

## Janody Pougala, Ph.D

Postdoctoral Researcher

Transport demand, Behavioral modeling, Daily mobility,  
Sustainable Urban Planning

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### Personal information

I am a postdoctoral researcher in the Department of Civil and Environmental Engineering at Northwestern University (USA). I hold a Ph.D. in Civil Engineering from École Polytechnique Fédérale de Lausanne (EPFL), Switzerland. My research focuses on modeling travel behavior and demand, understanding inter- and intra-personal dynamics that shape our use of the urban environment, designing sustainable mobility and urban systems, and developing interdisciplinary methods between mathematical modeling, transport engineering, and urban social science.

**Notable work:** I have developed OASIS, an open-source optimization-based activity-based model to simulate daily activity-travel schedules. This model is used by several research and industry partners internationally (e.g., Switzerland, the United Kingdom, Singapore). I have extensive experience teaching undergraduate and postgraduate transportation and behavioral modeling courses, including course design and project supervision.

**Languages:** French (Native), Italian (Native), English (Fluent), German (Basic), Spanish (Basic)

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### Education

**Ph.D. (Civil and Environmental Engineering) – EPFL (CH)** **2019 – 2024**

- **Thesis:** *OASIS : An integrated optimisation framework for activity scheduling*
- **Advisors:** Prof. M. Bierlaire and Dr. T. Hillel

**Master of Science (Civil Engineering). – EPFL (CH)** **2016 – 2019**

- **Thesis:** *Digital and physical methods to monitor urban mobility: Case study of Pully*
- **Advisors:** Prof. N. Geroliminis and Mr. P.-Y. Gilliéron

**Bachelor of Science (Civil Engineering) – EPFL (CH)** **2013 – 2016**

- **Thesis :** *Development of efficient one-way car-sharing schemes*
  - **Advisor:** Prof. N. Geroliminis
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### Research Experience

**Postdoctoral researcher – Northwestern University (USA)** **Oct. 2024 – Today**

*Mobility and Behavior Laboratory, McCormick School of Engineering*

- Behavioral modeling research with applications in transport accessibility, public policy perception and acceptability, social components of travel behavior.
- Conducted multi-stakeholder participatory research with major US industry partners and Chicago community representatives to co-design turnover strategies for fleet decarbonation.

**Doctoral student/Research assistant – EPFL (CH)** **Sep. 2019 – Jan.2024**

*Transport and Mobility Laboratory (TRANSP-OR)*

- Development of an open-source activity scheduling simulator based on random utility maximization, simultaneously integrating all activity-travel choice dimensions
- Successful collaborations with the Swiss Federal Railways to integrate OASIS within their long- term nationwide travel demand forecasting framework. Academic collaborations (e.g., Prof. V. Kaufmann, Prof. K. Axhausen) to explore potential applications of OASIS.
- This work resulted in publications in the *Journal of Choice Modelling*, *Transportation Research Part C: Emerging Technologies*, conference talks including *IATBR*

(International Association of Travel Behaviour Research). This work was funded through an Innosuisse grant, a Cluster grant from EPFL's School of Architecture, Civil and Environmental Engineering, and a grant from the Swiss Federal Office of Energy.

- This work was awarded the 2024 EPFL Outstanding PhD Thesis Distinction in Civil and Environmental Engineering, awarded to the top 8% graduates of the program.

#### **Visiting researcher – University College London (UK)**

**Sep. 2022 – Jan.2023**

*Behaviour and Infrastructure Group, Dep. Civil and Env. Engineering,*

- Awarded an EPFL Mobility Award to enrich activity-based research with UK and London context.
- Knowledge exchange with partners such as ARUP's City Modelling Lab.

#### **Graduate student – EPFL (CH)**

**2019**

*Master Thesis in Transportation and Mobility*

- Collaborated with the telecom provider Swisscom to calibrate and validate their Mobility Insights tool for the town of Pully (CH).
- Performed a cost-benefit analysis on behalf of the town of Pully for the installation of mobility sensors in the town center.
- Developed a methodology to fuse data from physical (from sensors) and digital sources (from mobile traces).
- This work was awarded the Citec Mobility Solutions Prize 2019, and VSS (Swiss association of roads and transport professionals) prize 2019. It was published as an article in the monthly publication of VSS's *Strasse und Verkehr*.

