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BRIEF BIO

Feng Guo is a Patricia Caldwell Fellow and Professor of the Department of Statistics at Virginia Tech and Lead Data Scientist at Virginia Tech Transportation Institute. With dual Ph.D.s in transportation engineering and statistics, his research involve both methodology and application research on quantitative transportation modeling, especially in traffic safety evaluation. Dr. Guo has held numerous leadership positions in the field including the Chair of the Transportation Statistics Interest group of American Statistical Association, a member of the Transportation Research Board Committee on Statistical Methods, and a member of the Committee on Safety Data, Analysis, and Evaluation of the National Academies. He has been a principal investigator (PI) and co-PI for more than 60 research projects sponsored by industry, federal and state agencies including NIH, FHWA, NHTSA, FMCSA, and CDC.

PROFESSIONAL EXPERIENCE

Patricia Caldwell Faculty Fellow, Virginia Tech**,** 2023-present

Professor, Department of Statistics, Virginia Tech, 2019- present

Lead Data Scientist, Virginia Tech Transportation Institute

Visiting Faculty Researcher, Google, March 2022-August 2022

Visiting Faculty Researcher, Google, May 2021-Dec 2021

Associate Professor, Department of Statistics, Virginia Tech, Virginia Tech Transportation Institute, Blacksburg, 2013–2019

Assistant Professor, Department of Statistics, Virginia Tech, Virginia Tech Transportation Institute, Blacksburg, 2007–2013

EDUCATION

Ph.D. in Statistics
University of Connecticut, Storrs, CT, 2007
Dissertation title: Modelling Genetic Data using Bayesian Hierarchical Models

Ph.D. in Transportation Engineering
University of Connecticut, Storrs, CT, 2010
Dissertation title: Nationwide Freight Generation Models

M.S. Transportation Economics and Management
Tongji University, Shanghai, China, 2000

B.S. Highway and Traffic Engineering

Tongji University, Shanghai, China, 1995

PROFESSIONAL SERVICE

- Member, National Research Council of the National Academies: Committee on Impacts of Alternative Compensation Methods on Commercial Motor Vehicle Driver Retention and Safety Performance, 9/29/2022-7/31/2023
- Section Editor: Engineering Science, the New England Journal of Statistics in Data Science, 2021-present
- Associate Editor, Statistics for Public Policy, 2022- present
- Associate Editor, *Sankhya Series B*, 2016–present
- Editorial Board, *Journal of Safety Research*, 2019-present
- Editorial Board, *Applied Science: Transportation and Future Mobility* July 2021-Nov 2022
- Member, Standing Committee on Safety Performance and Analysis (ACS20) of the Transportation Research Board of the National Academies April, 2020-April, 2022
- Program Committee, CIKM: AI in Transportation, 2019
- Member, Scientific Review Committee, The 7th Road Safety and Simulation (RSS) Conference, 2019
- Member, the New England Statistics Society Journal Editorial Board and Publication Committee, 2018-2021
- Member, Transportation Research Board of the National Academies, Committee on Statistical Methods (ABJ80), 2011–2020
- Member of the Transportation Research Board of the National Academies, Committee on Safety Data, Analysis, and Evaluation (ANB20), 2011–2020
- Co-Chair, Data Analysis Committee, SAE Crash Data Collection and Analysis, 2013–2018
- Chair, Transportation Statistics Interest Group of the American Statistical Association, 2016–2018
- Member of the Transportation Research Board Subcommittee on Traffic Surrogate Measures, 2010–present
- Organizer, SAMSI summer program on transportation statistics, August 14–18, 2017
- Scientific committee, The 6th Road Safety & Simulation International Conference, 2017
- Member, National Academy of Sciences Panel Study on Research Methodologies and Statistical Approaches to Understanding Driver Fatigue Factors in Motor Carrier Safety and Driver Health, 2014–2015
- Reviewer for National Academy of Sciences panel report, *Improving Motor Carrier Safety Measurement*, 2017

