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Rico Krueger

Research and teaching associate, EPFL

Transport and Mobility Laboratory (TRANSP-OR),
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Employment

Research and teaching associate (postdoc), Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland, 11/2019–present. Advisor: Prof Michel Bierlaire.

Education

PhD, Civil and Environmental Engineering, University of New South Wales (UNSW), Australia, 03/2016–09/2019. Degree awarded: 01/2020.

Thesis title: Hierarchical Bayesian Models of Travel Demand: Theory, Inference and Applications.
Principal supervisor: A/Prof Taha H. Rashidi.
Co-supervisors: Dr Akshay Vij (University of South Australia), Prof S. Travis Waller.

MSc, Industrial Engineering and Management, Technische Universität (TU) Berlin, Germany, 10/2013–02/2016.

Thesis title: Adoption of Shared Autonomous Vehicles: A Hybrid Choice Modelling Approach Based on a Stated Choice Survey.
Supervisors: Prof Christian von Hirschhausen, Prof Thorsten Beckers, Till Kreft.

BSc, Industrial Engineering and Management, Technische Universität (TU) Berlin, Germany, 10/2010–07/2013.

Academic visits and exchanges

Visiting scholar, Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland, 01/2019–06/2019. Supervisor: Prof Michel Bierlaire. Research topic: Variational Bayesian inference for discrete choice models.

Visiting scholar, University of New South Wales, Australia, 01/2015–05/2015. Supervisor: Dr Taha H. Rashidi. Research topic: Adoption of shared autonomous vehicles.

Coursework exchange, University of New South Wales, Australia, 02/2014–11/2014.

Relevant work experience

Research assistantships

Student research assistant, Research Centre for Integrated Transport Innovation, University of New South Wales, Australia, 01/2015–05/2015; 03/2017–10/2019.

Student research assistant, Workgroup for Infrastructure Policy, Technische Universität (TU) Berlin, Germany, 03/2013–08/2014.

Industry experience

Intern, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH (German Corporation for International Cooperation), Bangkok, Thailand, 06/2015–10/2015.

Working student, Stadler Rail AG, Berlin, Germany, 03/2012–12/2012.

Publications

Journal articles, refereed

J11 Bansal, P., Dua, R., **Krueger, R.**, Graham, D. J. (2021): Fuel Economy Valuation and Preferences of Indian Two-wheeler Buyers. *Journal of Cleaner Production*, 294, 126328.

J10 Bansal, P.*, **Krueger, R.***, Graham, D. J. (2021): Fast Bayesian Estimation of Spatial Count Data Models. *Computational Statistics & Data Analysis*, 157, 107152.

J9 **Krueger, R.**, Rashidi, T. H., Vij, A. (2020): X vs. Y: an analysis of intergenerational differences in transport mode use among young adults. *Transportation*, 47, 2203–2231.

J8 **Krueger, R.**, Rashidi, T. H., Vij, A. (2020): A Dirichlet process mixture model of discrete choice: Comparisons and a case study on preferences for shared automated vehicles. *Journal of Choice Modelling*, 36, 100229.

J7 **Krueger, R.***, Bansal, P.*, Buddhavarapu, P. (2020): A New Spatial Count Data Model with Bayesian Additive Regression Trees for Accident Hot Spot Identification. *Accident Analysis & Prevention*, 144, 105623.

J6 Bansal, P.*, **Krueger, R.***, Bierlaire, M., Daziano, R. A., Rashidi, T. H. (2020): Bayesian Estimation of Mixed Multinomial Logit Models: Advances and Simulation-Based Evaluations. *Transportation Research Part B: Methodological*, 131, 124-142.

J5 **Krueger, R.**, Rashidi, T. H., Dixit, V. V. (2019): Autonomous Driving and Residential Location Preferences: Evidence from a Stated Choice Survey. *Transportation Research Part C: Emerging Technologies*, 108, 255-268.

J4 **Krueger, R.**, Rashidi, T. H., Auld, J. (2019): Preferences for travel-based multitasking: Evidence from a survey among public transit users in the Chicago metropolitan area. *Transportation Research Part F: Traffic Psychology and Behaviour*, 65, 334-343.

J3 **Krueger, R.**, Vij, A., Rashidi, T. H. (2018): Normative beliefs and modality styles: a latent class and latent variable model of travel behaviour. *Transportation*, 45 (3), 789-825.

J2 Vij, A., **Krueger, R.** (2017): Random taste heterogeneity in discrete choice models: Flexible nonparametric finite mixture distributions. *Transportation Research Part B: Methodological*, 106, 76-101.

J1 **Krueger, R.**, Rashidi, T. H., Rose, J. M. (2016): Preferences for shared autonomous vehicles. *Transportation Research Part C: Emerging Technologies*, 69, 343-355.

Journal articles, under review

R3 Bansal, P., Kessels, R., **Krueger, R.**, Graham, D. J.: Face masks, vaccination rates and low crowding drive the demand for the London Underground during the COVID-19 pandemic.

R2 **Krueger, R.**, Bierlaire, M., Daziano, R. A., Rashidi, T. H., Bansal, P.: Evaluating the predictive abilities of mixed logit models with unobserved inter- and intra-individual heterogeneity.

