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Research Associate
 Center for Transportation Research (CTR)
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TECHNICAL INTERESTS

Large-scale Transportation Infrastructure Management, Resilience Analysis, Cutting-edge Interdisciplinary, Disaster Response Management, Risk Assessment, Traffic Safety Analysis, Asset Valuation, Emerging Technologies, Optimization Technique, Innovative Project Financing Mechanisms and Delivery Methods

EDUCATION

01/2014-08/2017 **Ph.D.** in Civil Engineering. The University of Texas at Austin. Austin, Texas, USA
 08/2015-05/2017 **Portfolio in Applied Statistical Modeling.** Department of Statistics and Data Science. The University of Texas at Austin. Austin, Texas, USA
 08/2012-12/2013 **M.S.** in Civil Engineering. The University of Texas at Austin. Austin, Texas, USA
 08/2010-07/2012 **Bachelor of Law.** Tsinghua University. Beijing, China
 08/2008-07/2012 **B.S.** in Civil Engineering. Tsinghua University. Beijing, China

CURRENT AND PREVIOUS ACADEMIC POSITIONS

09/2024-Present **Research Engineer**
 Center for Transportation Research, The University of Texas at Austin, Austin, Tx, USA
 04/2020-08/2024 **Research Associate**
 Center for Transportation Research, The University of Texas at Austin, Austin, Tx, USA
 09/2017-03/2020 **Postdoctoral Research Fellow**
 Center for Transportation Research, The University of Texas at Austin, Austin, Tx, USA

HONORS, AWARDS, AND RECOGNITIONS

01/2024 **Best Researcher Award.** International Research Awards on Civil and Environmental Engineering. Certificate Identification Number: 1939.
 11/2023 **UT Staff Council Professional Development Grant.** The University of Texas at Austin, USA
 10/2023 **Best Paper Award Winner.** Transportation Research Board (TRB) Standing Committee on Disaster Response, Emergency Evacuations, and Business Continuity (AMR20), Washington, D.C., USA
 03/2023 Paper featured as **Editor's Choice** by *Journal of Infrastructure Systems*, American Society of Civil Engineers (ASCE)
 06/2021 **Excellent Paper Award Winner.** The 4th World Transport Convention (WTC), Xi'an, China
 01/2017 **IACIP Outstanding Graduate Student Award.** International Association of Chinese Infrastructure Professionals (IACIP), Washington, D.C., USA
 01/2017 **Second Prize.** Poster competition of the 7th IACIP Annual Workshop, Washington, D.C., USA
 10/2016 **Kolodzey Travel Grant.** The University of Texas at Austin, USA
 08/2016 **Walter L. and Reta Mae Moore Graduate Fellowship.** The University of Texas at Austin, USA
 01/2016 **Professional Development Award.** The University of Texas at Austin, USA
 12/2015 **Capital Area Section-TexITE Scholarship.** Texas Institute of Transportation Engineers, Texas, USA
 09/2015 **Robert Herman Endowed Scholarship.** The University of Texas at Austin, USA
 05/2015 **Best Paper Award Winner.** The 9th International Conference on Managing Pavement Assets. Alexandria, Virginia, USA
 01/2015 **Second Prize.** Poster competition of the 5th IACIP Annual Workshop, Washington, D.C., USA
 12/2011 **First Class Scholarship for Science and Technology Academic.** Tsinghua University, Beijing, China

RESEARCH PROJECTS AND INTERAGENCY CONTRACTS

09/2024-Present **Field Operations Manager.** Interagency Contract: Technical Assistance for the Austin District. *Active. Total contract budget: \$16,882,550. Sponsored by Texas Department of Transportation, Austin District.*

- Task 1 Researcher** (\$1,589,652.23): Technical Support for Major Corridors Analyses

