Ruijie "Rebecca" Bian, PhD, PE
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BIO

Dr. Bian is a research assistant professor working at Louisiana Transportation Research Center (LTRC). As the Center's planning and multi-modal research manager, she focuses on supporting multi-modal transportation planning, design, and operation through research with the knowledge of transportation engineering and data science. Her enthusiasm and contributions in enhancing multi-modal transportation research, education, and outreach lead her to serve as a member of the Louisiana Complete Streets Advisory Council, which has 12 members in total advising the State in promoting multi-modal transportation. Dr. Bian is also well recognized by her research works in analyzing/modeling hurricane evacuation behavior and human mobility in extreme weather. She has served as an active member of the Transportation Research Board (TRB) Standing Committee on Disaster Response, Emergency Evacuations, and Business Continuity (AMR 20) since 2018.

Dr. Bian has served as the Principal Investigator on research projects with a total funding of over a million to date. Her current projects are funded by Louisiana Department of Transportation and Development (DOTD) and the National Academies of Science, Engineering, and Medicine (NASEM). She is one of the five Early-Career Research Fellows selected by NASEM in 2022 with a focus on Human Health and Community Resilience.

Her research interests include but are not limited to:
- travel demand modeling and forecasting
- hurricane evacuation behavior modeling
- human mobility analysis and modeling
- active transportation planning for pedestrians, bicyclists, and transit users

She is proficient in analyzing different types of data with education from experimental statistics and experience from research projects:
- small (e.g., survey responses)
- BIG (e.g., data passively collected by mobile devices)
- atypical (e.g., images and videos)

She is proficient in using different software, platforms, and programming languages:
- Transportation planning: TransCAD+GISDK and Cube
- Traffic simulation: TransModeler+GISDK
- Data analytics and management: R, LIMDEP/NLOGIT, SAS, SPSS, and SQL
- Programming: Python, Matlab, C/C++, C#, VB, and VB.NET
- Spatial analysis: ArcGIS

EDUCATION

2017   Ph.D., Civil Engineering-Transportation, Louisiana State University, U.S.
2013   M.Eng., Transportation Planning and Management, Tongji University, China
2010   B.Eng., Traffic and Transportation, Shandong University of Sci. and Tech., China

PROFESSIONAL HISTORY

8/2022-Present	Research Assistant Professor, Department of Civil and Environmental Engineering, Louisiana State University
1/2021-Present	Assistant Professor – Research, Louisiana Transportation Research Center
4/2020-1/2021	Research Associate IV, Louisiana Transportation Research Center
2/2019-4/2020	Postdoctoral Research Fellow, Clemson University
1/2018-2/2019	Postdoctoral Researcher, Louisiana State University
8/2013-12/2017	Graduate Research Assistant, Louisiana State University
9/2010-5/2013	Graduate Research Assistant, Tongji University

FUNDED RESEARCH PROJECTS

(as Principal Investigator or co-Principal Investigator; Total funding to date is $1,011,227)

2022-2024	<u>PI</u>: Enhance Multi-Modal Transportation Access with the Knowledge of Data Science. Early-Career Research Fellowship (ECRF) – Human Health and Community Resilience track from the Gulf Research Program (GRP). National Academy of Sciences, Engineering, and Medicine (**NASEM**)
2022-2024	<u>PI</u>: Testing the Hurricane Evacuation Modeling Package (HEMP). Louisiana Department of Transportation and Development (**DOTD**)
2022-2023	<u>PI</u>: Analyzing Human Mobility for Active Transportation Planning in Louisiana. Louisiana Department of Transportation and Development (**DOTD**)
2021-2022	<u>PI</u>: Evaluate the Impacts of Complete Streets Policy in Louisiana. Louisiana Department of Transportation and Development (**DOTD**)
2020-2022	<u>PI/co-PI</u>: Determining the True Cost and Benefit for Collecting and Maintaining Non-Road and Non-Bridge Asset Data. Louisiana Department of Transportation and Development (**DOTD**)
2020-2023	<u>PI/co-PI</u>: Assessing the Economic Benefits of the Transportation Infrastructure Model for Development (TIMED) Program – Phase 2 & Phase 3. Louisiana Department of Transportation and Development (**DOTD**)
2018	<u>PI</u>: A Systematic Assessment on Pedestrian Walking Environment for Future Planning. Louisiana Department of Transportation and Development (**DOTD**)