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### **Research projects and funding**

#### **Center for Connected and Automated Transportation (USA)**

- **Project:** *Empowering Para-Transit through Automation: A Behaviorally Informed Optimization Approach*
  - **Funding period:** 2025 – 2026
  - **Principal investigators:** Prof. Y. Nie, Prof. A. Stathopoulos (Northwestern University)
  - **Role:** Researcher, Grant writing

#### **Northwestern Institute of Complex Systems, Complex Challenges Seed Fund (USA)**

- **Project:** *The impact of linguistic framing on heat risk communication effectiveness*
  - **Funding period:** 2025 – 2026
  - **Principal investigators:** Prof A. Stathopoulos, Prof E. Ronai (Northwestern University)
  - **Role:** Researcher

#### **Health Effects Institute (USA)**

- **Project:** *Roadmap for Medium- and Heavy-Duty vehicle fleet renewal: A Chicago case-study on Air Quality and Public Health impacts of fleet conversion with multi-stakeholder engagement*
  - **Funding period:** 2024-2026
  - **Principal investigators:** Prof. D.E. Horton, Prof. A. Stathopoulos
  - **Role:** Researcher, Conducting community-based research to identify barriers and opportunities for electrification of operating in low-income communities in Chicago.

#### **Swiss Federal Office of Energy (CH)**

- **Project:** *e-Bike City*
  - **Funding period:** 2022-2025
  - **Principal investigators:** Prof. K. Axhausen (IVT-ETHZ), Prof. M. Bierlaire

- **Role:** Researcher. Exploring the integration of OASIS into MATSim microsimulator for behaviorally realistic inputs and insights.

#### EPFL ENAC Cluster Grant (CH)

- **Project:** *Activity scheduling and rhythmic style: multi-day modeling of mobility habits (MAPS)*
  - **Funding period:** 2020-2021
  - **Principal investigators:** Dr. J. Pougala, Dr. M.-E. Schultheiss (EPFL)
  - **Role:** Principal investigator. Proposal writing and submission, project management. Develop a methodology to simulate multiple days of activities, integrating socio-economic characteristics and constraints.

#### Innosuisse (CH)

- **Project:** *Optimization of individual mobility plans to simulate future travel in Switzerland*
  - **Funding period:** 2020-2022
  - **Principal investigators:** Prof. M. Bierlaire (EPFL) , Mr. P. Buetzberger (SBB)
  - **Role:** Researcher. This project was a collaboration with the Swiss Federal Railways (SBB), to integrate OASIS into their long-term transport demand forecasting for Switzerland.

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#### Teaching activities

- **Travel demand forecasting (Northwestern):** Graduate course for engineers. **Role:** teaching assistant. Winter 2025.
- **Introduction to transportation systems (EPFL):** Undergraduate course for engineers. **Role:** teaching assistant. Spring 2023.
- **Mathematical modeling of behavior (EPFL):** Graduate course for mathematicians and engineers. **Role:** teaching assistant. Fall 2019, 2020, 2021, 2022, 2023.
- **Decision-aid methodologies in transportation (EPFL):** Graduate course for engineers. **Role:** teaching assistant. Spring 2020, 2021, 2022.
- **Discrete Choice Analysis: Predicting Individual Behavior and Market Demand (EPFL/MIT):** Industry and postgraduate course. **Role:** lecturer and teaching assistant. Spring 2020, 2021, 2022, 2023

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#### Student supervision and mentoring

**Master/ Graduate theses (6):** Salim Benchelabi, Quentin Bochud, Nicolas Richter, Nicolas Salvadé, Alain Azzi, Sergej Gasparovich

**Undergraduate/Bachelor and Graduate/Master course projects (12):** Donovan Batts, Derrick Zhao, Honoka Shirai, Quentin Bochud, Mya Jamal Lahjouji, Luca Bataillard, Jingran Su, Nicolas Richter, Nicolas Salvadé, Benoit Pahud, Adrien Nicolet, Sergej Gasparovich

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#### Institutional Responsibilities

**European Association of Activity-Based Modeling (EU)**

**Since 2024**

*Member of Teaching committee*

**Civil Engineering Teaching Commission (EPFL, CH)**

**2019– 2024**

*PhD Representative*

## Review Services

**Journal of Transport and Land Use** (2 reviews), **Transportation Science** (2 reviews), **Computers, Environment and Urban Systems** (1 review), **Transportation Research Part B: Methodological** (1 review)

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## Conferences, lectures and seminars

- Conference in Emerging Technologies in Transportation Systems (TRC-30): *Co-author* – Heraklion, Crete (GR) – September 2024
  - International Association for Travel Behavior Research Conference 2024: *Speaker* – Vienna, (AT) – July 2024
  - UCL Behaviour and Infrastructure Group’s Colloquium: *Speaker* – London (UK) – February 2024
  - 11th Symposium of the European Association for Research in Transportation (hEART) 2023: *Speaker* – Zurich, (CH) – September 2023
  - International Association for Travel Behavior Research Conference 2022: *Speaker* – Santiago de Chile (CL) – December 2022
  - TU Munich Symposium on activity-based models, 2022: *Speaker* – Munich (DE) – September 2022
  - mobil.TUM 2022: *Speaker* – Online – April 2022
  - 9th Symposium of the European Association for Research in Transportation (hEART) 2020: *Speaker* – Lyon (FR) – April 2021
  - Swiss Transport Research Conference: *Speaker* – Ascona (CH) – May 2019, 2020, Sept. 2021, May 2022, May 2023
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## Prizes, awards and fellowships