- **Task 3 Co-leader** (\$1,377,715.30): Provide Technical Support in District Safety Analysis
 - **Task 5 Leader** (\$1,152,712.40): Knowledge Transfer and Support for the Austin District
 - **Task 6 Leader** (\$2,138,293.05): Provide Technical Support in Development of a Comprehensive Operational & Maintenance Master Planning Tool
- 09/2024-Present **Co-Investigator.** Project 0-7204: Synthesis: Prevention of Unauthorized Freeway Exits and Entrances.
Active. \$64,963.52. Sponsored by Texas Department of Transportation
- 09/2023-Present **Task Leader.** Interagency Contract: Technology Transfer and Technical Support Services for the San Antonio District, Transportation Planning and Development Section
Active. \$298,495.46. Sponsored by Texas Department of Transportation, San Antonio District
- 11/2023-08/2024 **Key Researcher.** Interagency Contract: House Bill 1, GAA Art V, Rider 51. Texas Department of Public Safety Driver License Division Study
Active. \$496,661.96. Sponsored by Texas Department of Public Safety
- 09/2023-Present **Co-Investigator.** Project 0-7182: Determine Effectiveness of Construction Management Plans.
Active. \$299,302.47. Sponsored by Texas Department of Transportation
- 09/2022-08/2024 **Principal Investigator.** Project 0-7137: Assessment of Austin, El Paso, and San Antonio HERO Incident Management Programs.
Active. \$393,182.94. Sponsored by Texas Department of Transportation
- 09/2020-08/2024 **Field Operations Manager.** Interagency Contract: Technical Assistance for the Austin District. *Completed. \$7,672,318.83. Sponsored by Texas Department of Transportation, Austin District*
- Task 1 **Researcher** (\$1,418,451.92): Technical Support for Major Corridors Analyses
 - Task 3 **Co-leader** (\$1,528,675.77): Provide Technical Support in District Safety Analysis
 - Task 5 **Leader** (\$616,245.95): Knowledge Transfer and Support for the Austin District
 - Task 6 (\$2,367,177.72): Provide Technical Support in Development of a Comprehensive Operational & Maintenance Master Planning Tool
 - **09/2020 – 12/2022: Task 6 Co-leader**
 - **01/2023 – 08/2024: Task 6 Leader**
- 09/2021-01/2024 **Co-Investigator.** Project 0-7123: Define a Statewide Plan for a Sustainable Real-Time Travel Time Network for Texas Hurricane Evacuations and Safe Citizen Return.
Completed. \$399,868.11. Sponsored by Texas Department of Transportation
- 04/2020-05/2022 **Co-Investigator.** Project 0-7050: Improving the Identification of Curve-Related Crashes in the Crash Records Information System (CRIS)
Completed. \$209,041. Sponsored by Texas Department of Transportation
- 04/2020-01/2022 **Key Researcher.** Interagency Contract: Technical Assistance to Professional Engineering Procurement Services (PEPS) Scope of Work Library
Completed. \$515,931.89. Sponsored by Texas Department of Transportation
- 01/2020-12/2021 **Co-Investigator.** Project 0-7055: Create a Resilient Port System in Texas: Assessing and Mitigating Extreme Weather Events
Completed. \$307,158. Sponsored by Texas Department of Transportation
- 07/2016-09/2021 **Invited International Expert Advisor.** Research and Application of VFM Quantitated Assessment Method for China’s PPP Model
Completed. Invited by Dr. Wenjuan Wang from Capital University of Economics and Business, Beijing, China
- 10/2019-12/2020 **Key Researcher.** Interagency Contract: Technical Assistance to Texas Department of Public Safety Driver License Division
Completed. \$976,008. Sponsored by Texas Department of Public Safety
- 09/2019-10/2020 **Co-Investigator.** Interagency Contract: Conversion Plan to Digital Library
Completed. \$466,254. Sponsored by Texas Department of Transportation
- 09/2017-08/2020 **Co-Leader.** Interagency Contract. Task 2: Provide Technical Assistance in Freeway Studies
Completed. \$360,000. Sponsored by Texas Department of Transportation, Austin District

- 09/2017-08/2020 **Co-Leader.** Interagency Contract. Task 4: Technical Assistance in Incorporating Data and Processes in Austin District Safety Analysis
Completed. \$450,000. Sponsored by Texas Department of Transportation, Austin District
- 09/2017-08/2020 **Co-Leader.** Interagency Contract. Task 7: Technology Transfer and Support for the Austin District
Completed. \$300,000. Sponsored by Texas Department of Transportation, Austin District
- 09/2017-08/2020 **Co-Leader.** Interagency Contract. Task 8: Support in Development of a Comprehensive Operational and Maintenance Master Planning Tool
Completed. \$825,000. Sponsored by Texas Department of Transportation, Austin District
- 09/2017-08/2020 **Co-Leader.** Interagency Contract. Task 9: Support the Austin District Environmental Section in Data Collection and Evaluation
Completed. \$450,000. Sponsored by Texas Department of Transportation, Austin District
- 02/2018-10/2019 **Co-Investigator.** Interagency Contract: Economic and Safety Considerations: Motor Vehicle Safety Inspections for Passenger Vehicles in Texas
Completed. \$151,002. Sponsored by Texas Department of Public Safety
- 01/2018-10/2019 **Co-Investigator.** Interagency Contract: Evaluating Safety and Economic Impacts of Texas Travel Information Centers
Completed. \$93,325. Sponsored by Texas Department of Transportation
- 08/2013-08/2017 **Key Researcher.** Interagency Contract: Support in Developing the Austin District's 4-year Plan
Completed. \$395,000. Sponsored by Texas Department of Transportation, Austin District

REFEREED JOURNAL PUBLICATIONS

*Indicating current or former students I guided or worked with.

- Wang, X., Y. Li, and **Z. Han**, "Urban Pavement Network Reliability: A Triangular Fuzzy Number and Dual-network Methodology." Manuscript submitted to *International Journal of Pavement Engineering (IJPE)*. Under review.
- Pan, S.*, K. Bathgate*, **Z. Han**, J. Sun, and Z. Zhang. "Modeling Interdependent Infrastructure System Vulnerability with Imprecise Information Using Two Fuzzy Inference Systems." *Transportation Research Record: Journal of the Transportation Research Board*. DOI: 10.1177/03611981241270153/ID: 23-01208.
- Lu, X., K. Bathgate*, J. Robbennolt, J. Sun, S. Pan*, **Z. Han**, and S. Boyles. "Understanding the Utilization of Real-Time Traffic Information during Hurricane Evacuations in Texas." *Transportation Research Record: Journal of the Transportation Research Board*. p.03611981241242777. **Best Paper Award Winner. Standing Committee on Disaster Response, Emergency Evacuations, and Business Continuity (AMR20)**. DOI: 10.1177/03611981241242777/ID: 23-01098.
- Yang, X.*, **Z. Han**, M. Murphy, and Z. Zhang. "A Methodological Procedure for Evaluating Curve-Related Misclassifications in Motor Vehicle Crash Databases." *Research in Transportation Economics* (2024). Vol. 103, p.101389. ISSN 0739-8859. DOI: <https://doi.org/10.1016/j.retrec.2023.101389>.
- Sun, J.*, **Z. Han**, and Z. Zhang. "Resource Allocation Framework for Optimizing Long-term Infrastructure Network Resilience." *Journal of Infrastructure Systems* (2023). Vol. 29, Issue 1 (March 2023). Published online: December 30, 2022. DOI: 10.1061/JITSE4.ISENG-2083. **Featured as Editor's Choice**.
- Gao, L., **Z. Han**, and Y. Chen. "Deep Learning-based Pavement Performance Modeling using Multiple Distress Indicators and Road Work History." *Journal of Transportation Engineering: Part B, Pavements* (2023). 149(1), p. 04022061. Published online on October 22, 2022. DOI: 10.1061/JPEODX.0000405.
- Politis, S.S.*, Z. Zhang, **Z. Han**, J.J. Hasenbein, and M. Arellano. Stochastic Analysis of Network-Level Bridge Maintenance Needs Using Latin Hypercube Sampling. *ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems, Part A: Civil Engineering* (2020), 7(1), p.04020049. DOI:10.1061/AJRUA6.0001099.
- Hoang, T.*, **Z. Han**, and Z. Zhang. "Integrating Economic and Utility Concepts for A Comprehensive Bridge Valuation Model". *Transportation Research Record: Journal of the Transportation Research Board* (2020). 2674(9), pp.26-37. DOI: 10.1177/0361198120926509.
- Wang, X., Y. Gou, **Z. Han**, and Z. Zhang. "Pavement Network Reliability: A Dual-network Based on Fuzzy Set Methodology" *IET Intelligent Transport Systems* (2019), 13(3), pp.475-484. DOI: 10.1049/iet-its.2018.5191