OTHER RESEARCH PROJECT EXPERIENCE

(as a Research Fellow or Graduate Research Assistant)

2019 - 2020	CRISP: Coordinated, Behaviorally Aware Recovery for Transportation and Power Disruptions. National Science Foundation (**NSF**) (PI: Pamela Murray-Tuite)
2019 - 2020	Multi-Perspective Evacuation Performance Measurement. National Science Foundation (**NSF**) (PI: Pamela Murray-Tuite)
2019 - 2020	Hazards SEES: Bridging Information, Uncertainty, and Decision-Making in Hurricanes using an Interdisciplinary Perspective. National Science Foundation (**NSF**) (PI: Pamela Murray-Tuite)
2018 - 2019	ITE Trip Generation Modification Factors for Louisiana. Louisiana Department of Transportation and Development (**DOTD**) (PI: Chester Wilmot)
2017 - 2019	Hurricane Evacuation Modeling Package. Louisiana Department of Transportation and Development (**DOTD**) (PI: Chester Wilmot)
2016 - 2017	Development of a Mode Choice Model to Estimate Evacuation Transit Demand. Louisiana Department of Transportation and Development (**DOTD**) (PI: Chester Wilmot)
2013 - 2016	Identifying Local Transit Resources for Evacuation. Louisiana Department of Transportation and Development (**DOTD**) (PI: Chester Wilmot)

PUBLICATIONS

(*) denote graduate student advisees; (**) denote undergrad advisees (h-index = 5; i10-index = 3)

Journal Articles

J14 **Bian, R.**, P. Murray-Tuite, J. Trainor, P. Edara, and K. Triantis. *Sequentially Modeling Household Accommodation, Destination, and Departure Time Choices*. International Journal of Mass Emergencies and Disasters. 2022.

J13 **Bian, R.**, P. Murray-Tuite, and J. Li. *Investigating COVID-19 Induced Taxi and For-Hire Vehicle Ridership Disparities*. Journal of Urban Planning and Development, Vol. 148, No. 4, Dec. 2022, pp. 1–18. (https://doi.org/10.1061/(ASCE)UP.1943-5444.0000887)

J12 **Bian, R.**, P. Murray-Tuite, P. Edara, and K. Triantis. *Modeling the Impact of Traffic Management Strategies on Households' Stated Evacuation Decisions*. Progress in Disaster Science, Vol. 15, Oct. 2022. (https://doi.org/10.1016/j.pdisas.2022.100246)

J11 **Bian, R.** and T. Tolford. *Evaluating the Impacts of the Complete Streets Policy in Louisiana: A Review of Practices and Projects in the Last 10 Years*. Transportation Research Record: Journal of the Transportation Research Board, Aug. 2022. (https://doi.org/10.1177/03611981221115726)

J10 **Bian, R.**, P. Murray-Tuite, P. Edara, and K. Triantis. *Household Hurricane Evacuation Plan Adaptation in Response to Estimated Travel Delay Provided Prior to Departure*. Natural Hazards Review, Vol. 23, No. 3, Aug. 2022. (https://doi.org/10.1061/(ASCE)NH.1527-6996.0000557)

J9 Alawadi, R., P. Murray-Tuite, and **R. Bian**. *Determinants of Departure Timing for Hurricane Matthew and Anticipated Changes*. Natural Hazards Review, Vol. 23, No. 2, May. 2022. (https://doi.org/10.1061/(ASCE)NH.1527-6996.0000553)

J8 **Bian, R.**, P. Murray-Tuite, and B. Wolshon. *Predicting Grocery Store Visits during the Early Outbreak of COVID-19 with Machine Learning*. Transportation Research Record: Journal of the Transportation Research Board, Sep. 2021. (https://doi.org/10.1177/03611981211043538)