- *EPFL Outstanding PhD Dissertation in Civil and Environmental Engineering 2024*: awarded to the top 8% graduates of the program
  - *hEART 2023 - Best paper award*: for the paper “Modelling the impact of activity duration on utility-based scheduling decisions: a comparative analysis”.
  - *EPFL’s Doctoral School of Civil and Environmental Engineering Mobility Award 2022*: funding for academic visit to external research institution.
  - *VSS Foundation award*: for outstanding Master’s theses in the field of transportation – Feb. 2020
  - *Citec Mobility Solutions award*: for outstanding Master’s theses in the field of mobility and transportation – Oct. 2019
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## Research output

### • Peer-reviewed journal publications:

- Chang, Z., **Pougala, J.**, Stathopoulos, A. (Under Review) *Evaluating Fairness in Public Transit: A Choice Model Investigation of Chicago Riders’ Perceptions*. Submitted to Travel Behaviour and Society.
- Wang, S., **Pougala, J.**, Hillel, T. (Under Review) *Joint Modelling of Electric Vehicle Charging and Daily Activity Scheduling*. Submitted to Transportation Research Part C: Emerging Technologies.
- Manser, P., Haering, T., Hillel, T., **Pougala, J.**, Krueger, R., & Bierlaire, M. (2024). *Estimating flexibility preferences to resolve temporal scheduling conflicts in activity-based modelling*. Transportation, 51(2), 501-528.
- **Pougala J.**, Hillel T., Bierlaire M. (2023). *OASIS: Optimisation-based Activity Scheduling with Integrated Simultaneous choice dimensions*. Transportation Research Part C: Emerging Technologies, Volume 155

- **Pougala J.**, Hillel T., Bierlaire M. (2022). *Capturing trade-offs between daily scheduling choices*. Journal of Choice Modelling, Volume 43 (100354)

• **Conference proceedings:**

- Wang S., **Pougala J.**, Hillel T. (2024) Simultaneous Scheduling of Electric Vehicle Charging and Daily Activities. Conference in Emerging Technologies in Transportation Systems (TRC-30), 10-14 September, Heraklion, Greece.
- **Pougala J.**, Hillel T., Bierlaire M. (2023) From one-day to multiday activity scheduling: extending the OASIS framework. Proceedings of the 23rd Swiss Transport Research Conference (STRC), 10-12 May, Ascona, Switzerland
- Wang M., **Pougala J.**, Bierlaire M. (2023) Initial Comparisons Between MDCEV model and OASIS Framework. Proceedings of the 23rd Swiss Transport Research Conference (STRC), 10-12 May, Ascona, Switzerland
- **Pougala J.**, Hillel T., Bierlaire M. (2022) Parameter estimation for activity-based models. Proceedings of the 22nd Swiss Transport Research Conference (STRC), 18-20 May, Ascona, Switzerland
- Salvadé N., Hillel T., **Pougala J.**, Haering T., Bierlaire M. (2022) Representing location choice within activity-based models. Proceedings of the 22nd Swiss Transport Research Conference (STRC), 18-20 May, Ascona, Switzerland
- **Pougala J.**, Hillel T., Bierlaire M. (2021) Choice set generation for activity-based models. Proceedings of the 21st Swiss Transport Research Conference (STRC), 12-14 September, Ascona, Switzerland
- Hillel T., **Pougala J.**, Manser P., Luethi R., Scherr W., Bierlaire M. (2020) Modelling mobility tool availability at a household and individual level: A case study of Switzerland. Proceedings of the 9th Symposium of the European Association for Research in Transportation (HEART), 3-4 February 2021, Lyon, France
- **Pougala J.**, Hillel T., Bierlaire M. (2020) An optimization framework for daily activity schedules. Proceedings of the 9th Symposium of the European Association for Research in Transportation (HEART), 3-4 February 2021, Lyon, France
- **Pougala J.**, Hillel T., and Bierlaire, M. (2020). Scheduling of daily activities: an optimization approach. Proceedings of the 20th Swiss Transport Research Conference (STRC) 13-14 May, 2020.

• **Other publications:**

- Pougala Janody. “Observatoire de la mobilité à Pully: Un outil qui permet de quantifier la mobilité dans le centre-ville”. Strasse und Verkehr, VSS, July-Aug. 2020

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**Reference contacts**

- Amanda Stathopoulos, Northwestern University: [a-stathopoulos@northwestern.edu](mailto:a-stathopoulos@northwestern.edu)
- Michel Bierlaire, EPFL: [michel.bierlaire@epfl.ch](mailto:michel.bierlaire@epfl.ch)
- Tim Hillel, UCL: [tim.hillel@ucl.ac.uk](mailto:tim.hillel@ucl.ac.uk)