- Han, Z.**, J. D. Porrás-Alvarado, C. Stone, and Z. Zhang. "Incorporating Uncertainties into Determination of Optimal Pavement Preventive Maintenance Intervals." *Transportmetrica A: Transport Science* (2018): 1-21. ISSN: 2324-9935. DOI: 10.1080/23249935.2018.1433730
- Han, Z.**, J. D. Porrás-Alvarado, J. Sun, and Z. Zhang. "Monte Carlo Simulation Based Assessment of Risks Associated with PPP Investments in Toll Highway Infrastructure." *Transportation Research Record: Journal of the Transportation Research Board*, No. 2670 (2017), 59-67. DOI: 10.3141/2670-08
- Porrás-Alvarado, J. D., M. R. Murphy, H. Wu, **Z. Han**, and Z. Zhang. "Analytical Hierarchy Process to Improve Project Prioritization in the Austin District." *Transportation Research Record: Journal of the Transportation Research Board*. No. 2613 (2016). DOI: 10.3141/2613-04.
- Porrás-Alvarado, J.D., **Z. Han**, MD Al-Amin, Z. Zhang. "Fairness and Efficiency Considerations in Performance-based Cross-Asset Resource Allocation." *Transportation Research Record: Journal of the Transportation Research Board*, No. 2596 (2016). DOI:10.3141/2596-03
- Qiu, S., **Z. Han**, W. Wang, K. Wang, and Z. Zhang. "Application of AASHTO PP69-10 & PP70-10 Based Continuous Rutting Depth Data." *International Journal of Pavement Research and Technology* 9, no. 1 (2016): 37-48. <http://dx.doi.org/10.1016/j.ijprt.2016.01.003>
- Wang, X., Z. Zhang, J. Chen, and **Z. Han**. "A Generalized Life-Cycle Cost Model for Rail Transit: Making Decisions Between At-grade Mode and Underground Mode." *International Journal of Rail Transportation Vol. 4*, no. 1 (2016): 37-54. DOI: 10.1080/23248378.2015.1015221.
- Wu, H., **Z. Han**, M. R. Murphy, and Z. Zhang. "Empirical Bayes Before-After Study on Safety Effect of Narrow Pavement Widening Projects in Texas." *Transportation Research Record: Journal of the Transportation Research Board* 2515 (2015): 63-69. DOI: 10.3141/2515-09
- Porrás-Alvarado, J. D., D. Peters, **Z. Han**, and Z. Zhang. "Novel Utility-Based Methodological Framework for Valuation of Road Infrastructure." *Transportation Research Record: Journal of the Transportation Research Board* 2529 (2015): 37-45. DOI: 10.3141/2529-04
- Wang, X., Z. Zhang, J. Chen, and **Z. Han**. "Methodologies for Assessing Costs of Rail Transit Systems Based on Small Sample Data." *International Journal of Rail Transportation*, 2015, Vol. 3, No. 2, pp. 81-96, Taylor & Francis Group. DOI: 10.1080/23248378.2015.1015222

REFEREED CONFERENCE PROCEEDINGS

*Indicating current or former students I guided or worked with.

- Sun, J., **Z. Han**, and Z. Zhang. "Quantifying the Benefits of Autonomous Vehicles to Roadway Infrastructure Efficiency". *2024 IEEE Forum on Integrated and Sustainable Transportation Systems (FISTS)*, February 26-28, 2024, Riverside, California, USA.
- Hasan, M.*, **Z. Han**, and R. Machemehl. "Development of Crash Database Parsing Tools to Support the Highway Safety Improvement Program in Texas". *International Conference on Transportation & Development (ICTD)*, American Society of Civil Engineers (ASCE). June 6 to June 9, 2021. Austin, Texas, USA.
- Wang, X., Y. Zhou, **Z. Han**, and Z. Zhang. "A Spatial Approach to Resource Allocation for Post-Earthquake Restoration of Urban Roadway Networks." *Transportation Research Board 95th Annual Meeting*, no. 16-3388. Jan. 10 to Jan. 14, 2016. Washington, D. C.
- Porrás-Alvarado, J. D., **Z. Han**, Z. Zhang, and C. M. Walton. "An Integrated Approach to the Finance, Maintenance, and Operation of Highway Infrastructure." *In 2nd International Conference on Public-Private Partnerships*. May 26 to May 29, 2015. Austin, Texas, U.S.A.
- Porrás-Alvarado, J. D., **Z. Han**, and Z. Zhang. "A Fair Division Approach to Performance-based Cross-Asset Resource Allocation." *In 9th International Conference on Managing Pavement Assets (ICMPA)*. Hosted by Virginia Tech Transportation Institute (VTTI). May 18 to May 21, 2015. **Winner, the Best Paper Award**. Alexandria, VA.
- Wang, X., Z. Zhang, and **Z. Han**. "Pavement Network Reliability: Triangular Fuzzy Number and Transited Network Methodology." *Transportation Research Board 94th Annual Meeting*, no. 15-5801. Jan. 11 to Jan. 15, 2015. Washington, D. C.
- Wang, X., Z. Zhang, and **Z. Han**. "Network-Level M&R Budget Planning Through Reliability of the Pavement Network." *Transportation Research Board 94th Annual Meeting*, no. 15-4515. Jan. 11 to Jan. 15, 2015. Washington, D. C.
- Han, Z.**, C. Stone, and Z. Zhang. "Reliability-based Approach to Optimizing Pavement Preventive Maintenance Cycles Using the Method of Moments." *Transportation Research Board 93rd Annual Meeting*, no. 14-3066. Jan. 12 to Jan. 16, 2014. Washington, D. C.