J7 **Bian, R.** and C. G. Wilmot. *Observing Transient Behavior during Hurricane Sandy through Passively Collected Data*. Transportation Research Part D: Transport and Environment, Vol. 77, Dec. 2019, pp. 606-614. (https://doi.org/10.1016/j.trd.2019.09.025)

J6 **Bian, R.**, C. G. Wilmot, and L. Wang. *Estimating Spatio-Temporal Variations of Taxi Ridership Caused by Hurricanes Irene and Sandy: A Case Study of New York City*. Transportation Research Part D: Transport and Environment, Vol. 77, Dec. 2019, pp. 627-638. (https://doi.org/10.1016/j.trd.2019.10.009)

J5 **Bian, R.**, C. G. Wilmot, R. Gudishala, and E. J. Baker. *Modeling Household-Level Hurricane Evacuation Mode and Destination Type Joint Choice Using Data from Multiple Post-Storm Behavioral Surveys*. Transportation Research Part C: Emerging Technologies, Vol. 99, Feb. 2019, pp. 130-143. (https://doi.org/10.1016/j.trc.2019.01.009)

J4 **Bian, R.** and C. G. Wilmot. *An Analysis on Transit Pick-up Points for Vulnerable People during Hurricane Evacuation: A Case Study of New Orleans*. International Journal of Disaster Risk Reduction, Vol. 31, Oct. 2018, pp. 1143–1151. (https://doi.org/10.1016/j.ijdrr.2017.07.005)

J3 Li, W., D. Cheng, **R. Bian**, S. Ishak, and O. A. Osman. *Accounting for Travel-Time Reliability, Trip Purpose and Departure-Time Choice in an Agent-Based Dynamic Toll Pricing Approach*. IET Intelligent Transport Systems, Vol. 10, 2017. (https://doi.org/10.1049/iet-its.2017.0004)

J2 **Bian, R.** and C. G. Wilmot. *Measuring the Vulnerability of Disadvantaged Populations during Hurricane Evacuation*. Natural Hazards, Vol. 85, No. 2, Jan. 2017, pp. 691–707. (https://doi.org/10.1007/s11069-016-2598-0)

J1 **Bian, R.** and C. G. Wilmot. *Spatiotemporal Population Distribution Method for Emergency Evacuation*. Transportation Research Record: Journal of the Transportation Research Board, Vol. 2532, No. 2532, Sep. 2015, pp. 99–106. (https://doi.org/10.3141/2532-12)

Under Review (external/internal)

E1 **Bian, R.**, P. Murray-Tuite, J. Trainor, P. Edara, and K. Triantis. *Modeling Evacuees' Intended Responses to a Phased Hurricane Evacuation Order*. Transportation Research Part A: Policy and Practice

E2   Adjei, E., P. Murray-Tuite, and **R. Bian**. *Households' Evacuation-Related First Decisions*. Risk Analysis

E3   **Bian, R.**, P. Murray-Tuite, K. Wernstedt, and S. Guikema. *Out-of-Home Activity Adaptations of Commuters and Non-Workers to the Power Outage at Home Induced by Hurricane Irma*. Journal of Transportation Engineering, Part A: Systems

E4   **Bian, R.**, T. Tolford, S. Liu, and S. Gangireddy*. *Lessons Learned from Evaluating Complete Streets Project Outcomes with Emerging Data Sources*. Transportation Planning and Technology

E5   Tolford, T. and **R. Bian**. *Complete Streets Policy in Louisiana: Insights from a Decade of State DOT Implementation*. Case Studies on Transport Policy

E6   **Bian, R.**, K. Smiley, S. Parr, J. Shen, and P. Murray-Tuite. *Analyzing Gas Station Visits during Hurricane Ida: Implications for Future Fuel Supply*. Transportation Research Record. (**Best Paper Award**)

E7   Gangireddy, S.*, **R. Bian**, T. Tolford, and H. Hasan. *Incorporating the Concept of Complete Streets into Pavement Preservation*. ASCE Conference Proceedings of the International Conference on Transportation & Development (ICTD)

Conference Proceedings

(Not duplicated with other publications)

C3   **Bian, R.**, C. G. Wilmot, and R. Gudishala. (2018) Estimating Activities of Taxi Riders and Investigating the Impact of Hurricane Sandy. Transportation Research Board 97th Annual Meeting, Washington, D.C.

