

AMRITA GOSWAMY (PhD, RSP1)

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[Google Scholar](#)

EDUCATION

- **PhD, Civil Engineering (Transportation).** 24th August 2015 – 10th August 2019, **Iowa State University, USA.** GPA: 3.81/4, **Minor: Statistics.**
Topic: Evaluation of Work Zone Safety Using the SHRP2 Naturalistic Driving Study Data.
- **M.S, Civil Engineering (Transportation).** 26th August 2013- 8th August 2015, **Iowa State University, USA.**
GPA: 3.96/4.
- **B. Tech, Civil Engineering,** July 2006-July 2010, **Meghnad Saha Institute of Technology, West Bengal, India**

WORK EXPERIENCE

Intelligent Transportation Engineer, AECOM. 18th March 2024- Present

Post-Doctoral Associate, University of Central Florida, Smart and Safe Transportation Lab. 15th June 2021 to 14th Aug 2022

- o Research related to **pedestrian safety, safety surrogate measures**, pedestrian crosswalk countermeasures, crash data analysis, traffic injury severity, etc. using various data sources (camera, probe, historical crash, and roadway data). Tasks include using **ESRI ArcGIS, data visualization techniques, data analysis using advanced statistical methods**, computer vision technology, machine learning).
- o **Reviewing and writing research papers**, grants, and proposals
- o **Mentoring, supervising**, and working with **students** enrolled in **PhD and MS program**
- o Preparing task deliverables for **Florida DOT and other projects**

Transportation Planner, Snyder & Associate, 9th September 2019- 8th April 2021

- o Travel modeling, transportation planning, operational and safety analyses
- o Technical writing for projects and proposals
- o Complete field observation, inspection, and **data collection**
- o Perform **traffic, safety and GIS analyses** and design using Synchro, Transmodeler, Sidra and Microstation.
- o Prepare memoranda, project specifications and engineering cost opinions.

Graduate Research Assistant, Institute of Transportation, Iowa State University, 13th Jan 2014-10th August 2019.

- o Literature review, project planning and develop workflow.
- o Identify, monitor, and assess study sites using historical and real-time data.
- o Spatial data analysis using ArcGIS and Google Earth
- o **Data visualization** and analysis using **statistical methodologies.**
- o Perform detailed data collection and reduction from various sources.
- o Manage and manipulate **large data sets** followed by data visualization and statistical analysis.
- o Evaluate the completeness and **quality of collected data.**

- o Develop statistical models, **network analysis**, and Interpret results.
- o Develop technical reports and papers and present research findings at conferences.

Graduate Teaching Assistant, Chemistry Department, Iowa State University, 26th Aug 2013- 21st Dec 2013.

- o **Recitation and grading** for Chem178 General Chemistry

Structural Design Engineer, Development Consultant Private Limited, Kolkata, India, Nov 2010- July 2013.

- o Analyze, design and detail **steel buildings for power plants**.
- o Consultation for **steel fabrication drawings**.
- o Present **project results in client meetings**.

RESEARCH INTERESTS

Transportation safety, pedestrian and bicycle safety, safety surrogate measures, driver behavior and distraction, teen and adult driving behavior, accident analysis, spatial and temporal factors, statistical methods, human factors, urban planning, intelligent transportation systems and applications.

HONORS AND AWARDS

- **2015 Best Paper Award** (Area: Safety), Transportation Data Competition, Transportation Research Board.
- Won **First Place** in Construction/Environmental/Transportation Engineering area at the **5th Annual CCEE Research Showcase and Poster Competition**, December 2015, Iowa State University.
- Won **Second Place** in the **MOVITE Student Paper Competition** (Thomas J. Seburn Award), 2015.
- Won **Second place** in the **poster competition** held at the MOVITE Fall Meeting 2015.
- Member of **Tau Beta Pi** (Engineering Honor Society) since April 2015.