TECHNICAL REPORTS

*Indicating current or former students I guided or worked with.

- Bathgate, K*, L. Xu, K. Jiang*, J. Sun, J. Robbennolt, S. Pan*, **Z. Han**, M. Murphy, S. Boyles, Z. Zhang, and R. Machemehl. *Define a Statewide Plan for a Sustainable Real-Time Travel Time Network for Texas Hurricane Evacuations and Safe Citizen Return*. FHWA/TX-24/0-7123-1. Texas Department of Transportation.
- Yang, X.*, **Z. Han**, M. Murphy, and Z. Zhang. *Development of An Automated Methodological Procedure to Improve the Identification of Curve-Related Crashes in the Crash Records Information System (CRIS) – Final Report*. Report No. FHWA/TX-22/0-7050-1. Texas Department of Transportation.
- Bathgate, K.*, J. Sun*, S. Pan*, S. Balakrishnan*, Z. Zhang, M. Murphy, **Z. Han**, and L. Loftus-Otway (2022). *Creating a Resilient Port System in Texas: Assessing and Mitigating Extreme Weather Events – Final Report*. Report No. FHWA/TX-22/0-7055-1. Texas Department of Transportation. Published May 2022.
- Murphy, M., S. Grenburg, D. Hazlett, L. Loftus-Otway, Teleki Consulting, S. Gallun, J. Guttman, M. Surka, **Z. Han**, M. Kammer-Kerwick, K. Takasaki, R. Machemehl, C. Baumanis, M. Brown, S. Pan*, S. Balakrishnan*, T. Lim, A. Markman, and Z. Zhang. “*Management, Operating Structure, Efficiencies, and Opportunities and Challenges of Transferring the Driver License Program*.” (2020). Center for Transportation Research. The University of Texas at Austin.
- Murphy, M., **Z. Han**, N. Jiang, D. Hazlett, A. S. Ahsan*, A. Cooper*, C. Baumanis, Z. Zhang, R. Machemehl, and R. Harrison. “*Evaluating Safety and Economic Impacts of Texas Travel Information Centers*.” (2018). Center for Transportation Research. The University of Texas at Austin. Transport Research International Documentation (TRID). Report number 01686002.
- Murphy, M., N. Jiang, **Z. Han**, D. Hazlett, C. Baumanis, A. S. Ahsan*, R. Machemehl, and Z. Zhang. “*Economic and Safety Considerations: Motor Vehicle Safety Inspections for Passenger Vehicles in Texas*.” (2018). Center for Transportation Research. The University of Texas at Austin. Transport Research International Documentation (TRID). Report number 01691602.
- Zhang, Z., **Z. Han**, and Z. Zhang, Center for Resilient Infrastructure and Smart Cities (CRISC), “*Methodologies for Assessing Infrastructure Projects under Public-Private Partnerships: From Project Financing to Maintenance Scheduling*”. (2017). Center for Resilient Infrastructure and Smart Cities (CRISC). Center for Transportation Research. The University of Texas at Austin.
- Zhang, Z., **Z. Han**, and Z. Zhang, Center for Resilient Infrastructure and Smart Cities (CRISC), “*Procedures and Resources for Analyses Related to Public-Private Partnerships*.” (2017). Center for Resilient Infrastructure and Smart Cities (CRISC). Center for Transportation Research. The University of Texas at Austin.

BOOKS

- Co-Author.** Qiu, S., W. Wang, W., Wang, J. Wang, W. Hu, **Z. Han**. *Machine Vision-based Detection, Maintenance, and Management of Cracks for Transportation Infrastructures*. Published by Central South University Press. July 2021. Published in Chinese.
- Deputy Editor.** Qiu, S., Z. Wang, Y. Chen, B. Xue, and **Z. Han**. *Operation and Management of City Underground Utility Tunnel*. Published by China Architecture & Building Press. August 2019. ISBN: 9787112236763. Published in Chinese.

INVITED TALKS AND TECHNICAL PRESENTATIONS

*Indicating current or former students I guided or worked with.

