

Rico Krueger

Research and teaching associate, EPFL

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Current position

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

Education

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

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.

Previous 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.

Intern, Manfred Narr GmbH, Berlin, Germany, 08/2010–10/2010.

Publications

Journal articles, refereed

- 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 **Krueger, R.**, Bierlaire, M., Daziano, R. A., Rashidi, T. H., Bansal, P.: On the usefulness of mixed logit models with unobserved inter- and intra-individual heterogeneity.
- R2 **Krueger, R.**, Bansal, P., Bierlaire, M., Gasos, T.: Robust discrete choice models with t-distributed kernel errors.
- R1 Bansal, P., Dua, R., **Krueger, R.**, Graham, D. J.: Fuel Economy Valuation and Preferences of Indian Two-wheeler Buyers.

Technical reports

- T1 Bierlaire, M., **Krueger, R.** (2020): Sampling and discrete choice. Transport and Mobility Laboratory, ENAC, EPFL.

Conference presentations

- C19 Hillel, T., **Krueger, R.**, Rashidi, T. H., Bierlaire, M.: Data fusion for passenger mode choice-sets from GPS traces: A case study of Sydney, Australia. *12th International Conference on Transport Survey Methods*, Lisbon, Portugal, 25–30 April 2021.
- C18 **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*, Lyon, France, 7–9 April 2021.
- C17 Bansal, P., Dua, R., **Krueger, R.**, Graham, D. J.: Fuel Economy Valuation and Preferences of Indian Two-wheeler Buyers. *Transportation Research Board 100th Annual Meeting*, Washington DC, USA, January 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 Sehilleier, 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 | Discrete Choice Analysis: Predicting Individual Behavior and Market Demand | Ecole Polytechnique Fédérale de Lausanne (EPFL) | Course coordinator & teaching assistant | academic & private sector |
| 2020 | Mathematical modeling of behavior | Ecole Polytechnique Fédérale de Lausanne (EPFL) | Teaching assistant | postgraduate students |
| 2020 | Optimization and simulation | Ecole Polytechnique Fédérale de Lausanne (EPFL) | Lecturer | postgraduate students |
| 2020, 2019 | Discrete Choice Analysis: Predicting Individual Behavior and Market Demand | Ecole Polytechnique Fédérale de Lausanne (EPFL) | Teaching assistant | academic & private sector |
| 2018 | Urban Transport Planning Practice | University of New South Wales (UNSW) | Teaching assistant | postgraduate students |
| 2018 | Transport Systems Part 1: Network Analysis | University of New South Wales (UNSW) | Teaching assistant | postgraduate students |
| 2018, 2016 | Engineering Infrastructure Systems | University of New South Wales (UNSW) | Teaching assistant | undergraduate students |

Supervision experience

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

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. 09/2020–03/2022.

OrgVisionPro: Automated organizational design and optimization. Sponsor: Innosuisse (Swiss Innovation Agency). External partner: Laurent Jaquenoud (CLEAP, Switzerland). Role: Project manager. 10/2019–09/2021.

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.

Reviewing activities

Journals

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| Transportation Research Part A | Transport Policy | Technology in Society |
| Transportation Research Part B | Research in Transportation Economics | IATSS Research |
| Transportation Research Part C | Transportmetrica A | |
| Transportation Research Part E | Transportation Letters | |
| Accident Analysis & Prevention | International J. of Sustainable Transp. | |
| Networks and Spatial Econometrics | International J. of Transp. Sci. & Tech. | |
| Journal of Choice Modelling | Public Transport | |

Grants and research proposals

National Fund for Scientific and Technological Development (Chile).

Computer and language skills

Python, Julia, R, MATLAB.

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

Referees

Available on request.