R1 **Krueger, R.**, Bierlaire, M., Gasos, T., Bansal, P.: Robust discrete choice models with t-distributed kernel errors.

Book chapters

BC1 Bierlaire, M., **Krueger, R.** (to appear): Sampling and discrete choice. In Hess, S., Daly, A. (eds): Handbook of Choice Modelling, 2nd edition.

Invited talks

IT1 **Krueger, R.**: Bayesian machine learning and spatial count data models: Advances in estimation and specification. Research Seminar, Transport Division DTU Management, Technical University of Denmark, Copenhagen, Denmark, 3 February 2021.

Conference presentations

C18 Bansal, P., Kessels, R., **Krueger, R.**, Graham, D. J.: Changes in activity and travel behaviour of London Underground users during the COVID-19 pandemic. *ICMC Mini Online Event*, 28 May 2021.

C17 **Krueger, R.**[*], Bansal, P.[*], Buddhavarapu, P.: A New Spatial Count Data Model with Bayesian Additive Regression Trees for Accident Hot Spot Identification. *9th Symposium of the European Association for Research in Transportation*, 3–4 February 2021.

C16 **Krueger, R.**[*], Bansal, P.[*], Buddhavarapu, P.: A New Spatial Count Data Model with Bayesian Additive Regression Trees for Accident Hot Spot Identification. *2nd Bridging Transportation Researchers Online Conference*, 11–12 August 2020.

C15 Bansal, P.[*], **Krueger, R.**[*], Bierlaire, M., Graham, D. J.: Variational Bayesian Inference for Spatial Negative Binomial Count Data Models with Unobserved Heterogeneity. *2nd Bridging Transportation Researchers Online Conference*, 11–12 August 2020.

C14 Bansal, P.[*], **Krueger, R.**[*], Bierlaire, M., Graham, D. J.: Variational Bayesian Inference for Spatial Negative Binomial Count Data Models with Unobserved Heterogeneity. *Swiss Transport Research Conference*, Ascona, Switzerland, 13–14 May 2020.

C13 Bansal, P.[*], **Krueger, R.**[*], Bierlaire, M., Daziano, R. A., Rashidi, T. H.: Bayesian Estimation of Mixed Multinomial Logit Models: Advances and Simulation-Based Evaluations. *International Choice Modelling Conference*, Kobe, Japan, 19–21 August 2019.

C12 **Krueger, R.**, Bansal, P., Bierlaire, M., Daziano, R. A., Rashidi, T. H.: Variational Bayesian Inference for Mixed Logit Models with Unobserved Inter- and Intra-Individual Heterogeneity. *Swiss Transport Research Conference*, Ascona, Switzerland, 15–17 May 2019.

C11 **Krueger, R.**, Rashidi, T. H., Vij, A.: X vs. Y: An Analysis of Inter-Generational Differences in Transport Mode Use Among Young Adults. *Transportation Research Board 98th Annual Meeting*, Washington DC, USA, 13–17 January 2019.

C10 **Krueger, R.**, Rashidi, T. H., Dixit, V. V.: Autonomous Driving and Residential Location Preferences: Evidence from a Stated Choice Survey. *Transportation Research Board 98th Annual Meeting*, Washington DC, USA, 13–17 January 2019.

C9 **Krueger, R.**, Rashidi, T. H., Auld, J.: Preferences for travel-based multitasking: Evidence from a survey among public transit users in the Chicago metropolitan area. *Transportation Research Board 98th Annual Meeting*, Washington DC, USA, 13–17 January 2019.

C8 **Krueger, R.**, Vij, A., Rashidi, T. H.: A Dirichlet Process Mixture Model of Discrete Choice with an Application to Route Choice Preferences. *15th International Conference on Travel Behaviour Research*, Santa Barbara, USA, 15–20 July 2018.

C7 **Krueger, R.**, Vij, A., Rashidi, T. H.: A Dirichlet Process Mixture Model of Discrete Choice. *Transportation Research Board 97th Annual Meeting*, Washington DC, USA, 7–11 January 2018.

C6 **Krueger, R.**, Rashidi, T. H.: What Makes You Cycle this Far? An Analysis of Mandatory Bicycle Tour Distances. *Transportation Research Board 97th Annual Meeting*, Washington DC, USA, 7–11 January 2018.

C5 **Krueger, R.**, Rashidi, T. H., Dixit, V. V.: Will Driverless Cars Induce Urban Sprawl? Experimental Design of a Stated Choice Study. *11th International Conference on Transport Survey Methods*, Montreal, Canada, 24–29 September 2017.

C4 **Krueger, R.**, Rashidi, T. H., Vij, A.: Goal-Directed Transport Mode Use: A Structural Equation Modelling Perspective. *International Choice Modelling Conference*, Cape Town, South Africa, 3–5 April 2017.

C3 Dixit, V. V., **Krueger, R.**, Rashidi, T. H., Saxena, N.: Subjective Beliefs about the Willingness to Pay for Travel Time Savings. *International Choice Modelling Conference*, Cape Town, South Africa, 3–5 April 2017.