- Associate Editor for the 10th International Chinese Conference of Transportation Professionals (ICCTP 2010)
- Expert reviewer, NCHRP 08-36/Task 115, Application of Fair Division, Data Envelopment Analysis, and Conjoint Analysis Techniques to Funding Decisions at the Program and Project/Activity Level
- Research proposal reviewer for 2013 research solicitation, The National Center for Transportation Systems Productivity and Management (NCTSPM), a U.S. DOT University Transportation Center

PROFESSIONAL SOCIETIES

- American Statistical Association
- Mu Sigma Rho national statistical honor society
- New England Statistical Society

HONORS AND AWARDS

1. **Taylor Technical Talent Award**, "Impact of Roadway Lighting on Crash Safety," Ronald Gibbons, Feng Guo, Alejandra Medina, Travis Terry, Jianhe Du, Paul Lutkevich, Qing Li, The Illuminating Engineering Society of North America (IES), 2015
2. **Best Poster Award:** "Senior Fitness-to-Drive Evaluation using Naturalistic Driving Study Data," Feng Guo, Youija Fang, Jonathan Antin, The Fourth International Symposium on Naturalistic Driving Study, 2014
3. Section on Bayesian Statistical Science Best Student Paper Award, Joint Statistical Meeting, Salt Lake City, 2007
4. **Gottfried Noether Award**, University of Connecticut, January 2004
5. Graduate Predoctoral Fellowship, University of Connecticut, 2004

<u>AWARDS WON BY ADVISEES</u>

1. First Place in Student Poster Award, Huiying Mao, "Evaluating High G-force Events Using SHRP2 NDS Data," The SAMSI Summer Institute on Transportation Statistics, 2017
2. Second Place in Student Poster Award, Danni Lu, "Evaluating the Impact of Distraction on Crash Risk," The SAMSI Summer Institute on Transportation Statistics, 2017
3. Cliff Spiegelman Award, Yiming Zhang, "Bayesian Criterion-based Assessments of Recurrent Event Models with Applications to Commercial Truck Driver Behavior Studies", the Transportation Statistics Interest Group of the American Statistical Association, 2021
4. Second Place in Student Paper Competition, Chen Qian, C'est La VIE: Variational Inference of Extremal for Rare Event Modeling with Application for Traffic Safety"

the Transportation Statistics Interest Group of the American Statistical Association, 2021

5. Best Poster Award: Yiming Zhang, "Bayesian Double-regression Model for Multi-type Recurrent Event Data" Presented at the 5th Eastern Asia Meeting on Bayesian Statistics, EAC-ISBA 2021, Virtual and in-person, Atlantic City, New Jersey, United States

IMPACTS AND MEDIA COVERAGE

1. The paper "Distracted Driving and Risk of Road Crashes among Novice and Experienced Drivers" (2014) in the *New England Journal of Medicine* received coverage from more than 70 news organizations, including CBS, NBC, NPR, Associated Press, Fox News, and Reuters. The paper is one of the Top 100 (58th) "Most Talked About" among all academic studies in 2014 according to the Altmetric.com https://www.altmetric.com/top100/2014/

2. ASA Impact Initiative interview: opportunities for statisticians and data scientists in advancing automated driving systems. https://magazine.amstat.org/blog/2020/11/01/make-an-impact/

REFERRED JOURNAL PAPERS

(Student under my supervision; *Corresponding author)

