

ARMITA KAR

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Education

Ph.D. in Geography

May 2023 (Expected)

The Ohio State University, OH, USA

Dissertation: *Inclusive Accessibility: Integrating person-based hard and soft constraints into transportation planning.*

Committee: Harvey J. Miller (Co-Chair), Huyen T.K. Le (Co-Chair), Ningchuan Xiao, Andre Carrel, and Srinivasan Parthasarathy

Master of Science in Geography

May 2019

The University of Utah, UT, USA

Thesis: *Vehicular Route Modelling for safe evacuation during Tropical Storms and Flooding.*

Advisor: Thomas J. Cova

Bachelor of Urban and Regional Planning

September 2015

Bangladesh University of Engineering and Technology, Dhaka, Bangladesh

Thesis: *Modelling and Analyzing Land Use Dynamics: A Case Study of Dhaka City Corporation.*

Advisor: Sarwar Jahan

Research Experience

Graduate Research Assistant

August 2022 -

Center for Urban and Regional Analysis (CURA), The Ohio State University, OH, USA

Project title: *Built environment influences on reckless driving behavior*

PI: Harvey J. Miller and Ginger Yang (Nationwide Children's Hospital, Columbus, Ohio)

Funded by: Translational Data Analytics Institute (TDAI) at The OSU

Graduate Research Assistant

May 2021 – August 2022

Department of Geography, The Ohio State University, OH, USA

Project: *Estimating exposure and health impacts of traffic-related air pollution during daily travel*

PI: Huyen TK Le

Funded by: Sustainability Institute Pilot Grant, Translational Data Analytics Institute Pilot grant.

GIS Research Assistant

May 2018 – July 2018

The DIGIT Lab, University of Utah, UT, USA

Project: *Producing military standard map series for military training around the world*

Supervisor: Phoebe B. Mcneally

Funded by: Rockwell Collins, Inc.

Teaching and Professional Experience

- Guest Lecturer** (upcoming) November 2022
Department of Geography, The Ohio State University, OH, USA
Course: Our Global Environment ([GEOG 2800](#))
- Guest Lecturer** March 2022
Department of Geography, The Ohio State University, OH, USA
Course: Emerging Topics in GIS ([GEOG 5229](#))
- Graduate Teaching Assistant** August 2020 – May 2021
Department of Geography, The Ohio State University, OH, USA
Courses: Introductory Spatial Data Analysis ([GEOG 4103](#)) and Cartography and Map Design ([GEOG 5200](#))
- Graduate Teaching Assistant** August 2017 – May 2019
Department of Geography, The University of Utah, UT, USA
Courses: Intro to GIS ([GEOG 3100](#)), Intro to Geo-Programming ([GEOG 1180](#)), Geographical Analysis ([GEOG 3020](#)), and World Regional Geography ([GEOG 1300](#))
- Lecturer** October 2015 – August 2017
Department of Urban and Regional Planning, Bangladesh University of Engineering and Technology (BUET), Dhaka, Bangladesh
Courses: GIS and Remote Sensing, Urban Planning Techniques, Site and Area Planning, Presentation and Communication Techniques Studio, Project Evaluation and Management

Publications

Peer-reviewed Journal Articles

- [7] **Kar, A.**, Carrel, A. L., Miller, H. J., & Le, H. T. (2022). Public transit cuts during COVID-19 compound social vulnerability in 22 US cities. *Transportation Research Part D: Transport and Environment*, 110, 103435. <https://doi.org/10.1016/j.trd.2022.103435>.
- [6] **Kar, A.**, Le, H. T., & Miller, H. J. (2021). What is essential travel? Socioeconomic differences in travel demand in Columbus, Ohio, during the COVID-19 lockdown. *Annals of the American Association of Geographers*, 112:4, 1023-1046. DOI: 10.1080/24694452.2021.1956876.
- [5] **Kar, A.**, Motoyama, Y., Carrel, A. L., Miller, H. J., & Le, H. T. (2021). COVID-19 exacerbates unequal food access. *Applied Geography*, 134, 102517. <https://doi.org/10.1016/j.apgeog.2021.102517>.
- [4] Stiles, J., **Kar, A.**, Lee, J., Miller, H. J. (2021). Lower volumes, higher speeds: Changes to crash type, timing, and severity on urban roads from COVID-19 stay-at-home policies. *Transportation Research Record*. <https://doi.org/10.1177/03611981211044454>
- [3] **Kar, A.**, Wan, N., Cova, T.J., Wang, H., & Lizotte, S. L. (2021). Using GIS to understand the influence of hurricane Harvey on spatial access to primary care. *Risk Analysis*. <https://doi.org/10.1111/risa.13806>

- [2] **Kar, A.**, Mashraky, R., Khatun, F., Huq, M. E., Mahmud, S., Islam, I., & Akther, M. S. (2016). Prospects of urban regeneration in Motijheel commercial area of Dhaka City. *Imperial Journal of Interdisciplinary Research (IJIR)*, Vol-2, Issue-10, pg 1435-1444.
- [1] Mahmud, S., Huq, M. E., **Kar, A.**, Mashraky, R., Khatun, F., Islam, I., & Akther, M. S. (2014). Managing development of fringe areas in Dhaka City: Land Readjustment as a technique for sustainable future development ensuring environmental and social justice. *International Journal of Undergraduate Research and Creative Activities*, 6(2), 5.