RELEVANT COURSES (AT ISU)

- **Traffic Engineering Courses:** CE 551- Urban Transportation Planning and Modelling, CE 553-**Traffic Engineering**, CE 556- **Transportation Data Analysis**, CE 558- Transportation System Development and Management, CE 552- Traffic Safety, Operations, and Maintenance.
- **Statistical Courses:** STAT 401/STAT 587- **Statistical Methods** for Researchers, STAT 407- Methods of **Multivariate Analysis**, Stat 447/STAT 588- **Statistical Theory** for Research, STAT 551- Time Series Analysis, STAT 406- **Spatial Statistical Analysis**, STAT 579- **An Introduction to R**.
- CRP 551- Introduction to **Geographic Information Systems**.

COMPUTER SKILLS

- **Advanced Excel, Tableau**, Microsoft Office.
- Windows, Linux
- Data visualization: Power Bi,
- **Spatial Software:** ESRI ArcGIS, QGIS, Google Earth pro,
- **Statistical Software:** R statistical modelling (count data, random effects, ordered logit/probit, big data analysis, data visualization, data preparation, machine learning with R), **JMP, SPSS, NLOGIT5 (LIMDEP)**.
- **Machine learning** fundamentals in python.

- **Traffic Simulation/analysis Software: Synchro, Vissim, Transmodeler, Microstation, Petra Pro, Sidra, CountCam, PCWarrants.**
- **HSM, HCM, MUTCD, AASHTO Green Book.**
- **ITSM: Interactive Time Series Modelling Software**
- **Computer Vision Basics**

JOURNAL PUBLICATIONS

1. Anwari, N., M. Abdel-Aty, **A. Goswamy**, O. Zheng. “Investigating Safety Surrogate Measures at Midblock Pedestrian Crossings Using Non-linear Multivariate Models with Roadside Camera Data”. **Accident Analysis and Prevention**. Volume 192, 2023, 107233, ISSN 0001-4575, <https://doi.org/10.1016/j.aap.2023.107233>.
2. Islam, Z., M. Abdel-Aty, **A. Goswamy**, Amr Abdelrauf, Ou Zheng. Effect of signal timing on vehicles near misses at intersections. **Scientific Reports** 13, 9065 (2023). <https://doi.org/10.1038/s41598-023-36106-3>
3. **Goswamy, A.**, M. Abdel-Aty, Z. Islam. “Factors Affecting Injury Severity at Pedestrian Crossing Locations with Rectangular RAPID Flashing Beacons (RRFB) using XGBoost and Random Parameters Discrete Outcome Models. **Accident Analysis and Prevention**.” 2023. <https://doi.org/10.1016/j.aap.2022.106937>
4. Oneyear, N., Hallmark, S., **Goswamy, A.**, Thapa, R. and Basulto-Elias, G. “Analysis of Stopping Behavior at Rural T-Intersections Using Naturalistic Driving Study Data.” *Journal of Transportation Technologies*, 13, pp. 208-221, 2023. doi: 10.4236/jtts.2023.132010.
5. **Goswamy, A.**, M. Abdel-Aty. “Safety Effectiveness of Rectangular Rapid Flashing Beacons (RRFB) Pedestrian Enhancement”. **Journal of Transportation Engineering**. 2023. DOI: 10.1061/JTEPBS/TEENG-7507
6. Hallmark S., G. E. Basulto, N. Oneyear, **A. Goswamy**, R. Thapa, S. Chrysler, O. Smadi. “Evaluation of the Impact of Work Zone Traffic Control Devices on Change in Speed Using the SHRP 2 Naturalistic Driving Study.” **Transportation Research Record: Journal of the Transportation Research Board**, 2022. <https://doi.org/10.1177/03611981231163789>
7. S. Hallmark, **A. Goswamy**, T. Litteral, N. Hawkins, O. Smadi, S. Knickerbocker. “Evaluation of Sequential Dynamic Chevron Warning Systems on Rural Two-Lane Curves.” *Journal of the Transportation Research Board*. 2020.
8. R. Thapa, S. Hallmark, O. Smadi & **A. Goswamy** (2019). Assessing driving behavior upstream of work zones by detecting response points in speed profile: A naturalistic driving study, **Traffic Injury Prevention**, 20:8, 854-859, DOI: 10.1080/15389588.2019.1663348
9. **Goswamy, A.**, S. Hallmark, G.E. Basulto, and M., Pawlovich. “Safety Evaluation of Stop-Sign Mounted Beacons - A Cross-Sectional Study.” *Journal of Transportation Technologies*, 2018. 10.4236/jtts.2019.91006
10. **Goswamy, A.**, S. Hallmark, T. Litteral, and M., Pawlovich. “Safety Evaluation of Destination Lighting Treatment at Stop-Controlled Cross Intersections.” *Transportation Research Record: Journal of the Transportation Research Board*, Vol. 2672, Issue 16, 2018. <https://doi.org/10.1177/0361198118774747>
11. E. Rista, **A. Goswamy**, B. Wang, T. Barrette, R. Hamzeie, B. Russo, G. Bou-Saab, P. T. Savolainen. “Examining the Safety Impacts of Narrow Lane Widths on Urban/Suburban Arterials.” *Journal of Transportation Safety & Security*, 2016. Volume 10, Issue 3, pp. 213-228. <https://doi.org/10.1080/19439962.2016.1273291>