C2   Gudishala, R. and **R. Bian**. (2018) Rational Choice or Herd Behavior: An Analysis of Hurricane Evacuation Decision Making in Hurricane Sandy. Transportation Research Board 97th Annual Meeting, Washington, D.C.

C1   **Bian, R.**, R. Gudishala, C. G. Wilmot, and E. J. Baker. (2017) Modeling Household-Level Joint Evacuation Mode and Destination Type Choice using Hurricane Irene Data. Transportation Research Board 96th Annual Meeting, Washington, D.C.

Reports

R5   Stopher P. and **R. Bian**, Determining the True Cost and Benefit for Collecting and Maintaining Non-Road and Non-Bridge Asset Data, Baton Rouge, LA, 2022. (85 pages)

R4   Stopher P., C. G. Wilmot, and **R. Bian**, Assessing the Economic Benefits of the Transportation Infrastructure Model for Development (TIMED) Program – Phase 2, Baton Rouge, LA, 2022. (102 pages)

R3   Wilmot, C. G., R. Gudishala, **R. Bian**, D. Kolasani, S. Adhakaree, and H. Davis III, Hurricane Evacuation Modeling Package, Baton Rouge, LA, 2021. (117 pages)

R2   Wilmot, C. G., **R. Bian**, and R. Gudishala, Development of a Mode Choice Model to Estimate Evacuation Transit Demand, Baton Rouge, LA, 2017. (72 pages)

R1   Wilmot, C. G., **R. Bian**, M. Greensword, and A. Shams. Identifying Local Transit Resources for Evacuation. Baton Rouge, LA, 2015. (126 pages)

PRESENTATIONS

(*) denote grad advisees; (**) denote undergrad advisees; underlines mark presenters

Posters

P10   Bian, R. and T. Tolford. Evaluating the Impacts of the Complete Streets Policy in Louisiana: A Review of Practices and Projects in the Last 10 Years. Transportation Research Board 101st Annual Meeting, Washington, D.C. 2022

P9   Doulabi, S., C. Wilmot, P. Stopher, and A. Antipova. Contextual Adjustment of the ITE Trip Generation Rates for Small and Medium Urban Areas in Louisiana. Transportation Research Board 101st Annual Meeting, Washington, D.C. 2022 (Bian presented on behalf of the authors)

P8   Bian, R., P. Murray-Tuite, and B. Wolshon. Analyzing and Modeling Grocery Shopping Activities during the Early Outbreak of COVID-19. Transportation Research Board 100th Annual Meeting, (Virtual). 2021

P7 Wang, X., J. Li, and R. Bian. Commuting Behavior Changes in Post COVID-19 Period: A Case Study in Shanghai. Transportation Research Board 100th Annual Meeting, (Virtual). 2021

P6 Triantis, K., P. Murray-Tuite, J. Trainor, P. Edara, R. Bian, T. Daychman, T. Topcu, T. Williams, and D. Chang. Evacuation Performance Measurement from Interdisciplinary Perspectives. The 44th Natural Hazards Workshop. Broomfield, CO. 2019

P5 Bian, R., C. G. Wilmot, and R. Gudishala. Estimating Activities of Taxi Riders and Investigating the Impact of Hurricane Sandy. Transportation Research Board 97th Annual Meeting, Washington, D.C. 2018

P4 Bian, R., C. G. Wilmot, L. Bu, and L. Wang. Estimating Spatio-Temporal Variations of Taxi Ridership Caused by Hurricanes in New York City. Transportation Research Board 97th Annual Meeting, Washington, D.C. 2018

P3 Gudishala, R. and R. Bian. Rational Choice or Herd Behavior: An Analysis of Hurricane Evacuation Decision Making in Hurricane Sandy. Transportation Research Board 97th Annual Meeting, Washington, D.C. 2018

P2 Bian, R. and C. G. Wilmot. GIS-based Method to Assess the Vulnerability of Disadvantaged Populations during Hurricane Evacuation from New Orleans. Transportation Research Board 95th Annual Meeting, Washington, D.C. 2016