Manuscripts under Review

- [1] Liu, L., **Kar, A.**, Tokey, A. I., Le, H. T. & Miller, H. J. (under review). Disparities in public transit accessibility and usage by people with mobility disabilities: An evaluation using high-resolution transit data. *Journal of Transport Geography*.

Manuscripts in Progress

- [4] **Kar, A.**, Le, H. T., & Miller, H. J. Inclusive accessibility: Redefining urban mobility from the users' perspectives. (*Scheduled submission: October 2022 to Annals of the American Association of Geographers. Draft available upon request*).
- [3] **Kar, A.**, May, A., Ahmed, A. & Le, H. T. Spatio-temporal modeling of PM2.5 concentration based on land use and human activity pattern. (*Scheduled submission: December 2022*).
- [2] **Kar, A.**, Le, H. T., & Miller, H. J. Inclusive accessibility: Exploring the socioeconomic differences in mobility perceptions. (*Scheduled submission: December 2022*).
- [1] **Kar, A.**, Le, H. T., & Miller, H. J. Inclusive accessibility: Application in need-specific transportation planning. (*Scheduled submission: May 2023*).

Non-peer Reviewed Articles

- [2] **Kar, A.**, Liu, L., Lin, Y. & Xiao, N. (July 23, 2020). Exploring the spatio-temporal dynamics of socio-economic dimensions of the COVID-19 pandemic: An interactive dashboard approach. URL: <https://u.osu.edu/geographyblog/2020/07/23/exploring-spatio-temporal-dynamics/>
- [1] **Kar, A.** & Mashraky, R. (2016). Trends in pro-poor growth and inequality from the perspective of Bangladesh. *Nogor Shoilee*, Vol-7, ISBN-978984-333-9806-2.

Conference Presentations

- [11] **Kar, A.**, Le, H. T. & Miller, H. J. (2023). Inclusive Accessibility: Redefining Urban Mobility from the Users' Perspectives. Annual Meeting of Transportation Research Board (TRB).
- [10] Liu, L., **Kar, A.**, Tokey, A. I., Le, H. T. & Miller, H. J. (2023). Disparities in public transit accessibility and usage by people with mobility disabilities: An evaluation using high-resolution transit data. Annual Meeting of Transportation Research Board (TRB).
- [9] **Kar, A.** (2022). Inclusive accessibility: Understanding the users' perspectives on public transit. Ohio Public Transit Association Conference (OPTA).
- [8] **Kar, A.**, Le, H. T. & Miller, H. J. (2022). Inclusive accessibility: A space-time framework integrating person-based hard and soft constraints. *Student lightning talks*. The University Consortium of Geographic Information Science (UCGIS) Symposium.

- [7] **Kar, A.,** Le, H. T. & Miller, H. J. (2022). Inclusive accessibility: A deep learning-based space-time framework integrating person-based hard and soft constraints. *GeoAI - Intelligent geospatial analytics*. Annual Meeting of the American Association of Geographers (AAG).
- [6] **Kar, A.,** Carrel, A. L., Miller, H. J., & Le, H. T. (2022). Reducing public transit compounds social vulnerabilities during COVID-19. *Transit, accessibility & vulnerability during the COVID-19 pandemic*. Annual Meeting of Transportation Research Board (TRB).
- [5] **Kar, A.,** Carrel, A. L., Miller, H. J., & Le, H. T. (2021). Reducing public transit compounds social vulnerabilities during COVID-19. The OSU Translational Data Analytics Institute (TDAI) fall forum.
- [4] **Kar, A.,** Carrel, A. L., Miller, H. J., & Le, H. T. (2021). Impacts of COVID-19 on public transit service and accessibility to food and health care in US cities. The University Consortium of Geographic Information Science (UCGIS) Symposium.
- [3] **Kar, A.,** Motoyama, Y., Carrel, A. L., Miller, H. J., & Le, H. T. (2021). Impact of COVID-19 on food shopping: A spatio-temporal analysis of changes in travel to supermarket and grocery stores. *Mobility changes and community impacts of COVID-19*. Annual Meeting of Transportation Research Board (TRB).
- [2] **Kar, A.,** Cova, T. (2020). Vehicular route modeling for safe evacuation during tropical storms and flooding. *Jeanne X. Kasperson student paper award*. Annual Meeting of the American Association of Geographers (AAG).
- [1] **Kar, A.,** Cova, T. (2019). Vehicular route modeling for safe evacuation during Tropical Storms and Flooding. *GIScience and hazards in the era of big data*. Annual Meeting of the American Association of Geographers (AAG).

