

Divyakant Tahlyan

Curriculum Vitae

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Transportation Center
Northwestern University
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Education

- Sep.2018-now **Ph.D Civil Engineering**, *Northwestern University*, Evanston, IL, USA, Advisor: Prof. Hani S. Mahmassani, Committee: Prof. Amanda Stathopoulos, Prof. Sunil Chopra, Prof. Susan Shaheen.
- Sep.2018-Mar.2021 **M.S Civil Engineering**, *Northwestern University*, Evanston, IL, USA, Advisor: Prof. Hani Mahmassani, Committee: Prof. Amanda Stathopoulos.
- Aug.2016-May.2018 **M.S Civil Engineering**, *University of South Florida*, Tampa, FL, USA, Advisors: Prof. Abdul R. Pinjari & Prof. Fred L. Mannering, Committee: Prof. Robert L. Bertini.
Thesis: Performance Evaluation of Choice Set Generation Algorithms for Modeling Truck Route Choice: Insights from Large Streams of Truck-GPS Data
- Jul.2011-May.2015 **B.Tech Civil Engineering**, *Indian Institute of Technology (BHU)*, Varanasi, U.P., India, Advisor: Prof. Anurag Ohri.

Professional Experience

- Sep.2019-now **Graduate Research Assistant**, *Northwestern University Transportation Center*, Evanston, IL, USA.
- Apr.2021-Jun.2021 **Teaching Assistant**, *Northwestern University*, Evanston, IL, USA.
- Apr.2019-Jun.2019 **Teaching Assistant**, *Northwestern University*, Evanston, IL, USA.
- Aug.2016-May.2018 **Graduate Research Assistant**, *University of South Florida*, Tampa, FL, USA.
- Jun.2015-Jun.2016 **Junior Research Fellow**, *Indian Institute of Science*, Bangalore, Karnataka, India.

Research Interests

- *Statistical, econometric and machine learning methods for transportation data analysis*: Discrete choice and ordered response models, integrated choice and latent variable models, count data models, heterogeneity and hierarchical models, machine learning based classifiers (SVM, neural networks, decision trees), ensemble learning and causal inference.
- *ICT and travel*: Role of perceptions, attitudes, experiences, constraints and satisfaction on tele-activities adoption and future retention, virtual/physical activity interaction, tele-activity and well-being.
- *Social networks and travel*: Egocentric network data collection and synthetic social network generation, social capital measurement, dimensions and impact on activity participation.
- *Transportation sector electrification*: Resilience and evacuation planning, transportation interaction with energy.
- *Sustainability and equity*: Micro- and shared mobility, well-being, accessibility, reducing car dependence.
- *Route choice modeling*: Choice set generation algorithms, truck route choice, use of large scale passive data sources.
- *Crash data analysis*: Frequency and severity modeling and prediction, zero-inflated and limited dependent variable models, unobserved heterogeneity and hierarchical models, spatial transfer-ability and temporal instability.

