

# KAPIL KUMAR MEENA

PhD IIT Kharagpur | Master's IIT Roorkee

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 Portfolio/Website

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 Google Scholar

## Education

### Indian Institute of Technology Kharagpur

PhD in Transportation Engineering

West Bengal, India

2022–Present

**Advisor:** Prof. Arkopal Goswami | *Thesis: Developing an integrated framework for pollution-aware urban mobility using discrete choice modeling and real-time routing algorithms.*

### Indian Institute of Technology Roorkee

M.Tech in Transportation Engineering

Uttarakhand, India

2019–2021

**Advisor:** Prof. Amit Agarwal | *Thesis: Commuter Exposure to Air Pollution*

### Rajasthan Technical University

B.Tech in Civil Engineering (Honors)

Kota, India

Graduated with Honors | Top 5% of class

2015–2019

## Work Experience

### World Resources Institute (WRI) India

Remote

Research Consultant / Electric Mobility

Nov 2021 – Mar 2022

- Conducted comparative analysis of inhaled pollution dose for commuters (EV vs. ICE), contributing to data-driven policy frameworks.
- Developed recommendations for deploying electric mobility solutions in Tier-2 cities, bridging research and public sector implementation.

### IIT Kharagpur & IIT Roorkee

India

Teaching Assistant

2019–2023

- **Courses:** Multimodal Urban Transport (NPTEL), Intersection Design (CEN 662), Engineering Drawing (CE13001).
- Mentored students in laboratory sessions, simulation tools, and geospatial analysis.

## Patents

[P1]: K. K. Meena and Arkopal Kishore Goswami. "Personalized dynamic route planning system for sustainable urban mobility." (Filed 2025)

## Media Features

**The Hindu (June 2025):** "IIT-KGP app helps commuters pick 'greener' routes on the road."

Feature article on the DRUM web application, highlighting its contribution to sustainable urban mobility and public health. [Read Article]

## Publications

### Journal Articles

[1]: K. K. Meena, A.K. Goswami. *Not all travellers think alike: Segmenting travel behaviour under air pollution exposure using a hybrid latent class and discrete choice approach.* **Transportation Research Record (TRR)**, Accepted, 2026.

[2]: K. K. Meena, A.K. Goswami. *Beyond choice modelling: Bridging econometric theory and deep learning for robust mode choice prediction.* **Transportation Research Part A: Policy and Practice**, Under Review, 2025.

[3]: K. K. Meena, A.K. Singh, A.K. Goswami. *Dynamic route planning for urban green mobility: Development of a web application offering sustainable route options to commuters.* **Transportation Research Record**, 2025. [DOI]

[4]: Sumbhate, A., K. K. Meena, Goswami, A.K. *Assessing air pollution exposure to school children in different modes of transport while commuting to school: A case of Kharagpur, India.* **Journal of the Eastern Asia Society**

**for Transportation Studies**, Vol. 16, 2025. [\[DOI\]](#)

[5]: B.S. Manoj, **K. K. Meena**, H. Panchal, G. Sharma, A.K. Goswami. *Modeling bicycle choice behavior and its potential health impact: Case of first/last mile access to suburban rail*. **International Journal of Sustainable Transportation**, 2025. [\[DOI\]](#)

[6]: B.S. Manoj, **K. K. Meena**, A.K. Goswami. *A prioritization framework to identify key attributes of transit-oriented development (TOD) using multi-criteria decision-making (MCDM) approach: An Indian context*. **Sustainable Transport and Livability**, vol. 2, 2025. [\[DOI\]](#)

[7]: K. K. Meena, A.K. Goswami. *A review of air pollution exposure impacts on travel behaviour and way forward*. **Transport Policy**, Elsevier, 2024. [\[DOI\]](#)

[8]: K. K. Meena, D. Bairwa, A. Agarwal. *A machine learning approach for unraveling the influence of air quality awareness on travel behavior*. **Decision Analytics Journal**, vol. 11, 100459, Elsevier, 2024. [\[DOI\]](#)

[9]: K. K. Meena, R. Taneja, A. Agarwal. *Impact of air pollution on informed decision-making for choice of a travel mode*. **16th International Conference on COMmunication Systems & NETworkS (COMSNETS)**, IEEE, 2024. [\[DOI\]](#)

[10]: K. K. Meena, V. Singh, A. Agarwal. *Perception of commuters towards air quality in Delhi*. **Journal of Transport & Health**, vol. 31, 101643, Elsevier, 2023. [\[DOI\]](#)

[11]: V. Singh, K. K. Meena, A. Agarwal. *Travellers' exposure to air pollution: A systematic review and future directions*. **Urban Climate**, vol. 38, 100901, Elsevier, 2021. [\[DOI\]](#)

#### **Conference Proceedings (Refereed)**

[12]: K. K. Meena, A.K. Goswami. *Not all travellers think alike: Segmenting travel behaviour under air pollution exposure*. **Transportation Research Board (TRB) 2026 Annual Meeting**, Washington, DC.

[13]: C. Gupta, A. Amitabh, **K. K. Meena**, A.K. Goswami. *A hybrid geostatistical and deep learning framework for urban pollutant concentration prediction from sparse data*. **18th International Conference on COMmunication Systems & NETworkS (COMSNETS)**, 2026.

[14]: A. Singh, **K. K. Meena**, G. Sharma, A.K. Goswami. *Developing an integrated walkability score using image-based feature extraction and user preferences*. **Transportation Research Board (TRB) 2026 Annual Meeting**, Washington, DC.