Invited Talks and Interviews

- [4] **Kar, A.** (September 30, 2022). Online surveys and mobility tracking: Pros and cons of using the web. Talk presented at *Reports from the field*, Department of Geography, The Ohio State University.
- [3] **Kar, A.** (February 28, 2022). Socio-economic differences in travel demand in Columbus during COVID-19 lockdown. Talk presented at *Ohio - StreetLight User Group (SLUG)* meeting. <https://www.youtube.com/watch?v=DSiebgLo98k&t=326s>
- [2] **Kar, A.** (September 1, 2021). Pandemic made unequal access to food even worse, study suggests. Interview by *Spotlight on poverty & opportunity*. <https://spotlightonpoverty.org/spotlight-exclusives/pandemic-made-unequal-access-to-food-even-worse-study-suggests/>
- [1] **Kar, A.** Le, H. T. & Miller, H. J. (July 19, 2021). COVID heightened disparities in food access, Ohio State study finds. Radio interview by Evans, N. *WOSU 89.7 NPR News*. <https://news.wosu.org/coronavirus/2021-07-19/covid-heightened-disparities-in-food-access-ohio-state-study-finds>

Media Coverage and Highlights

- [7] Ohio State News (2021): [COVID-19 made unequal access to food worse, study suggests](#)
- [6] Ohio State News (2021): [Low-income people saw smallest drop in travel during COVID-19](#)
- [5] EurekAlert (2021): [Low-income people saw smallest drop in travel during COVID-19](#)
- [4] News Medical (2021): [Study finds more deadly auto crashes during pandemic lockdown](#)

- [3] WebMD (2021): [Pandemic Changed Grocery Shopping for Rich and Poor](#)
 [2] Science Daily (2021): [Deadly auto crashes more likely during pandemic lockdown](#)
 [1] Prothom Alo (2021): [People with low income saw smallest drop in travel during pandemic](#)

Grants and Fellowships

The Rayner Scholarship for Fieldwork Department of Geography, The Ohio State University Amount received \$3,500	Spring 2022
The E. Willard and Ruby S. Miller Scholarship Department of Geography, The Ohio State University Amount received \$4,000	Spring 2022
Student Dissertation Award Sustainability Institute, The Ohio State University Amount received \$5,000	Spring 2021
One-year Graduate Student Fellowship Award Graduate School, The Ohio State University Amount received \$26,000	2019 - 2020

Awards

Best student lightning talk , University Consortium for Geographic Information Science (UCGIS) Symposium, Syracuse, New York	2022
Jeanne X. Kasperson Student Paper Award , Hazards, Risks, and Disasters Specialty Group, American Association of Geographers (AAG).	2020
Prime Minister Gold Medal , the University Grant Commission of Bangladesh.	2015
Best Undergrad Thesis Award , Department of Urban and Regional Planning, Bangladesh University of Engineering and Technology (BUET)	2015
Dean's List Award for securing 1 st position in the class, Bangladesh University of Engineering and Technology (BUET).	2012 - 2015

Service

Journal Reviewer , Cities, Transportation Safety and Environment, Health and Place, Transportation Research Board (TRB), International Journal of Digital Earth, Bridging Transportation Research (BTR) conference, Journal of Bangladesh Institute of Planners.	2020 -
Volunteer , Project Sidewalk, A community for identifying and mapping sidewalk accessibility issues in Columbus using Google Street View images.	2021 -
Contributor , An interactive COVID-19 dashboard, a voluntary project led by Dr. Ningchuan Xiao on behalf of the OSU Department of Geography https://geog-gis.asc.ohio-state.edu/COVID19-Dashboard/	2020

Member, Women Are Creating Knowledge (WACK) (women graduate student professional development organization), Department of Geography, The Ohio State University 2019 -

Vice President, Bangladesh Student Association, University of Utah (BSAUU). 2018 - 2019

Cultural Secretary, Urban and Regional Planning (URP) Students Association of BUET (USAB). 2014-2015

Professional Affiliations

- American Association of Geographers (AAG)
- Transportation Research Board (TRB)
- University Consortium for Geographic Information Science (UCGIS)
- Bangladesh Institute of Planners (BIP)

Technical Skills

Programming Skills	Python, R Programming, NetLogo, HTML, Javascript
GIS Skills	ArcGIS Desktop, ArcGIS Pro, ArcGIS Online, WebGIS, IDRISI, Erdas Imagine
Other Software Skill	Autocad, SPSS, MS Project, Adobe Illustrator
Methods	Machine learning: Random forest, support vector machine, logistic regression, neural networks, and few-shot learning techniques. Statistical models: Bayesian hierarchical logistic regression model, multilevel binary logistic model, and Hurdle model. Spatial and space-time analytics: Spatially weighted interaction models, Space-time regression kriging, Space-time accessibility. Network analytics and Optimization. Data collection methods: Online and smartphone app-based survey, GPS tracking, big data.