- Han, Z.** and Z. Zhang. “Genetic Algorithm Based Optimization of Capital Structure in Design-Build-Finance-Operate-Maintain Toll Highway Infrastructures.” *Accepted to be presented at Transportation Research Board 104th Annual Meeting*, no. TRBAM-25-06093. Jan. 5 to Jan. 9, 2025. Washington, D. C.
- Hasan, M.*, **Z. Han**, S. Pan*, J. Sun, and R. Machemehl. “Development of Austin Safety Analytical Program (ASAP) Tool to Support the Highway Safety Improvement Program (HSIP) in Texas”. *Center for Transportation Research (CTR) Annual Symposium*. April 3, 2024. Austin, Texas, USA.
- Xu, Y., **Z. Han**, M. Murphy, and A. Bhasin. “Identifying Crash Hotspots and Prioritizing Horizontal Curves”. *Center for Transportation Research (CTR) Annual Symposium*. April 3, 2024. Austin, Texas, USA.
- Xu, L., K. Bathgate*, J. Robbennolt, J. Sun, S. Pan*, K. Jiang*, **Z. Han**, M. Murphy, S. Boyles, Z. Zhang, and R. Machemehl. “Project 0-7123: Define a Statewide Plan for a Sustainable Real-Time Travel Time Network for Texas Hurricane Evacuations and Safe Citizen Return”. *Center for Transportation Research (CTR) Annual Symposium*. April 3, 2024. Austin, Texas, USA.

- Sun, J., **Z. Han**, and Z. Zhang. “Quantifying the Benefits of Autonomous Vehicles to Roadway Infrastructure Efficiency”. Paper accepted to be presented on *2024 IEEE Forum on Integrated and Sustainable Transportation Systems (FISTS)*, February 26-28, 2024, Riverside, California, USA.
- Lu, X., K. Bathgate*, J. Robbennolt, J. Sun, S. Pan*, **Z. Han**, and S. Boyles. “Understanding the Utilization of Real-Time Traffic Information during Hurricane Evacuations in Texas.” *Transportation Research Board 103rd Annual Meeting*. TRBAM-24-01044. Jan. 7 to 11, 2024. Washington, D. C. **Best Paper Award Winner**. Standing Committee on Disaster Response, Emergency Evacuations, and Business Continuity (AMR20)
- Pan, S.*, K. Bathgate*, **Z. Han**, J. Sun, and Z. Zhang. “Modeling Interdependent Infrastructure System Vulnerability with Imprecise Information Using Two Fuzzy Inference Systems.” *Transportation Research Board 103rd Annual Meeting*. TRBAM-24-05970. Jan. 7 to 11, 2024. Washington, D. C.
- Han, Z.** “Modeling Pavement Network Condition through Dual-network and Fuzzy Set Methodology”. *The 14th International Association of Chinese Infrastructure Professionals (IACIP) Annual Workshop*. January 7, 2024. Washington, D.C.
- Jiang, K.*, K. Bathgate*, J. Sun*, S. Pan*, M. Murphy, **Z. Han**, and Z. Zhang. “Perceptions and Usage of Traffic Monitoring Devices during Past Hurricane Evacuations in Texas”. *International Conference on Transportation & Development (ICTD), American Society of Civil Engineers (ASCE)*. June 14 to June 17, 2023. Austin, Texas, USA.
- Yang, X.*, **Z. Han**, M. Murphy, and Z. Zhang. “Developing an Automated Methodological Procedure for Improving the Identification of Curve-Related Crashes in the Texas Crash Records Information System (CRIS)”. *International Conference on Transportation & Development (ICTD), American Society of Civil Engineers (ASCE)*. June 14 to June 17, 2023. Austin, Texas, USA.
- Han, Z.**, Y. Xu*, M. Murphy, R. Machemehl, D. Hazlett, and Z. Zhang. “Project 0-7137: Assess HERO Incident Management Programs in Austin, El Paso, and San Antonio Metropolitan Areas”. *Center for Transportation Research (CTR) Annual Symposium*. April 19, 2023. Austin, Texas, USA.
- Bathgate, K.*, K. Jiang*, **Z. Han**, M. Murphy, and Z. Zhang. “Evacuation Volume and Safety Assessment: A Case Study in Rural Texas Highways during Hurricane Laura on US 90 and US 287”. *Center for Transportation Research (CTR) Annual Symposium*. April 19, 2023. Austin, Texas, USA.
- Pan, S.*, **Z. Han**, and M. Murphy. “Development of Austin District Driveway Permit Tool”. *Center for Transportation Research (CTR) Annual Symposium*. April 19, 2023. Austin, Texas, USA.
- Politis, S.*, **Z. Han**, L. Liang, M. Arellano, and M. Murphy. “Transportation Infrastructure Maintenance and Rehabilitation Master Planning Tools”. *Center for Transportation Research (CTR) Annual Symposium*. April 19, 2023. Austin, Texas, USA.
- Xu, Y.*, **Z. Han**, M. Murphy, and Z. Zhang. “Project 0-7050: Improving the Identification of Curve-Related Crashes in the Crash Record Information System (CRIS)”. *Center for Transportation Research (CTR) Annual Symposium*. April 19, 2023. Austin, Texas, USA.
- Bathgate, K.*, K. Jiang*, S. Pan*, J. Robbennolt, L. Xu, J. Sun, **Z. Han**, and S. Boyles. “Evaluation of Real-Time Traffic Monitoring Devices for Texas Hurricane Evacuations”. *Center for Transportation Research (CTR) Annual Symposium*. April 19, 2023. Austin, Texas, USA.
- Bathgate, K.*, K. Jiang*, **Z. Han**, M. Murphy, and Z. Zhang. “Evacuation Volume and Safety Assessment: A Case Study in Rural Texas Highways during Hurricane Laura on US 90 and US 287”. *Transportation Research Board 102nd Annual Meeting*. TRBAM-S-22-05194-1. Jan. 8 to 12, 2023. Washington, D. C.
- Hasan, M.*, **Z. Han**, R. Machemehl, and M. Murphy. “Development of Crash Database Parsing Tools to Support the Highway Safety Improvement Program in Texas”. *Center for Transportation Research (CTR) Annual Symposium*. April 13, 2022. Austin, Texas, USA.
- Bathgate, K.*, J. Sun*, S. Pan*, **Z. Han**, M. Murphy, and Z. Zhang. “Project 0-7055: An Extreme Weather Risk-Assessment Framework for Port Infrastructure Systems”. *Center for Transportation Research (CTR) Annual Symposium*. April 13, 2022. Austin, Texas, USA.
- Sun, J.*, **Z. Han**, and Z. Zhang. “Quantifying the Benefits of Autonomous Vehicles to Roadway Infrastructure.” *Transportation Research Board 101st Annual Meeting*, TRBAM-22-04425. Jan. 9 to Jan. 13, 2022. Washington, D. C.
- Sun, J.*, **Z. Han**, and Z. Zhang. “A Resource Allocation Framework for Optimizing Long-term Infrastructure Network Resilience.” *16th Annual Inter-University Symposium on Infrastructure Management (AISIM)*. July 17 to July 18, 2021. Hosted by the University of Texas at Austin, Austin, Texas, U.S.A. Virtual Meeting.

