
- Gaurav Khanna, Wenquan Liang, A Mushfiq Mobarak and Ran Song (2020), The Productivity Consequences of Pollution-Induced Migration in China, working paper
    - The paper is available in Canvas -> Files -> Papers -> Lecture 20. Please do not circulate.

Part 4: Other Topics

Search Models; Value of Time (L21)

1. Giulia Brancaccio, Myrto Kalouptsidi and Theodore Papageorgiou (2019) A Guide to Estimating Matching Functions in Spatial Models
2. Giulia Brancaccio, Myrto Kalouptsidi and Theodore Papageorgiou (2020) Geography, Transportation and Endogenous Trade Costs
3. Giulia Brancaccio, Myrto Kalouptsidi, Theodore Papageorgiou and Nicola Rosaia (2020), Search Frictions and Efficiency in Decentralized Transport Markets
4. Nicholas Buchholz, Laura Doval, Jakub Kastl, Filip Matejka, Tobias Salz (2020) The Value of Time: Evidence From Auctioned Cab Rides

Costs of Remoteness: Market Power and Collusion (L22)

1. ***Lauren Falcao Bergquist and Michael Dinerstein (2020), Competition and Entry in Agricultural Markets: Experimental Evidence from Kenya
2. Treb Allen, David Atkin, Santiago Cantillo and Carlos Hernandez (2020) Trucks

Distance and Contracting (L23)

1. Meredith Startz (2018) The value of face-to-face: Search and contracting problems in Nigerian trade

Mobility and COVID-19 (L24)

1. *TBD*
2. Bloom, Nicholas, James Liang, John Roberts, and Zhichun Jenny Ying, "Does working from home work? Evidence from a Chinese experiment," The Quarterly Journal of Economics, 2015, 130 (1), 165–218

Calendar

Lecture	Date	Day	Topic
1	3-Sep	Thursday	Intro
2	8-Sep	Tuesday	Transport Infrastructure - Empirics
3	10-Sep	Thursday	Transport Infrastructure - Models
4	15-Sep	Tuesday	Transport Infrastructure - Models and Empirics
5	17-Sep	Thursday	Transport Infrastructure - Topics
6	22-Sep	Tuesday	Urban Structure - Empirics

7	24-Sep	Thursday	Urban Structure - Models
8	29-Sep	Tuesday	Traffic congestion - Empirics
9	1-Oct	Thursday	Traffic congestion - Equilibrium Models
10	6-Oct	Tuesday	Public Transportation
11	8-Oct	Thursday	Urban Mobility and Safety
12	13-Oct	Tuesday	Urban Mobility, Search and Labor Market Outcomes
13	15-Oct	Thursday	Informal urban settlements
14	20-Oct	Tuesday	Spatial Externalities and Health
15	22-Oct	Thursday	Cities and environment: pollution
16	27-Oct	Tuesday	Migration - Empirics
17	29-Oct	Thursday	Migration - Interpreting Empirics
18	3-Nov	Tuesday	Migration - GE Models
19	5-Nov	Thursday	New Data Sources
20	10-Nov	Tuesday	***Guest Lecture:*** *Gaurav Khana*
21	12-Nov	Thursday	Search Models; Value of Time
22	17-Nov	Tuesday	Remoteness and Market Power
23	19-Nov	Thursday	Contracting
24	24-Nov	Tuesday	Mobility and COVID-19
	26-Nov	Thursday	Thanksgiving break
25	1-Dec	Tuesday	Student presentations
26	3-Dec	Thursday	Student presentations