Publications

Journal Publications

1. **Tahlyan, D.**, Said, M., Mahmassani, H., Stathopoulos, A., Walker, J., Shaheen, S. For Whom Did Telework Not Work During the Pandemic? Understanding the Factors Impacting Telework Satisfaction in the US Using a Multiple Indicator Multiple Cause (MIMIC) Model. *Transportation Research Part A*. <https://doi.org/10.1016/j.tra.2021.11.025>. **(amongst one of 25 most downloaded articles in last 90 days in TR Part A)**
2. Abkarian, H., **Tahlyan, D.**, Mahmassani, H., Smilowitz, K. 2021. Understanding Visitor Engagement Behavior at Large-Scale Events: Activity Sequence Clustering and Ranking using GPS Tracking Data. *Tourism Management*. <https://doi.org/10.1016/j.tourman.2021.104421>
3. Cummings, C., Abkarian, H., Zhou, Y., **Tahlyan, D.**, Smilowitz K. and Mahmassani, H. 2021. Simulating Large-Scale Events as a Network of Heterogeneous Queues: Framework and Application. *Transportation Research Record*. <https://doi.org/10.1177/03611981211035755>
4. Rahul, T.M., Manoj, M., **Tahlyan, D.** and Verma, A., 2021. The Influence of Activities and Socio-Economic / Demographic Factors on the Acceptable Distance in an Indian Scenario. *Transportation in Developing Economies*, 7(3). <https://doi.org/10.1007/s40890-020-00110-3>
5. Verma, A., **Tahlyan, D.** and Bhusari, S., 2020. Agent based simulation model for improving passenger service time at Bangalore airport. *Case Studies on Transport Policy*, 8(1), pp.85-93. <https://doi.org/10.1016/j.cstp.2018.03.001>
6. **Tahlyan, D.**, Pinjari, A. 2020. Performance Evaluation of Choice Set Generation Algorithms for Analyzing Route Choice: Insights from Spatial Aggregation for the BFS-LE Algorithm. *Transportmetrica A: Transportation Science*, 16:3, pp. 1030-1061. <https://doi.org/10.1080/23249935.2020.1725790>
7. Luong, T.D., **Tahlyan, D.** and Pinjari, A.R., 2018. Comprehensive Exploratory Analysis of Truck Route Choice Diversity in Florida. *Transportation Research Record*, 2672(9), pp.152-163. <https://doi.org/10.1177/0361198118784175>
8. Verma, A., Kumari, A., **Tahlyan, D.** and Hosapujari, A.B., 2017. Development of hub and spoke model for improving operational efficiency of bus transit network of Bangalore city. *Case Studies on Transport Policy*, 5(1), pp.71-79. <https://doi.org/10.1016/j.cstp.2016.12.003>

Book Chapters

1. **Tahlyan, D.**, Balusu, S.K., Sheela, P.V., Maness, M. and Pinjari, A.R., 2020. An empirical assessment of the impact of incorporating attitudinal variables on model transferability. In *Mapping the Travel Behavior Genome* (pp. 145-165). Elsevier. <https://doi.org/10.1016/B978-0-12-817340-4.00009-7>

Conference Presentations (*presenter)

1. **Tahlyan, D.***, Said, M., Mahmassani, H., Stathopoulos, A., Walker, J., Shaheen, S. 2022. For Whom Did Telework Not Work During the Pandemic? Understanding the Factors Impacting Telework Satisfaction in the US Using a Multiple Indicator Multiple Cause (MIMIC) Model. 101st Annual Meeting of Transportation Research Board. Washington D.C. [Oral]
2. **Tahlyan, D.***, Said, M., Mahmassani, H., Stathopoulos, A., Walker, J., Shaheen, S. 2022. Latent Transition Analysis of Consumer Spending Behavior and Adaptation Across Online and In-Person Channels Through the Pandemic. 101st Annual Meeting of Transportation Research Board. Washington D.C. [Poster]
3. **Tahlyan, D.***, Stathopoulos, A., Maness, M. 2021. Disentangling Social Capital: Understanding the Effect of Social Support and Social Network Resources on Urban Activity Participation. 3rd Bridging Transportation Researchers (BTR) Conference. Online. [Oral]