- Sun, J.*, **Z. Han**, and Z. Zhang. "A Life-Cycle Resource Allocation Framework for Optimizing Infrastructure Network Resilience." *4th World Transport Convention (WTC)*. June 16 to June 18, 2021. **Excellent Paper Award Winner**. Xi'an, China.
- Hasan, M.*, **Z. Han**, and R. Machemehl. "Development of Crash Database Parsing Tools to Support the Highway Safety Improvement Program in Texas". *International Conference on Transportation & Development (ICTD)*, American Society of Civil Engineers (ASCE). June 6 to June 9, 2021. Austin, Texas, USA.
- Sun, J.*, **Z. Han**, and Z. Zhang. "A Life-Cycle Resource Allocation Framework for Optimizing Infrastructure Network Resilience." *Transportation Research Board 100th Annual Meeting*, TRBAM-21-04301. Jan. 25 to Jan. 29, 2021. Virtual meeting.
- Hoang, T.*, **Z. Han**, and Z. Zhang. "Integrating Economic and Utility Concepts for A Comprehensive Bridge Valuation Model". *Transportation Research Board 99th Annual Meeting*, no. 19-05545. Jan. 12 to Jan. 16, 2020. Washington, D. C.
- Politis, S.S.*, Z. Zhang, **Z. Han**, J.J. Hasenbein, M. Arellano. "Simulation-Based Bridge Network Maintenance Budget Planning Using Latin Hypercube Sampling". *Transportation Research Board 99th Annual Meeting*, no. 19-02165. Jan. 12 to Jan. 16, 2020. Washington, D.C.
- Han, Z.**, J. D. Porras-Alvarado, J. Sun*, and Z. Zhang. "Monte Carlo Simulation Based Assessment of Risks Associated with PPP Investments in Toll Highway Infrastructure." *3rd World Transport Convention (WTC)*. June 13 to June 16, 2019. Beijing, China
- Galvis, O.*, **Z. Han**, M. Murphy, and Z. Zhang. "Develop A Tool to Automate Damage Claim Process". *Center for Transportation Research (CTR) Annual Symposium*. April 10, 2019. Austin, Texas, USA.
- Han, Z.**, J. D. Porras-Alvarado, and Z. Zhang. "Genetic Algorithm Based Optimization of Capital Structure in Design-Build-Finance-Operate-Maintain Toll Highway Infrastructures." *Transportation Research Board 98th Annual Meeting*, no. 19-02923. Jan. 13 to Jan. 17, 2019. Washington, D. C.
- Sun, J.*, **Z. Han**, J. D. Porras-Alvarado and Z. Zhang. "Impact of Autonomous Vehicle on Asset Value of Roadway Network." *World Transport Convention*. June 18 to June 21, 2018. Beijing, China.
- Galvis, O.*, and **Z. Han**. "Benefit-Cost Estimate for Skid Resistance Improvements at The Network Level Using Markov Chains". *Center for Transportation Research (CTR) Annual Symposium*. April 12, 2018. Austin, Texas, USA.
- Porras-Alvarado, J. D., C. Stone, **Z. Han**, T. Lim, and Z. Zhang. "An Innovative Approach to Integrate Economic Benefits of Existing Roadways into Asset Valuation." *World Conference on Pavement and Asset Management (WCPAM)*. June 12 to June 16, 2017. Baveno, Italy.
- Han, Z.**, J. D. Porras-Alvarado, J. Sun*, and Z. Zhang. "Monte Carlo Simulation Based Assessment of Risks Associated with PPP Investments in Toll Highway Infrastructure." *Transportation Research Board 96th Annual Meeting*, no. 17-06702. Jan. 8 to Jan. 12, 2017. Washington, D. C.
- Porras-Alvarado, J. D., M. R. Murphy, H. Wu, **Z. Han**, and Z. Zhang. "Analytical Hierarchy Process to Improve Project Prioritization in the Austin District." *Transportation Research Board 96th Annual Meeting*, no. 17-03985. Jan. 8 to Jan. 12, 2017. Washington, D. C.
- Porras-Alvarado, J. D., **Z. Han**, and Z. Zhang. "A Utility-based Asset Valuation Approach to Cross Asset Resource Allocation Considering Efficiency and Equity." *Transportation Research Board 96th Annual Meeting*, no. 17-03332. Jan. 8 to Jan. 12, 2017. Washington, D.C.
- Han, Z.**, and Z. Zhang. "A Spatial Allocation Approach for Post-Earthquake Urban Roadway Network." *Center for Transportation Research (CTR) Annual Symposium*. April 13, 2016. Austin, Texas, USA.
- Porras-Alvarado, J. D., **Z. Han**, M. A. Amin, and Z. Zhang. "Fairness and Efficiency Considerations in Performance-based Cross-Asset Resource Allocation." *Transportation Research Board 95th Annual Meeting*, no. 16-5357. Jan. 10 to Jan. 14, 2016. Washington, D.C.
- Wang, X., Y. Zhou, **Z. Han**, and Z. Zhang. "A Spatial Approach to Resource Allocation for Post-Earthquake Restoration of Urban Roadway Networks." *Transportation Research Board 95th Annual Meeting*, no. 16-3388. Jan. 10 to Jan. 14, 2016. Washington, D. C.
- Porras-Alvarado, J. D., **Z. Han**, Z. Zhang, and C. M. Walton. "An Integrated Approach to the Finance, Maintenance, and Operation of Highway Infrastructure." *2nd International Conference on Public-Private Partnerships*. May 26 to May 29, 2015. Austin, Texas, United States.
- Porras-Alvarado, J. D., **Z. Han**, and Z. Zhang. "A Fair Division Approach to Performance-based Cross-Asset Resource Allocation." *9th International Conference on Managing Pavement Assets (ICMPA)*. May 18 to May 21, 2015. **Best Paper Award Winner**. Alexandria, VA, United States.