[15]: K. K. Meena, A.K. Singh, A.K. Goswami. *Dynamic route planning for urban green mobility*. **7th International Conference of Transportation Research Group of India (CTRG-2023)**, SVNIT Surat, India, 2025.

[16]: A. Sumbhate, **K. K. Meena**, A.K. Goswami. *Assessing the air pollution exposure to school children... (EASTS)*. **EASTS**, 2025.

[17]: B.S. Manoj, **K. K. Meena**, A.K. Goswami. *A prioritization framework to identify key attributes of transit-oriented development (TOD)*. **1st World Symposium on Sustainable Transport and Livability (WSSTL-2025)**, IISc Bengaluru, 2025.

[18]: R. Kodukulla, **K. K. Meena**, G. Sharma, A.K. Goswami. *Accessibility assessment of urban public transit to key facilities through spatial analysis: A case study of Delhi*. **Transportation Infrastructure Projects: Conception to Execution (TIPCE)**, IIT Roorkee, 2025.

[19]: S. Dasgupta, **K. K. Meena**, D. Majumdar, A.K. Goswami. *Air pollution exposure among Kolkata's auto-rickshaw drivers: PM variability, health risks, and predictive modeling*. **Energies, AEEE India**, 2025.

[20]: A. Sumbhate, **K. K. Meena**, A.K. Goswami. *Breathable modes to school: Assessing the air pollution exposure of travel choices for school children in urban environments*. **52nd Urban Affairs Association (UAA) Annual Meeting**, Nashville, USA, 2024.

[21]: P. Mohanty, **K. K. Meena**, A.K. Goswami. *Analysing user behaviour along dedicated bicycle facilities in an urban environment*. **52nd Urban Affairs Association (UAA) Annual Meeting**, Nashville, USA, 2024.

[22]: B.S. Manoj, **K. K. Meena**, H. Panchal, G. Sharma, A.K. Goswami. *Assessing the willingness to bicycle for the first mile to the Mumbai suburban rail*. **17th International Association for Travel Behaviour Research (IATBR)**, Vienna, Austria, 2024.

[23]: K. K. Meena, A.K. Goswami. *A review of air pollution exposure impacts on travel behaviour and way forward*. **16th World Conference on Transport Research (WCTR)**, Montréal, Canada, 2023.

[24]: K. K. Meena, R. Kumar, A.K. Goswami. *On-road pollution exposure in multiple transport micro-environments*:

## Technical Expertise

<b>Programming &amp; Web:</b>	Python, React JS, Vercel, MongoDB, Git.
<b>Geospatial Tech:</b>	QGIS, Mapbox API, GraphHopper API, Spatial Data Mining.
<b>Analytics &amp; Viz:</b>	Tableau, D3.js, Streamlit, Plotly, SPSS, Minitab.
<b>Modeling &amp; Tools:</b>	Machine Learning, R, Discrete Choice (Biogeme, NLOGIT), VISSIM, LaTeX.

## Major Open Source Contributions

- DRUM Web App** | *React, Python, Vercel* | Pollution-aware dynamic routing for urban commuters.
- India real-time AQI Dashboard** | *Streamlit, Plotly* | Interactive city-level air quality analysis across India.
- Travel Survey Platform** | *React, Node.js* | Stated preference survey tool with real-time monitoring.
- PM<sub>2.5</sub> Forecasting** | *Python, Scikit-Learn* | ML models for next-day pollutant concentration prediction.
- Cycling Dashboard** | *Tableau, Streamlit* | Spatial analytics for cycling and motorcycle mode share.

## Awards and Achievements

- **Best Presentation Award**, Research Scholar Day, IIT Kharagpur.
- **Best Poster Presentation**, Cyber-Physical System Summit (CyPhySS 2023).
- **Institute Travel Grant**, for presenting at TRB Annual Meeting (Washington D.C., USA) and IATBR (Vienna).
- **International Research Exchange Grant**, University of Leeds, UK.
- **GATE Qualified** (Rank 559), Civil Engineering, 2019.
- **MHRD Fellowship** for PhD Research.
- Winner at Regional level in National Children Science Congress (DST, Govt of India).

## Leadership & Service

**Session Chair:** Technical Session Chair, Eastern Asia Society for Transportation Studies (EASTS) Conference, 2025.

**Coordinator:** Overall Coordinator, Annual Conference on Infrastructure (IBSR), IIT Kharagpur (2023 & 2024).

**Reviewing Services**.....

**Journals:** Transport Policy, Transportation Research Part A & D, Research in Transportation Business & Management (RTBM), Transport Research Record (SAGE), Transportation in Developing Economies.

**Memberships:** ASCE T&DI, TRG India, WCTR Society, IATBR.

## Invited Talks & Workshops

- 2025:** Google India | DRUM: Pollution-aware Dynamic Routing for Urban Mobility.
- 2022:** NIT Calicut | Transportation Data Analysis using Real-world Mobility Data.
- 2022:** Swastik Edustart | Data Visualization and Decision Support using Tableau.
- 2020:** IIT Roorkee | Quality Control and Performance Evaluation of Road Infrastructure.
- 2019:** Wonder Cement Ltd. | Practical Aspects of Concrete Mix Design and Quality Assurance.

## Referees

### Prof. Arkopal Kishore Goswami

Associate Professor, Transportation Engineering  
Associate Dean, International Relations  
IIT Kharagpur, India  
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### Prof. Amit Agarwal

Associate Professor, Transportation Engineering  
Associate Dean, Corporate Interaction  
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