1. White, E., **Guo, F.,** Han, S., Mollenhauer, M., Broaddus, A., Sweeney, T., Robinson, S., Novotny, A., & Buehler, R. (2023). What factors contribute to e-scooter crashes: A first look using a naturalistic riding approach. *Journal of Safety Research*. https://doi.org/10.1016/j.jsr.2023.02.002
2. Perez, M. A., Sudweeks, J. D., Sears, E., Valente, J., & **Guo, F.** (2023). Differences in frequency of occurrence, event characteristics, and pre-impact vehicle kinematics between crashes, near-crashes, and single vehicle conflicts in a large-scale naturalistic driving study. *Traffic Injury Prevention*, *24*(1), 32-37. https://doi.org/10.1080/15389588.2022.2155785
3. Liu, L., Racz, D., Vaillancourt, K., Michelman, J., Barnes, M., Mellem, S., Eastham, P., Green, B., Armstrong, C., Bal, R., O'Banion, S., & **Guo, F.** (2023). Smartphone-based hard-braking event detection at scale for road safety services. *Transportation Research Part C: Emerging Technologies*, *146*, 103949. https://doi.org/https://doi.org/10.1016/j.trc.2022.103949
4. Almannaa, M. H., Bareiss, M. G., Riexinger, L. E., & **Guo, F.** (2022). In-Depth Evaluation of Association between Crash and Hand Arthritis via Naturalistic Driving Study. *Applied Sciences*, *12*(23), 12079. https://www.mdpi.com/2076-3417/12/23/12079

5. Zhang, Y., Chen, M.-H., & **Guo, F.*** (2022). Bayesian criterion-based assessments of recurrent event models with applications to commercial truck driver behavior studies. *Statistics in Medicine*, *41*(23), 4607-4628. https://doi.org/https://doi.org/10.1002/sim.9528
6. Wang, X., Zhang, X., **Guo, F.,** Gu, Y., & Zhu, X. (2022). Effect of daily car-following behaviors on urban roadway rear-end crashes and near-crashes: A naturalistic driving study. *Accident Analysis & Prevention*, *164*, 106502. https://doi.org/https://doi.org/10.1016/j.aap.2021.106502
7. Shi, L., Qian, C., & **Guo, F.*** (2022). Real-time driving risk assessment using deep learning with XGBoost. *Accident Analysis & Prevention*, *178*, 106836. https://doi.org/https://doi.org/10.1016/j.aap.2022.106836
8. **Guo, F.*,** & Lu, D. (2022). How many crashes does cellphone use contribute to? Population attributable risk of cellphone use while driving. *Journal of Safety Research*, *82*, 385-391. https://doi.org/https://doi.org/10.1016/j.jsr.2022.07.005
9. McCarthy, R., Flintsch, G., Katicha, S., Izeppi, E. d. L., & **Guo, F**. (2022). Determining investigatory levels of friction with crash modelling. *International Journal of Pavement Engineering*, *23*(9), 3236-3243. https://doi.org/10.1080/10298436.2021.1888089
10. Mao, H., **Guo, F***., Deng, X., & Doerzaph, Z. R. (2021). Decision-adjusted driver risk predictive models using kinematics information. *Accident Analysis & Prevention*, *156*, 106088. https://doi.org/https://doi.org/10.1016/j.aap.2021.106088
11. Wotring, B., Dingus, T., Atwood, J., **Guo, F.,** McClafferty, J., & Buchanan-King, M. (2020). The prevalence of cognitive disengagement in automobile crashes. *Applied Cognitive Psychology*, *34*(2), 543-550. https://doi.org/10.1002/acp.3630
12. Li, Q., **Guo, F.*,** & Kim, I. (2020). A non-parametric Bayesian change-point method for recurrent events. *Journal of Statistical Computation and Simulation*, *90*(16), 2929-2948. https://doi.org/10.1080/00949655.2020.1792907
13. Lu, D., **Guo, F***., & Li, F. (2020). Evaluating the causal effects of cellphone distraction on crash risk using propensity score methods. *Accident Analysis & Prevention*, *143*, 105579. https://doi.org/https://doi.org/10.1016/j.aap.2020.105579
14. Bálint, A., Flannagan, C. A. C., Leslie, A., Klauer, S., **Guo, F.,** & Dozza, M. (2020). Multitasking additional-to-driving: Prevalence, structure, and associated risk in SHRP2 naturalistic driving data. *Accident Analysis & Prevention*, *137*, 105455. https://doi.org/https://doi.org/10.1016/j.aap.2020.105455
15. **Guo, F.** (2019). Statistical Methods for Naturalistic Driving Studies. *Annual Review of Statistics and Its Application*, *6*(1), 309-328. https://doi.org/10.1146/annurev-statistics-030718-105153
16. Dingus, T. A., Owens, J. M., **Guo, F.,** Fang, Y., Perez, M., McClafferty, J., Buchanan-King, M., & Fitch, G. M. (2019). The prevalence of and crash risk associated with primarily