C2 **Krueger, R.**, Rashidi, T. H., Rose, J. M.: Adoption of Shared Autonomous Vehicles? A Hybrid Choice Modelling Approach based on a Stated Choice Survey. *Transportation Research Board 95th Annual Meeting, Washington DC*, USA, 10–14 January 2016.

C1 **Krueger, R.**, Rashidi, T. H., Rose, J. M.: Identifying Potential Users of Smart Urban Mobility Services: Adoption of Shared Autonomous Vehicles: A Hybrid Choice Modelling Approach based on a Stated Choice Survey. *Workshop on Smart Urban Mobility*, hosted by Edinburgh Napier University, UK, 26–27 November 2015.

Journal articles, edited

JE1 Sehlleier, F., Nagel, J., **Krueger, R.** (2016): Energy-efficient two-wheelers in Southeast Asia, *International Transportation*, 68, 1, 12–15.

[*] joint first authorship.

Teaching experience

Courses taught

Years	Course	Institution	Role	Audience
2021, 2020	Optimization and simulation	EPFL	Lecturer	postgraduate students
2021	Discrete Choice Analysis: Predicting Individual Behavior and Market Demand	EPFL	Course coordinator & teaching assistant	academic & private sector
2021, 2020	Mathematical modeling of behavior	EPFL	Teaching assistant	postgraduate students
2020, 2019	Discrete Choice Analysis: Predicting Individual Behavior and Market Demand	EPFL	Teaching assistant	academic & private sector
2018	Urban Transport Planning Practice	UNSW	Teaching assistant	postgraduate students
2018	Transport Systems Part 1: Network Analysis	UNSW	Teaching assistant	postgraduate students
2018, 2016	Engineering Infrastructure Systems	UNSW	Teaching assistant	undergraduate students

Supervision experience

PhD theses

Cloe Cortes Balcells: Activity-based models and epidemics. EPFL. Co-supervised with Michel Bierlaire. 08/2021–09/2024.

Master theses

Julien Harbulot: Transport mode classification with smartphone accelerometer data: An end-to-end deep learning approach. EPFL. Co-supervised with Michel Bierlaire. 02/2020–08/2020.

Master semester projects

Ambroise Favre: Matrix factorisation methods. Mines ParisTech, EPFL. Co-supervised with Michel Bierlaire. 03/2021–06/2021.

Antoine Crettenand: Designing a MATSIM environment to study the impact of SARS-CoV-2 in mobility. EPFL. Co-supervised with Michel Bierlaire and Cloe Cortes Balcells. 02/2021–06/2021.

Thomas Gasos: Bayesian analysis of multinomial discrete choice models with t-distributed kernel errors. EPFL. Co-supervised with Michel Bierlaire. 02/2020–06/2020.

Projects

Optimization of individual mobility plans to simulate future travel in Switzerland. Sponsor: Innosuisse (Swiss Innovation Agency). External partner: Swiss Federal Railways (SBB, Switzerland). Role: Co-investigator. 09/2020–01/2022.

OrgVisionPro: Automated organizational design and optimization. Sponsor: Innosuisse (Swiss Innovation Agency). External partner: Laurent Jaquenoud (CLEAP, Switzerland). Role: Project manager. 10/2019–06/2021.

Empirical Estimation of Time Use and Disutility of Travel Time in the Context of New Mobility Technologies. Sponsor: Argonne National Laboratory (USA). Role: Co-investigator. 04/2017–09/2018.

Scholarships

Tuition Fee Scholarship and living allowance, granted by the University of New South Wales to support doctoral research, 2016–2019.

PROMOS scholarship of the German Academic Exchange Service (DAAD) for the support of a master thesis at the University of New South Wales (Sydney, Australia), 2015.

Study abroad scholarship of the Technische Universität (TU) Berlin for two exchange semesters (coursework) at the University of New South Wales (Sydney, Australia), 2014.

24th Congress Bundestag Youth Exchange Program (formerly Fulbright), high school student exchange to Eugene, Oregon, USA, 2007–2008.

Service

Reviewing activities

Journals

Accident Analysis & Prevention
IATSS Research
IEEE Open Journal of Intelligent Transportation Systems
International Journal of Transportation Science and Technology
International Journal of Sustainable Transportation
Journal of Choice Modelling
Journal of Transport Geography
Nature Sustainability
Networks and Spatial Econometrics
Public Transport
Research in Transportation Economics
Technology in Society
Transportation Letters
Transportmetrica A
Transport Policy
Transportation Research Part A: Policy and Practice
Transportation Research Part B: Methodological
Transportation Research Part C: Emerging Technologies
Transportation Research Part E: Logistics and Transportation Review

Grants and research proposals

National Science Foundation (NSF), USA. 25/02/2021–18/03/2021.

National Fund for Scientific and Technological Development (FONDECYT), Chile. 18/10/2018–09/11/2018.

Editorial activities

Member of the Editorial Board of *Transportation Letters*. 02/2021–present.

Computer and language skills

Python, Julia, R, MATLAB.

English (Full professional proficiency), German (native proficiency), French (limited working proficiency).