RESEARCH REPORTS

- Task 1 Deliverable, BDV24 TWO 977-42. Evaluation of Midblock Pedestrian Signals (MPS). Mohamed A. Abdel-Aty, Ph.D., P.E., Qing Cai, Ph.D., Amrita Goswamy, Ph.D.
- Task 2 Deliverable, BDV24 TWO 977-42. Evaluation of Midblock Pedestrian Signals (MPS) Mohamed A. Abdel-Aty, Ph.D., P.E. Amrita Goswamy, Ph.D. Nafis Anwari, Ou Zheng, Zhenyu Pan, Shile Zhang.
- S.L. Hallmark, A. Goswamy, T. Litteral, M. Pawlovich. “Safety Evaluation of Destination Lighting at Stop- Controlled Cross Intersections.” Midwest Transportation Center. 2018-02-02.
- FHWA Request to Experiment 4(09)-79(E) Midblock Pedestrian Signals (MPS) – Semi-Annual Progress Report #1 and #2
- S.L. Hallmark, A. Goswamy. “Crash Modification Factors for Chevrons in Iowa.” Midwest Transportation Center. 2018-02-02.
- “Risk Factor Identification.” InTrans Project 15-551. 2016/12.
- S.L. Hallmark, A. Goswamy, M. Pawlovich. “Safety Effectiveness of Stop-Sign Beacons - A Cross-Sectional Study.” Midwest Transportation Center. 2018-02-02.
- S. L. Hallmark, A. Goswamy, M. Pawlovich. “Safety Edge Crash Modification Factors: Tech Brief.” Midwest Transportation Center. 2016-08-01

PEER REVIEWED CONFERENCE PROCEEDINGS (WITH SEVERAL CO-AUTHORS)