- Han, Z.**, H. Wu, M. Murphy, K. R. Persad, and Z. Zhang. "GIS Tools for Displaying 4-Year Plan Projects." *Center for Transportation Research (CTR) Annual Symposium*. April 8, 2015. Austin, Texas, USA.
- Wu, H., **Z. Han**, M. Murphy, and Z. Zhang. "Empirical Bayes Before-After Study on Safety Effect of Narrow Pavement Widening Projects in Texas". *Center for Transportation Research (CTR) Annual Symposium*. April 8, 2015. Austin, Texas, USA.
- Qiu, S., **Z. Han**, K. C. P. Wang, and Z. Zhang. "Application of AASHTO PP69-10 & PP70-10 Based Continuous Rutting Depth Data." *Transportation Research Board 94th Annual Meeting*, no.15-5496. Jan.11 to Jan. 15, 2015. Washington, D. C.
- Wu, H., **Z. Han**, M. R. Murphy, and Z. Zhang. "Empirical Bayes Before-After Study on Safety Effect of Narrow Pavement Widening Projects in Texas." *Transportation Research Board 94th Annual Meeting*, no. 15-3001. Jan.11 to Jan. 15, 2015. Washington, D. C.
- Wang, X., Z. Zhang, and **Z. Han**. "Pavement Network Reliability: Triangular Fuzzy Number and Transited Network Methodology." *Transportation Research Board 94th Annual Meeting*, no. 15-5801. Jan. 11 to Jan. 15, 2015. Washington, D. C.
- Wang, X., Z. Zhang, and **Z. Han**. "Network-Level M&R Budget Planning Through Reliability of the Pavement Network." *Transportation Research Board 94th Annual Meeting*, no. 15-4515. Jan. 11 to Jan. 15, 2015. Washington, D. C.
- Porras-Alvarado, J. D., D. Peters, **Z. Han**, and Z. Zhang. "Novel Utility-Based Methodological Framework for Valuation of Road Infrastructure." *Transportation Research Board 94th Annual Meeting*, no. 15-5315. Jan. 11 to Jan. 15, 2015. Washington, D. C.
- Han, Z.**, C. Stone, and Z. Zhang. "Reliability-based Approach to Optimizing Pavement Preventive Maintenance Cycles Using the Method of Moments." *Transportation Research Board 93rd Annual Meeting*, no. 14-3066. Jan. 12 to Jan. 16, 2014. Washington, D. C.
- Wang, X., J. Liu, **Z. Han**, and Z. Zhang. "Reliability of Post-Seismic Urban Road Network: Weight Model of Sections." *1st International Symposium on Disaster Prevention and Mitigation of Infrastructure*, hosted by China Highway and Transportation Society, 2014. Chongqing, China.

PAPER WORKING IN PROGRESS

**Indicating current or former students I guided.*

- Han, Z.**, J. D. Porras-Alvarado, J. Sun, and S. Boyles. "An Optimization Approach for Financial Structural in Design-Build-Finance-Operate-Maintain Partnerships." Manuscript is being finalized. Journal TBD.
- Han, Z.**, X. Wang, Y. Li, and Z. Zhang. "Network-Level Maintenance & Rehabilitation Budget Planning Through Pavement Network Reliability." Plan to submit to *Transportation Research Part C: Emerging Technologies*. Manuscript is being finalized.
- Han, Z.**, X. Wang, Y. Li, and Z. Zhang. "An Edge Betweenness Centrality Based Relative Importance Index for Post-Earthquake Restoration of Urban Roadway Networks." Plan to submit to *Computer Aided Civil and Infrastructure Engineering*. Manuscript is being finalized.
- Han, Z.**, X. Wang, J. Liu, Z. Zhang, L. Gao, and Yihao Ren. "Empirical Approach to Characterizing Chinese Railway Network with Consideration of High-Speed Railways."
- Han, Z.**, M. Murphy, and Z. Zhang. "Investigation of Texas Passenger Vehicle Safety Inspection First Time Failure Rate based on Survey Data."
- Han, Z.**, A. K. Singh, X. Zhang, C. Claudel, and Z. Zhang. "Real-Time Automated Accident Detection using Supervised Machine Learning."
- Han, Z.**, W. Wang, L. Gao, X. Lin, S. Qiu, M. Barbara, and Y. Chen. "Quantifying the Impact Factors of Under-Reporting Near-Misses for Construction Workers."
- Sun, J., **Z. Han**, and Z. Zhang. "Impact of Autonomous Vehicle on Asset Value of Roadway Network."
- Porras-Alvarado, J. D., **Z. Han**, and Z. Zhang. "A Utility-based Asset Valuation Approach to Cross Asset Resource Allocation Considering Efficiency and Equity."
- Gao, Z., K. Wang, W. Bao, **Z. Han**, and S. Bratu. "Efficient Sets Based Control for Network Revenue Management under Customer Choice Model."
- Porras-Alvarado, J. D., M. R. Murphy, N. Jiang, and **Z. Han**. "Weight Characterization of Specialized Hauling Vehicles based on Weigh-in-Motion and Department of Public Safety Weight Enforcement Data."