cognitive secondary tasks. *Safety Science*, *119*, 98-105. https://doi.org/10.1016/j.ssci.2019.01.005

17. Liu, Y., & **Guo, F.*** (2019). A Bayesian Time-Varying Coefficient Model for Multitype Recurrent Events. *Journal of Computational and Graphical Statistics*, *29*(2), 383-395. https://doi.org/10.1080/10618600.2019.1686988
18. Zhang, L., Cui, B., Yang, M., **Guo, F.,** & Wang, J. (2019). Effect of Using Mobile Phones on Driver's Control Behavior Based on Naturalistic Driving Data. *International Journal of Environmental Research and Public Health*, *16*(8), 1464. https://www.mdpi.com/1660-4601/16/8/1464
19. Stern, H. S., Blower, D., Cohen, M. L., Czeisler, C. A., Dinges, D. F., Greenhouse, J. B., **Guo, F**., Hanowski, R. J., Hartenbaum, N. P., Krueger, G. P., Mallis, M. M., Pain, R. F., Rizzo, M., Sinha, E., Small, D. S., Stuart, E. A., & Wegman, D. H. (2019). Data and methods for studying commercial motor vehicle driver fatigue, highway safety and long-term driver health. *Accident Analysis & Prevention*, *126*, 37-42. https://doi.org/https://doi.org/10.1016/j.aap.2018.02.021
20. Mao, H., Deng, X., Lord, D., Flintsch, G., & **Guo, F.*** (2019). Adjusting finite sample bias in traffic safety modeling. *Accident Analysis & Prevention*, *131*, 112-121. https://doi.org/https://doi.org/10.1016/j.aap.2019.05.026
21. **Guo, F.,** Kim, I., & Klauer, S. G. (2019). Semiparametric Bayesian models for evaluating time-variant driving risk factors using naturalistic driving data and case-crossover approach. *Statistics in Medicine*, *38*(2), 160-174. https://doi.org/https://doi.org/10.1002/sim.7574
22. Atwood, J. R., **Guo, F.*,** & Blanco, M. (2019). Evaluate driver response to active warning system in level-2 automated vehicles. *Accident Analysis & Prevention*, *128*, 132-138. https://doi.org/https://doi.org/10.1016/j.aap.2019.03.010
23. Owens, J. M., Dingus, T. A., **Guo, F.,** Fang, Y., Perez, M., & McClafferty, J. (2018). *Crash Risk of Cell Phone Use While Driving: A Case-Crossover Analysis of Naturalistic Driving Data*.
24. Liu, Y., **Guo, F.*,** & Hanowski, R. (2018). A time-varying coefficient model for evaluating commercial truck driver performance. *Manuscript submitted for publication*.
25. Ankem, G., Klauer, C., Ollendick, T., Dingus, T., & **Guo, F**. (2018). How Risky Are ADHD Teen Drivers? Analysis of ADHD Teen Drivers Using Naturalistic Driving Data. *Journal of Transport & Health*, *9*, S13. https://doi.org/10.1016/j.jth.2018.05.065
26. Li, Q., **Guo, F.*,** Kim, I., Klauer, S. G., & Simons-Morton, B. G. (2018). A Bayesian finite mixture change-point model for assessing the risk of novice teenage drivers. *Journal of Applied Statistics*, *45*, 604 - 625.