P1 Bian, R. and C. G. Wilmot. A Spatio-Temporal Population Distribution Method for Emergency Evacuation: A Case Study of New Orleans. Transportation Research Board 94th Annual Meeting, Washington, D.C. 2015

Lectures

L13 Bian, R. Analyze Crashes during Extreme Weather with Spatial Data Science. American Planning Association (APA) Louisiana 2022 Conference, New Orleans, LA. 2022

L12 Gangireddy, S.*, R. Bian, T. Tolford, and H. Hasan. Incorporating the Concept of Complete Streets into Pavement Preservation. American Planning Association (APA) Louisiana 2022 Conference, New Orleans, LA. 2022

L11 Bian, R and T. Tolford. Evaluating the Impacts of the Complete Streets Policy in Louisiana. American Planning Association (APA) Louisiana 2022 Conference, New Orleans, LA. 2022

L10 Bian, R. and T. Tolford. Evaluating the Impacts of the Complete Streets Policy in Louisiana. Louisiana Transportation Conference (Virtual). 2022

L9 Alawadi, R., R. Bian, P. Murray-Tuite, S. V. Ukkusuri, and Y. Ge. A Zero Truncated Poisson Model of the Number of Household Vehicles Used to Evacuate from Hurricane Matthew. Transportation Research Board 99th Annual Meeting, Washington, D.C. 2020.

L8 Bian, R., P. Murray-Tuite, K. Triantis, T. Topcu, J. Trainor, and P. Edara. Modeling Household Evacuate/Stay Decisions with Evacuation Perception. The 44th Natural Hazards Workshop. Broomfield, CO. 2019

L7 Bian, R. and C. G. Wilmot. Observing Transient Behavior during Hurricane Sandy through Passively Collected Data. Transportation Research Board 98th Annual Meeting, Washington, D.C. 2019

L6 Wilmot, C. G., R. Bian, A. Shams, and R. Gudishala. Harnessing Local Transit Resources during an Emergency. The 11th International Conference on Transport Survey Method, Quebec, Canada, 2017

L5 Bian, R. and C. G. Wilmot. A Combination of Research on Evacuating by Transit during Hurricanes. National Hurricane Conference, New Orleans, LA. 2017

L4 Bian, R., R. Gudishala, C. G. Wilmot, and E. J. Baker. Modeling Household-Level Joint Evacuation Mode and Destination Type Choice using Hurricane Irene Data. Transportation Research Board 96th Annual Meeting, Washington, D.C. 2017

L3 Bian, R. and C. G. Wilmot. An Analysis on Transit Pick-up Points for Disadvantaged People during Hurricane Evacuation: A Case Study of New Orleans. National Evacuation Conference, New Orleans, LA. 2016

L2   <u>Bian, R.</u> and C. G. Wilmot. GIS-based Method to Assess the Vulnerability of Disadvantaged Populations during Hurricane Evacuation from New Orleans. Dam Safety National Conference, New Orleans, LA. 2015

L1   <u>Bian, R.</u> and C. G. Wilmot. A Spatio-Temporal Population Distribution Method for Emergency Evacuation: A Case Study of New Orleans. Louisiana Academy of Sciences, Thibodaux, LA. 2015

PROFESSIONAL MEMBERSHIP

- Transportation Research Board
  - Standing Committee on Disaster Response, Emergency Evacuations, and Business Continuity, AMR 20 (Young member from 2018 to 2021; Member since 2021 with paper review coordination, conference session presiding, and committee liaison tasks)
  - Standing Committee on Extreme Weather and Climate Change Adaptation, AMR 50 (Committee liaison to AMR 20)
  - Standing Committee on Transportation Demand Forecasting, AEP50 (Reviewer; Paper review handler)
  - Standing Committee on Community Resources and Impacts, AME 80 (Reviewer)
  - Standing Committee on Transportation and Public Health, AME70 (Reviewer)
- Louisiana Complete Streets Advisory Council (Member since 2021 serving as the research arm)
- Women's Transportation Seminar (Great Baton Rouge Chapter; Member since 2014)
- American Planning Association (Louisiana Chapter; Member since 2022)