4. **Tahlyan, D.**, Stathopoulos, A.*, Maness, M. 2021. Disentangling Social Capital: Understanding the Effect of Social Support and Social Network Resources on Urban Activity Participation. 100th Annual Meeting of Transportation Research Board. Online. [Poster]
5. **Tahlyan, D.***, Kim, E., Mahmassani, H. 2021. Real-Time Short-Term Traffic Forecasting: A Meta-Learner Based Ensemble Framework. 100th Annual Meeting of Transportation Research Board. Online. [Poster]
6. **Tahlyan, D.*** and Mahmassani, H. 2021. Characterizing zero-vehicle households: A double-hurdle problem perspective. 100th Annual Meeting of Transportation Research Board. Online. [Poster]
7. Cummings, C.*, Abkarian, H., Zhou, Y., **Tahlyan, D.**, Smilowitz, K. and Mahmassani, H. 2021. Simulating Large-Scale Events as a Network of Heterogeneous Queues: Framework and Application. 100th Annual Meeting of Transportation Research Board. Online. [Poster]
8. Cummings, C.*, **Tahlyan, D.**, Abkarian, H., and Mahmassani, H. 2021. Understanding Attendee Satisfaction at Planned Special Events: Role of Quality of Transportation Services and Prior Expectations. 100th Annual Meeting of Transportation Research Board. Online. [Poster]
9. **Tahlyan, D.***, Kim, E., and Mahmassani, H. 2020. Real-Time Short-Term Traffic Forecasting: A Meta-Learner based Ensemble Framework. 2nd Bridging Transportation Researchers (BTR) Conference. Online. [Oral]
10. **Tahlyan, D.**, Maness, M.* 2019. Incorporating social capital as a latent variable in discrete choice models. International Choice Modeling Conference (ICMC), Kobe, Japan. [Oral]
11. **Tahlyan, D.**, Sheela, P.V., Maness, M.*, Pinjari, A.R. 2018. Improving the spatial transferability of travel demand forecasting models: An empirical assessment of the impact of incorporating attitudes on model transferability. 15th International Conference on Travel Behavior Research, Santa Barbara. [Oral]
12. **Tahlyan, D.**, Sheela, P.V., Maness, M.*, Pinjari, A.R. 2018. Improving the spatial transferability of travel demand forecasting models: An empirical assessment of the impact of incorporating attitudes on model transferability. 7th International Conference on Innovations in Travel Modeling (ITM), Atlanta. [Oral]
13. **Tahlyan, D.***, Pinjari, A. R., 2018. Performance Evaluation of Choice Set Generation Algorithms for Modeling Truck Route Choice: Insights from Large Streams of Truck-GPS Data. 97th Annual Meeting of Transportation Research Board, Washington D.C. [Poster]
14. Luong, T.D.*, **Tahlyan, D.** and Pinjari, A.R., 2018. Comprehensive Exploratory Analysis of Truck Route Choice Diversity in Florida. 97th Annual Meeting of Transportation Research Board, Washington D.C. [Poster]
15. **Tahlyan, D.***, Pinjari, A. R., 2017. Performance Evaluation of Choice Set Generation Algorithms for Modeling Truck Route Choice: Insights from Large Streams of Truck-GPS Data. 4th Conference of the Transportation Research Group of India, Mumbai, India. [Oral]
16. **Tahlyan, D.***, Pinjari, A. R., 2017. Performance Evaluation of Choice Set Generation Algorithms for Modeling Truck Route Choice: Insights from Large Streams of Truck-GPS Data. 5th Annual UTC Conference for the South-eastern Region, Gainesville, FL. [Oral]

Project Reports

1. Mannering, F., Maness, M., Pinjari, A., Zhang, Y., Alnawmasi, N., Balusu, S.K., Barbour, N., Behnood, A., Eluru, N., Luong, T., Mishra, D., Sheela, P.V. and **Tahlyan, D.**, 2019. *Emerging Econometric and Data Collection Methods for Capturing Attitudinal and Social Factors in Activity, Travel Behavior and Safety Modeling*. Prepared for Center for Teaching Old Models New Tricks (TOMNET), U.S. Department of Transportation University Transportation Center.
2. Mannering, F., Maness, M., Pinjari, A., Zhang, Y., Balusu, S.K., Barbour, N., Menon, N., Sheela, P.V. and **Tahlyan, D.**, 2018. *Investigation of the Role of Attitudinal Factors on the Adoption of Emerging Automated Vehicle and Safety Technologies*. Prepared for Center for Teaching Old Models New Tricks (TOMNET), U.S. Department of Transportation University Transportation Center.