PROFESSIONAL SOCIETY ACTIVITIES AND MEMBERSHIPS

10/2024-Present **Chair of the Infrastructure Systems Committee (ISC).**

Transportation & Development Institute (T&DI) Committees. American Society of Civil Engineers (ASCE)

- 12/2023-Present **Chair, JC01 Joint Technical Committees**
World Transport Convention (WTC), Chair of JC01 Joint Technical Committees:
- JC0101 Infrastructure Finance, Investments, and Management
 - JC0102 Infrastructure Asset Management
 - JC0103 Infrastructure Resilience Analysis and Management
- 07/2023-Present **Member of the Economics & Finance Committee.**
Transportation & Development Institute (T&DI) Committees. American Society of Civil Engineers (ASCE)
- 03/2023-Present **Project Panel Member.** National Academies.
NCHRP 20-24(147): Identify Best Practices for Automated Driving Systems and Other Emerging Technologies
- 01/21/2024 **Session Chair.** The 14th International Association of Chinese Infrastructure Professionals (IACIP) Student Online Forum. *Emerging Technologies in Civil Infrastructure and Systems. Session III: Asphalt Innovation and Sustainable Pavements*
- 01/07/2024 **Session Chair.** The 14th International Association of Chinese Infrastructure Professionals (IACIP) Annual Workshop. *Emerging Technologies in Civil Infrastructure and Systems. Session III: Transportation Geotechnics and Environment*
- 10/2023-01/2024 **Organizing Committee Member.** The 14th International Association of Chinese Infrastructure Professionals (IACIP) Annual Workshop. Washington, D.C.
- 06/2023-09/2024 **Member of the Infrastructure Systems Committee (ISC).**
Transportation & Development Institute (T&DI) Committees. American Society of Civil Engineers (ASCE)
- 10/2022-06/2023 **Committee Member.** Local Tours Program Committee.
International Conference on Transportation & Development (ICTD 2023), American Society of Civil Engineers (ASCE). June 14 to June 17, 2023, Austin, Texas, USA.
- 06/2020-Present **Registered Texas Professional Engineer (P.E.).** Serial Number: 138112.
Licensed by Texas Board of Professional Engineers and Land Surveyors
- 11/2019-11/2023 **Technical Committee Chair**
World Transport Convention (WTC), Technical Committee on JC0102 Infrastructure Asset Management
- 03/2018-Present **Member.** American Society of Civil Engineers (ASCE)
- 09/2017-Present **Membership Committee Member.** International Association of Chinese Infrastructure Professionals (IACIP)
- 07/2015-Present **Academic Committee Friend Member**
Transportation Research Board (TRB), ACS10 Standing Committee on Transportation Safety Management Systems. National Academies. United States
- 07/2015-Present **Academic Committee Friend Member**
Transportation Research Board (TRB), AKR10 Standing Committee on Maintenance and Operations Management. National Academies. United States
- 07/2015-Present **Academic Committee Friend Member**
Transportation Research Board (TRB), AKT10 Standing Committee on Pavement Management Systems. National Academies. United States
- 05/2014-Present **Academic Committee Friend Member**
Transportation Research Board (TRB), ACS20 Standing Committee on Safety Performance and Analysis. National Academies. United States
- 05/2014-Present **Member.** Chinese Overseas Transportation Association (COTA)
- 01/2014-Present **Member.** International Association of Chinese Infrastructure Professionals (IACIP)
- 04/2016-04/2018 **LabVIEW Certified Associate Developer.** Licensed by National Instruments
- 05/2015 **Organizing Committee Member.** The 2nd International Conference on Public-Private Partnerships, Austin, Texas, USA

EDITORIAL POSITIONS

- 11/2020-Present **Section Editor-in-Chief.** *Current Social Sciences: Traffic Safety Analysis Field*

- 10/2020-Present **Editorial Board Member.** *International Journal of Transportation Engineering and Technology*
- 05/2020-Present **Editorial Board Member.** *Transportation Management.* EnPress
- 04/2022-06/2023 **Guest Editor.** *Computation.* MDPI
Special Issue on *Algorithm to Compute Urban Road Network Resilience*

REFEREE SERVICES

01/2020-Present **Reviewer Board Member.** *Symmetry.* MDPI

- Civil Engineering
- Construction and Building Materials
- Environmental Science and Pollution Research
- Green Materials
- IET Renewable Power Generation
- International Journal of Environmental Research and Public Health
- International Journal of Pavement Engineering
- International Journal of Transportation Science and Technology
- Journal of Advanced Transportation
- Journal of Transportation Engineering, Part B: Pavements
- Journal of Urban Planning and Development
- Kybernetes
- Natural Hazards
- Omega
- SAGE Open
- Sustainability
- Technology Analysis & Strategic Management
- Transportmetrica A: Transport Science
- Transportation Research Record
- Water
- World Transport Convention