27. Atwood, J., **Guo, F.*,** Fitch, G., & Dingus, T. A. (2018). The driver-level crash risk associated with daily cellphone use and cellphone use while driving. *Accident Analysis & Prevention*, *119*, 149-154. https://doi.org/https://doi.org/10.1016/j.aap.2018.07.007
28. Antin, J. F., **Guo, F.,** Fang, Y., Dingus, T. A., Hankey, J. M., & Perez, M. A. (2017). The influence of functional health on seniors' driving risk. *Journal of Transport & Health*, *6*, 237-244. https://doi.org/10.1016/j.jth.2017.07.003
29. Antin, J. F., **Guo, F.,** Fang, Y., Dingus, T. A., Perez, M. A., & Hankey, J. M. (2017). A validation of the low mileage bias using naturalistic driving study data. *Journal of Safety Research*, *63*, 115-120. https://doi.org/https://doi.org/10.1016/j.jsr.2017.10.011
30. Medina-Flintsch, A., Hickman, J. S., **Guo, F**., Camden, M. C., Hanowski, R. J., & Kwan, Q. (2017). Benefit–cost analysis of lane departure warning and roll stability control in commercial vehicles. *Journal of Safety Research*, *62*, 73-80. https://doi.org/https://doi.org/10.1016/j.jsr.2017.06.001
31. Li, Q., **Guo, F**.*, Klauer, S. G., & Simons-Morton, B. G. (2017). Evaluation of risk change-point for novice teenage drivers. *Accident Analysis & Prevention*, *108*, 139-146. https://doi.org/https://doi.org/10.1016/j.aap.2017.08.007
32. Hickman, J. S., **Guo, F.**, Camden, M. C., Dunn, N. J., & Hanowski, R. J. (2017). An observational study of the safety benefits of electronic logging devices using carrier-collected data. *Traffic Injury Prevention*, *18*(3), 312-317. https://doi.org/10.1080/15389588.2016.1201201
33. Glaser, Y. G., **Guo, F.**, Fang, Y., Deng, B., & Hankey, J. (2017). Investigate moped-car conflicts in China using a naturalistic driving study approach. *Journal of Safety Research*, *63*, 171-175. https://doi.org/https://doi.org/10.1016/j.jsr.2017.10.008
34. Chen, C., & **Guo, F.** (2016). Evaluating the influence of crashes on driving risk using recurrent event models and Naturalistic Driving Study data. *Journal of Applied Statistics*, *43*(12), 2225-2238. https://doi.org/10.1080/02664763.2015.1134449
35. **Guo, F**., Klauer, S. G., Fang, Y., Hankey, J. M., Antin, J. F., Perez, M. A., Lee, S. E., & Dingus, T. A. (2016). The effects of age on crash risk associated with driver distraction. *International Journal of Epidemiology*, *46*(1), 258-265. https://doi.org/10.1093/ije/dyw234
36. Dingus, T. A., **Guo, F.**, Lee, S., Antin, J. F., Perez, M., Buchanan-King, M., & Hankey, J. (2016). Driver crash risk factors and prevalence evaluation using naturalistic driving data. *Proceedings of the National Academy of Sciences*, *113*(10), 2636-2641. https://doi.org/doi:10.1073/pnas.1513271113
37. Chen, G. X., Fang, Y., **Guo, F.,** & Hanowski, R. J. (2016). The influence of daily sleep patterns of commercial truck drivers on driving performance. *Accident Analysis & Prevention*, *91*, 55-63. https://doi.org/https://doi.org/10.1016/j.aap.2016.02.027