3. **Tahlyan, D.**, Pinjari, A.R., Luong, T. and Ozkul, S., 2017. *Truck Route Choice Modeling using Large Streams of GPS Data*. Report No. CAIT-UTC-NC32. Prepared for Center for Advanced Infrastructure and Transportation (CAIT), U.S. Department of Transportation University Transportation Center.
4. **Tahlyan, D.**, Luong, T.D., Pinjari, A.R. and Ozkul, S., 2017. *Development and Analysis of Truck Route Choice Data for the Tampa Bay Region using GPS Data*. Report BDK25-730-3. Prepared for Florida Department of Transportation.

Master's Thesis

1. **Tahlyan, D.**, 2018. Performance Evaluation of Choice Set Generation Algorithms for Modeling Truck Route Choice: Insights from Large Streams of Truck-GPS Data. *University of South Florida*.

Working Papers and Papers Under Review

1. **Tahlyan, D.**, Stathopoulos, A., Maness, M. Disentangling Social Capital: Understanding the Effect of Social Support and Social Network Resources on Urban Activity Participation.
2. **Tahlyan, D.**, Said, M., Mahmassani, H., Stathopoulos, A., Walker, J., Shaheen, S. Latent Transition Analysis of Consumer Spending Behavior and Adaptation Across Online and In-Person Channels Through the Pandemic.
3. Said, M., **Tahlyan, D.**, Stathopoulos, A., Mahmassani, H., Walker, J., Shaheen, S. In-Person, Pick Up or Delivery? Evolving Patterns of Household Retail Spending Behavior Through the Pandemic.
4. **Tahlyan, D.**, Kim, E., Mahmassani, H. Real-Time Short-Term Traffic Forecasting: A Meta-Learner Based Ensemble Framework.
5. **Tahlyan, D.** and Mahmassani, H. Characterizing zero-vehicle households: A double-hurdle problem perspective.

Invited Talks

1. Disentangling Social Capital: Understanding the Effect of Social Support and Network Resources on Urban Activity Participation. *Indian Institute of Science*. [Virtual | April 09, 2021]

Recognition

Awards & Honors

- 2021 Northwestern University Transportation Center (NUTC) Dissertation Year Fellowship. Amount: \$39,648
- 2021 Transportation & Development Institute (T&DI) Bob Camillone Memorial Scholarship, American Society of Civil Engineers (ASCE) Illinois Section. Amount: \$2,000
- 2018 Walter P. Murphy Fellowship, Northwestern University. (The Walter P. Murphy is an endowed fellowship that enables outstanding students to pursue their first year of graduate study with no teaching or research obligations). Amount: \$52,178
- 2017 2nd Place. USF ITE Student Chapter Transportation Data Visualization Competition. Cash Prize: \$100

Travel Grants

- 2022 Northwestern TGS Conference Travel Grant. For attending 101st Annual Meeting of Transportation Research Board in Washington D.C. Amount: \$600
- 2017 USF Student Government. For attending 4th Conference of Transportation Research Group of India in Mumbai, India. Amount: \$750
- 2017 USF ITE Student Chapter. For attending 5th Annual UTC Conference for the Southeastern Region in Gainesville, FL. Amount: \$150

Media Mentions

- 2021 Northwestern Graduate School Spotlight. <https://www.tgs.northwestern.edu/about/our-people/spotlight/divyakant-tahlyan.html>
- 2021 "Roadwork projects must consider issues of pedestrians, say IISc researchers", Deccan Herald. <https://www.deccanherald.com/city/bengaluru-infrastructure/roadwork-projects-must-consider-issues-of-pedestrians-say-iisc-researchers-942957.html>
- 2020 "Fewer crashes, but more serious injuries in Chicago during pandemic, data shows", WGN-TV. <https://wgntv.com/news/coronavirus/fewer-crashes-but-more-serious-injuries-in-chicago-during-pandemic-data-shows/>. Also read: <https://www.transportation.northwestern.edu/news-events/articles/2020/chicago-mobility-under-covid-19.html>
- 2018 "Boarding at model Kempegowda International Airport will be a breeze", Bangalore Mirror. <https://bangaloremirror.indiatimes.com/bangalore/others/boarding-at-model-kempegowda-international-airport-will-be-a-breeze/articleshow/63671281.cms>
- 2016 "IISc to develop software that could prevent mishaps like the stampede during Kumbh Mela", India Times. <https://www.indiatimes.com/news/india/iisc-to-develop-software-that-could-prevent-mishaps-like-the-stampede-during-kumbh-mela-255592.html>