1. Anwari N., Abdel-Aty M., **Goswamy A.**, Zheng O. (2023) Investigating Pedestrian Safety Surrogate Measures at Midblock RRFB and PHB Crossings using Roadside Camera Data, Transportation Research Board Annual Meeting, Paper No. TRBAM-23-02037, January 2023.
2. Mukherjee D., **Goswamy A.**, Abdel-Aty M. (2023) A Comprehensive Analysis of Pedestrian Fatalities and Severe Injury Crashes in Florida, Transportation Research Board Annual Meeting, Paper No. TRBAM-23-02917, January 2023.
3. Islam Z., Abdel-Aty M., **Goswamy A.**, AbdelRaouf A., Zheng O. (2023) Modelling the Relationship Between Post Encroachment Time and Signal Timings Using UAV Video data, Transportation Research Board Annual Meeting, Paper No. TRBAM-23-02799, January 2023.
4. **Goswamy, A.**, Abdel-Aty, M., Mahmoud, N., Cai, Q. et al. 2021. “Safety Effectiveness of Rectangular Rapid Flashing Beacons.” Presented at Transportation Research Board Annual Meeting 2022.
5. Hallmark, S., Basulto-Elias, G., Oneyear, N., **Goswamy, A.**, Thapa, R., Chrysler, S. T., Smadi, O. “Evaluation of the Impact of Work Zone Traffic Control Devices on Change in Speed Using the SHRP 2 Naturalistic Driving Study.” Presented at Transportation Research Board Annual Meeting 2022.
6. S. Hallmark, **A. Goswamy**, T. Litteral, N. Hawkins, O. Smadi, S. Knickerbocker. “Evaluation of Sequential Dynamic Chevron Warning Systems on Rural Two-Lane Curves.” Presented at the 99th Transportation Research Board Annual Meeting, 2020.
7. **Goswamy et al.** “Identification of Risk Factors Affecting Crash Frequency and Severity on Horizontal Curves along High-Speed Divided Highways.” Presented at Roadway Safety and Simulation 2019.
8. **Goswamy**, S. Hallmark, T. Litteral. “Impact of Destination Lighting and Other Factors on Driver’s Injury Severity of Nighttime Crashes at Rural Stop-Controlled Cross-Intersections Using Proportional Odds Model.” Presented at the 98th Transportation Research Board Annual Meeting, 2019.
9. **Goswamy**, S. Hallmark, and M., Pawlovich. “An Iowa Study for Safety Effectiveness of Stop-signs with Beacon Using Propensity Core Matching.” Presented at IRF R2T Expo & Conference, November 2018.
10. **Goswamy**, S. Hallmark, O. Smadi and S. Chrysler. “Modeling Driver Work-zone Speed on 4 lane Divided Highways.” Presented at 7th International Naturalistic Driving Research Symposium. Virginia Tech Transportation Institute, Virginia, 2018.
11. **Goswamy**, S. Hallmark, T. Litteral, and M., Pawlovich. “Safety Evaluation of Destination Lighting Treatment at Stop-Controlled Cross Intersections.” Presented at 97th Transportation Research Board Annual Meeting, 2018.

12. **Goswamy**, S. Hallmark, B. Wang, and M. Pawlovich. “Empirical Bayes Before and After Method to Evaluate Edge Treatment.” Presented at 97th Transportation Research Board Annual Meeting, 2018.
13. **Goswamy**, S. Hallmark, M. Pawlovich. “Safety Effectiveness of Beacons on Stop Sign - A Cross-Sectional Study.” Presented at Road Safety and Simulation International Conference, The Hague, Netherlands, 2017.
14. **Goswamy**. “Safety Evaluation of Safety Edge Treatment in Iowa.” Presented at TRB First International Roadside Safety Conference titled *Safer Roads, Saving Lives, Saving Money*, San Francisco, California, 2017.
15. **Goswamy**, M. Morshedi, T. Messacar, T. and Savolainen, P. “Identification of Risk Factors Affecting Crash Frequency and Severity on Horizontal Curves along High-Speed Divided Highways”. Presented at 96th Transportation Research Board Annual Meeting, 2017.
16. N. Parvin, M. Morshedi, and **A. Goswamy**. “Comparison of Calibrated Highway Safety Manual Model and Jurisdiction Specific Safety Performance Functions for Rural Two-Lane Highways.” Presented at 96th Transportation Research Board Annual Meeting, 2017.
17. **Goswamy**, Hallmark S., and Smadi, O. “Identification of Work-Zones from SHRP 2 Naturalistic Driving Study (NDS) Database and the Roadway Information (RID) Database for Future Analysis of Work-Zone Safety.” Presented at 5th International Naturalistic Driving Research Symposium, Virginia Tech Transportation Institute, Virginia, 2016.