38. Zhu, H. H., Chen, Q., Ju, J. W., Yan, Z. G., **Guo, F.**, Wang, Y. Q., Jiang, Z. W., Zhou, S., & Wu, B. (2015). Maximum entropy-based stochastic micromechanical model for a two-phase composite considering the inter-particle interaction effect. *Acta Mechanica*, *226*(9), 3069-3084. https://doi.org/10.1007/s00707-015-1375-6
39. Gibbons, R. B., **Guo, F.**, Medina, A., Du, J., Terry, T., Lutkevich, P., & Li, Q. (2015). Approaches to Adaptive Lighting on Roadways. *Transportation Research Record: Journal of the Transportation Research Board*, *2485*(1), 26-32. https://doi.org/10.3141/2485-04
40. Fitch, G. M., Hanowski, R. J., & **Guo, F.** (2015). The Risk of a Safety-Critical Event Associated With Mobile Device Use in Specific Driving Contexts. *Traffic Injury Prevention*, *16*(2), 124-132. https://doi.org/10.1080/15389588.2014.923566
41. Simons-Morton, B. G., Klauer, S. G., Ouimet, M. C., **Guo, F.**, Albert, P. S., Lee, S. E., Ehsani, J. P., Pradhan, A. K., & Dingus, T. A. (2015). Naturalistic teenage driving study: Findings and lessons learned. *Journal of Safety Research*, *54*, 41.e29-44. https://doi.org/https://doi.org/10.1016/j.jsr.2015.06.010
42. Hickman, J. S., **Guo, F.**, Camden, M. C., Hanowski, R. J., Medina, A., & Mabry, J. E. (2015). Efficacy of roll stability control and lane departure warning systems using carrier-collected data. *Journal of Safety Research*, *52*, 59-63. https://doi.org/https://doi.org/10.1016/j.jsr.2014.12.004
43. **Guo, F.**, Fang, Y., & Antin, J. F. (2015). Older driver fitness-to-drive evaluation using naturalistic driving data. *Journal of Safety Research*, *54*, 49.e29-54. https://doi.org/https://doi.org/10.1016/j.jsr.2015.06.013
44. Farmer, C. M., Klauer, S. G., McClafferty, J. A., & **Guo, F.** (2015). Secondary Behavior of Drivers on Cell Phones. *Traffic Injury Prevention*, *16*(8), 801-808. https://doi.org/10.1080/15389588.2015.1020422
45. Farmer, C. M., Klauer, S. G., McClafferty, J. A., & **Guo, F.** (2015). Relationship of Near-Crash/Crash Risk to Time Spent on a Cell Phone While Driving. *Traffic Injury Prevention*, *16*(8), 792-800. https://doi.org/10.1080/15389588.2015.1019614
46. Chen, Q., Zhu, H. H., Ju, J. W., **Guo, F.**, Wang, L. B., Yan, Z. G., Deng, T., & Zhou, S. (2015). A stochastic micromechanical model for multiphase composites containing spherical inhomogeneities. *Acta Mechanica*, *226*(6), 1861-1880. https://doi.org/10.1007/s00707-014-1278-y
47. **Guo, F.**, & Aultman-Hall, L. (2014). A zone design methodology for national freight origin–destination data and transportation modeling. *Transportation Planning and Technology*, *37*(8), 738-756. https://doi.org/10.1080/03081060.2014.959355
48. Klauer, S. G., **Guo, F.**, & Simons-Morton, B. G. (2014). Distracted Driving and Crash Risk REPLY. *New England Journal of Medicine*, *370*(16), 1565-1566.
49. Simons-Morton, B. G., **Guo, F.**, Klauer, S. G., Ehsani, J. P., & Pradhan, A. K. (2014). Keep Your Eyes on the Road: Young Driver Crash Risk Increases According to Duration of

Distraction. *Journal of Adolescent Health*, *54*(5), S61-S67. https://doi.org/10.1016/j.jadohealth.2013.11.021