REVIEWING EXPERIENCE

Journal/Conference (since 2018; only listed top 5 journals with more reviews)	**Count**
TOTAL	**112**
Transportation Research Board Annual Meeting	33*
Transportation Research Part D: Transport and Environment	14
Transportation Research Part C: Emerging Technologies	12
Journal of Urban Planning and Development	10
Natural Hazards	9
(*) not include paper review coordination work for committees.	
Problem statement (since 2018)	**Count**
TOTAL	**47**
Transportation Consortium of South-Central States (Tran-SET; Region 6 UTC)	9
Louisiana Transportation Research Center (LTRC)	9
National Cooperative Highway Research Program (NCHRP)	29

TEACHING EXPERIENCE

CE 7610 Online: Traffic Engineering Operations and Control. LSU	Fall 2021, Fall 2022
CE 7641: Urban Transportation Planning Models. LSU (2 guest lectures)	Fall 2020
CE 7641 - Lab: Urban Transportation Planning Models. LSU (13 lectures)	Fall 2020
CE 8930: Transportation Risk and Evacuation. Clemson University (Course development and 2 guest lectures)	Fall 2019

STUDENT ADVISORY

Name	Degree	Role
Sirisha Gangireddy	MS (2023)	Co-advising; Committee member (Chair: H. Hassan)
James D Fuller	MS (2023)	Committee member (Chair: B. Wolshon)
Armaghan Monshizadegan	MS (2024)	Co-advising; Committee member (Chair: H. Hassan)
Manika Rana Bhat	MS (2024)	Co-advising; Committee member (Chair: H. Hassan)
Margaret Blouin	BS (2023)	Providing training through Scholarship
Morgan Domingue	BS (2024)	Providing training through Scholarship

STEM SERVICE

Panel Service

9/2022-Present	Serve as a panel member for "NCHRP 08-164: Institutional Integration of Active Transportation" (D08164)

Editorial Service

2/2022	Initiate the Call for Papers on *Big Data Analytics in Transportation* "Special Issue: Transport Resilience and Emergency Management in the Era of Big Data"
2021, 2022	Coordinate paper review and serve on the Best Paper Award Review Sub-Committee for the Transportation Research Board Annual Meeting (AMR 20: Standing Committee on Disaster Response, Emergency Evacuations, and Business Continuity)

Conference Service

11/2022	Propose one session to the 2023 National Hurricane Conference (NHC): "Energy Supply and Demand during Storms" (New Orleans, LA)
10/2022	Propose one session to the 86th Annual Educational Conference & Exhibition (AEC 2023), National Environmental Health Association (NEHA): "Louisiana's Wicked Climate Future: A Cautionary Tale About Hurricanes, Floods and Heat, Oh My!" (New Orleans, LA)
7/2022	Propose (and accepted) two sessions to the American Planning Association (APA) Louisiana 2022 Conference: 1) "Human Health and Community Resilience in Louisiana: Cutting-Edge Research from Fellows Funded by the National Academies" and 2) "Active Transportation Research Roundup: Recent and Ongoing Projects at Louisiana Transportation Research Center" (New Orleans, LA)
8/2022-1/2023	Scenario designer and facilitator for a workshop in the 102nd Transportation Research Board (TRB) Annual Meeting: "Tell Me Your Story: Interviewing Techniques for Data Collection and Analysis" (Washington DC)
1/2022	Preside over TRB Lectern Session "1084 - Ready for Action: Making the Leap from Research to Practice for Emergency Response" (Washington DC)
3/2021, 4/2022	Serve as a reviewer and referee for the Civil and Environmental Engineering (CEE) Graduate Student Research Conference (Baton Rouge, LA)
6/2020-12/2020	Design scenarios for the 6th Annual Resiliency Simulation and Workshop in the 100th Transportation Research Board (TRB) Annual Meeting: "A Disaster during Lockdown" (Washington DC)

K-12 Education Service

10/2017-11/2018	Serve as a STEM education volunteer at Knock Knock Children's Museum (Baton Rouge, LA)
10/2017	Serve as a STEM education volunteer for Girl Scouts: "Believe in Girls" (BIG) Event (New Orleans, LA)