Research Project Experience

- 2019-now *Graduate Research Assistant*, Northwestern University, Evanston, IL
- Mobility 4.0: Survey design to gather information from public, private and academic stakeholders regarding ongoing autonomous/electric mobility work in the state of Illinois
 - UTC Tele-mobility: E-commerce and tele-work adoption amid a global pandemic, longitudinal tracking survey, latent class and transition analysis
 - Advisory Services for Maricopa Association of Governments (MAG) ABM-DTA Model Integration Phase II: dynamic traffic assignment software performance evaluation
 - EAA Air Show Access Logistics: multi-modal simulation, scenario design, policy recommendations
- 2016 - 2018 *Graduate Research Assistant*, University of South Florida, Tampa, FL
- UTC Teaching Old Models New Tricks (TOMNET): spatial transferability of travel models, choice models and latent variables, survey design, social network analysis
 - Truck Route Choice Modeling using Large Streams of GPS Data: large scale GPS data analysis, discrete choice modeling, route choice set generation
 - Development and Analysis of Truck Route Choice Data for the Tampa Bay Region using GPS Data: heuristic development for raw GPS data to route choice data conversion
- 2015 - 2016 *Junior Research Fellow*, Indian Institute of Science, Bangalore, India
- The Kumbh Mela Experiment: data collection in large scale high density crowd event, personal GPS tracker and video data collection
 - Agent based pedestrian modeling for Bangalore International Airport

Teaching Experience

- 2021 *Teaching Assistant, Economics and Finance for Engineers* | Class Size: 72 | Weekly in-class discussion session (1 hour), weekly office hours (2 hours) | **Median CTEC Score: 5/6** for TA's ability to answer student's questions, preparation for each session, communication of ideas, and interest in teaching the course | Course In-charge: Pablo Durango-Cohen | Northwestern University
- 2019 *Teaching Assistant, Engineering Analysis 3: System Dynamics* | Class Size: 106 | Weekly in-class discussion session (1 hour), weekly office hours (2.5 hours), and weekly homework and exam grading (for 10 weeks in total) | **Median CTEC Score: 5/6** for TA's ability to answer student's questions, preparation for each session, communication of ideas, and interest in teaching the course | Course In-charge: Kyoo-Chul Park | Northwestern University

Mentoring Experience

2021 Xiaowei Bi, Undergraduate Student, Northwestern University [Mobility 4.0 Project]

Professional Service

Peer Review for Journals (total no. of reviews)

Transportation Research Part A: Policy and Practice (13)
IATSS Research (2)
IEEE Access (2)
Transportation Research Part D: Transport and Environment (3)
Journal of Infrastructure Systems (1)
Case Studies on Transport Policy (1)
Journal of Transport Geography (1)
Total = 23

Peer Review for Conferences (year: total no. of reviews)

Transportation Research Board Annual Meeting (2022: 6; 2021: 5, 2020: 2, 2018: 1)
Conference of Transportation Research Group of India (2017: 4)
Bridging Transportation Researchers Conference (2021: 1, 2020: 2)
IEEE International Conference on Intelligent Transportation (2021: 2)
Total = 23

Other Service

Board Member, Northwestern Transportation Club, 2020-2021
Data Steward, Northwestern University Transportation Center, 2020-now
Undergraduate Training & Placement Representative, Department of Civil Engineering, Indian Institute of Technology (BHU), Varanasi, 2014-2015
Joint Secretary, Cine Club, Indian Institute of Technology (BHU), Varanasi, 2013-2014

Memberships

Student Member, Institute of Transportation Engineers, Oct.2021-now
Student Member, American Society of Civil Engineers, 2021-now
Student Member, International Institute of Forecasters, 2021-2022
Student Member, USF Institute of Transportation Engineers (ITE) Student Chapter, 2016-2018