50. Ouimet, M. C., Brown, T. G., Guo, F., Klauer, S. G., Simons-Morton, B. G., Fang, Y., Lee, S. E., Gianoulakis, C., & Dingus, T. A. (2014). Higher Crash and Near-Crash Rates in Teenaged Drivers With Lower Cortisol Response: An 18-Month Longitudinal, Naturalistic Study. *Jama Pediatrics*, *168*(6), 517-522. https://doi.org/10.1001/jamapediatrics.2013.5387
51. Klauer, S. G.•, **Guo, F.•** , Simons-Morton, B. G., Ouimet, M. C., Lee, S. E., & Dingus, T. A. (2014). Distracted Driving and Risk of Road Crashes among Novice and Experienced Drivers. *New England Journal of Medicine*, *370*(1), 54-59. https://doi.org/10.1056/NEJMsa1204142
    - **Equally contributing authors**

    (Rank 58 of all academic studies that received the most attention in 2014 with 72 media reports (https://www.altmetric.com/top100/2014/))
52. **Guo, F.**, Simons-Morton, B. G., Klauer, S. E., Ouimet, M. C., Dingus, T. A., & Lee, S. E. (2013). Variability in Crash and Near-Crash Risk among Novice Teenage Drivers: A Naturalistic Study. *The Journal of pediatrics*, *163*(6), 1670-1676. http://linkinghub.elsevier.com/retrieve/pii/S0022347613009335?showall=true
53. Soccolich, S. A., Blanco, M., Hanowski, R. J., Olson, R. L., Morgan, J. F., **Guo, F.**, & Wu, S.-C. (2013). An analysis of driving and working hour on commercial motor vehicle driver safety using naturalistic data collection. *Accident Analysis & Prevention*, *58*, 249-258. https://doi.org/https://doi.org/10.1016/j.aap.2012.06.024
54. Simons-Morton, B. G., Cheon, K., **Guo, F.**, & Albert, P. (2013). Trajectories of kinematic risky driving among novice teenagers. *Accident Analysis & Prevention*, *51*, 27-32. https://doi.org/https://doi.org/10.1016/j.aap.2012.10.011
55. **Guo, F.***, & Fang, Y. (2013). Individual driver risk assessment using naturalistic driving data. *Accident Analysis & Prevention*, *61*, 3-9. https://doi.org/https://doi.org/10.1016/j.aap.2012.06.014
56. **Guo, F.***, Li, Q., & Rakha, H. (2012). Multistate Travel Time Reliability Models with Skewed Component Distributions. *Transportation Research Record: Journal of the Transportation Research Board*, *2315*(1), 47-53. https://doi.org/10.3141/2315-05
57. Hickman, J. S., **Guo, F.**, Hanowski, R. J., Bishop, R., Bergoffen, G., & Murray, D. (2012). Safety Benefits of Speed Limiters in Commercial Motor Vehicles Using Carrier-Collected Crash Data. *Journal of Intelligent Transportation Systems*, *16*(4), 177-183. https://doi.org/10.1080/15472450.2012.704340
58. Antin, J. F., Lockhart, T. E., Stanley, L. M., & **Guo, F.** (2012). Comparing the impairment profiles of older drivers and non-drivers: Toward the development of a fitness-to-drive

model. *Safety Science*, *50*(2), 333-341. https://doi.org/https://doi.org/10.1016/j.ssci.2011.09.013