INVITED TALK

- “Driver Behavior in Work Zones Using Naturalistic Driving Study Data: A Transportation Safety Study.” Department of Neurological Sciences Mind & Brain Health, University of Nebraska Medical Center. May 2020.
- “Transportation Safety: Driver Behavior in Work Zones, Pedestrian Crossing and other promising crash countermeasures.” Department of Civil Engineering. Indian Institute of Science. Bengaluru, India. 28th March 2022.
- Research Seminar (Job Talk) at North Dakota State University. December 1st, 2023.
- Research Talk at UMTRI CMISST, University of Michigan, Ann Arbor. Monday, March 11, 2023.
- Research Talk for “The Latest and Greatest: Let’s Talk About CMFs, Bicycle Treatments, and RRFBS”. Tuesday, December 17, 2024.

REVIEWER

Transportation Research Record.
Journal of Transportation Engineering, Part A: Systems.

RESEARCH SUPERVISION

PhD Students: Nafis Anwari (Midblock Pedestrian Safety Evaluation)

Research Paper: Investigating surrogate safety measures at midblock pedestrian crossings using multivariate models with roadside camera data

Undergraduate Student: Kadeem Cuffy

OTHER CONFERENCE PROCEEDINGS

- **A. Goswamy.** “Drivers Speed Change for Work Zones Features on Four Lane Divided Highways.” The 2019 Mid-Continent Transportation Research Symposium. August 2015. Iowa State University.
- **A. Goswamy.** “Identification of Risk Factors for Horizontal Curves in Iowa.” The 2016 Mid-Continent Transportation Research Symposium. October 2016. Madison Wisconsin.
- **A. Goswamy, S. Hallmark, B. Wang.** “An Observational Before and After Safety Evaluation Study for Road Segments Provided with Safety Edge in Iowa.” The 2015 Mid-Continent Transportation Research Symposium. August 2015. Iowa State University.

PROJECTS

- Safety Effectiveness of Mid-Block Pedestrian Signal (MPS) Countermeasure, Sponsor: FDOT
- Safety effectiveness of Rectangular Rapid Flashing Beacons (RRFBs) and Pedestrian Hybrid Beacons (PHB), Sponsor: FDOT
- Traffic Impact Studies for Highway Corridors and Intersections in Iowa.
- Traffic Engineering Assistance Program Analysis.
- Land use and corridor studies: Trip Generation and Distribution, traffic forecasting.
- Traffic Signal Design and Optimization.
- Corridor, Existing Intersection, Roundabout analysis using Synchro, Transmodeler, etc.
- Work Zone Related Safety Evaluation Using the SHRP 2 Naturalistic Driving Study Data. Sponsor: Minnesota DOT.
- Evaluating the relationship between the driver and roadway to address rural intersection safety using the SHRP2 naturalistic driving study data
- Guidelines on Use of Temporary Barriers in Work Zones
- An Intelligent Video-Based End of Queue Warning System for Work Zones
- Identification of Risk Factors for Horizontal Curves in Iowa. Sponsor: Iowa DOT
- Safety Evaluation of Beacons on Stop Sign. Sponsor: Iowa DOT
- Safety Evaluation of Sequential Dynamic Chevrons. Sponsor: Iowa DOT
- Development of Crash Modification Factors for Curve Chevrons. Sponsor: Iowa DOT
- Development of Crash Modification Factors for Safety Edge. Sponsor: Iowa DOT
- Road Diet: Analysis of Bike and Pedestrian Crashes. Sponsor: LEIDOS

OTHER ACTIVITIES

- **Reviewer:** Journal of Transportation Engineering, Transportation Research Board.
- **WTS (Women in Transportation Studies) Iowa Chapter** membership committee.
- **Vice President**, ISU Chapter of Transportation Student Association. Summer 2015-Summer 2016.
- **Recruitment Head**, ISU Chapter of Transportation Student Association. Spring 2014-Spring 2015.
- Won Certificates and Medals for **singing competitions** and 100m, 200m and 400m **sprints**.