59. Jiao, Y., Cortés, E., Andrews, K., & **Guo, F.** (2011). Poor-data and data-poor species stock assessment using a Bayesian hierarchical approach. *Ecological Applications*, *21*(7), 2691-2708. http://www.jstor.org/stable/41416688
60. **Guo, F.**, Rakha, H., & Park, S. (2010). Multistate Model for Travel Time Reliability. *Transportation Research Record: Journal of the Transportation Research Board*, *2188*(1), 46-54. https://doi.org/10.3141/2188-06
61. Park, S., Rakha, H., & **Guo, F.** (2010). Calibration Issues for Multistate Model of Travel Time Reliability. *Transportation Research Record: Journal of the Transportation Research Board*, *2188*(1), 74-84. https://doi.org/10.3141/2188-09
62. **Guo, F.**, Wang, X., & Abdel-Aty, M. A. (2010). Modeling signalized intersection safety with corridor-level spatial correlations. *Accident Analysis & Prevention*, *42*(1), 84-92. https://doi.org/https://doi.org/10.1016/j.aap.2009.07.005
63. **Guo, F.**, Klauer, S. G., Hankey, J. M., & Dingus, T. A. (2010). Near Crashes as Crash Surrogate for Naturalistic Driving Studies. *Transportation Research Record*, *2147*(1), 66-74. https://doi.org/10.3141/2147-09
64. **Guo, F**., Dey, D. K., & Holsinger, K. E. (2009). A Bayesian Hierarchical Model for Analysis of Single-Nucleotide Polymorphisms Diversity in Multilocus, Multipopulation Samples. *Journal of the American Statistical Association*, *104*(485), 142-154. https://doi.org/10.1198/jasa.2009.0010
65. **Guo, F.**, Dey, D. K., & Holsinger, K. E. (2009). A Bayesian Hierarchical Model for Analysis of Single-Nucleotide Polymorphisms Diversity in Multilocus, Multipopulation Samples. *Journal of the American Statistical Association*, *104*(485), 142-154. https://doi.org/10.1198/jasa.2009.0010
66. Novak, D. C., Hodgdon, C., **Guo, F.**, & Aultman-Hall, L. (2008). Nationwide Freight Generation Models: A Spatial Regression Approach. *Networks and Spatial Economics*, *11*(1), 23-41. https://doi.org/10.1007/s11067-008-9079-2
67. Scott, D. M., Novak, D. C., Aultman-Hall, L., & **Guo, F.** (2006). Network Robustness Index: A new method for identifying critical links and evaluating the performance of transportation networks. *Journal of Transport Geography*, *14*(3), 215-227. https://doi.org/10.1016/j.jtrangeo.2005.10.003

PEER-REVIEWED CONFERENCE PROCEEDINGS (FULL PAPERS)

Please note that the Transportation Research Board meeting is the most influential meeting on transportation research. Papers are peer reviewed with about a 50% acceptance rate.

C1. Lu, D., Tao, C., Chen J, Li, F., **Guo F.**, Carin L. (2020). Reconsidering generative objectives for counterfactual reasoning. *Advances in Neural Information Processing Systems (NeurIPS)*.

C2. Owens, J. M., T. A. Dingus, **F. Guo**, Y. Fang, M. Perez, J. McClafferty, and B. Tefft. 2018. "Estimating the prevalence and crash risk of drowsy driving using data from a large-scale naturalistic driving study" (Paper No. 18-04410). Washington, DC: Transportation Research Board.

C3. Owens, J. M., Tefft, B., **Guo**, **F.,** Fang, Y., Perez, M., McClafferty, J. & Dingus, T. A. 2018. "Crash risk of cell phone use while driving: Case-crossover study of SHRP 2 naturalistic driving data" (Paper No. 18-03148). Washington, DC: Transportation Research Board.

C4. Wang, W. & Guo F. (2016) RoadLab: Revamping Road Condition and Road Safety Monitoring by Crowdsourcing with Smartphone App. *Proceedings of the Transportation Research Board 96th Annual Meeting*.

C5. Du, J., **F. Guo**, and Rakha, H. 2016. "Study of high occupancy toll lane usage by single occupancy vehicles." *Proceedings of the Transportation Research Board 96th Annual Meeting*.

C6. Gibbons, R., **F. Guo**, J. Du, A. Medina, T. Terry, P. Lutkevich, and Q. Li. 2015. "Linking roadway lighting and crash safety." *Proceedings of the Transportation Research Board 94th Annual Meeting*.

C7. Flintsch, A. M., R. B. Gibbons, J. Du, **F. Guo**, and T. N. Terry. 2015. "Moving toward MAP-21 and beyond: Creating GIS multistate database to support safety analyses." *Proceedings of the Transportation Research Board 94th Annual Meeting*.

C8. Hickman, J. S., **F. Guo**, M. Camden, R. J. Hanowski, J. Mabry, and Q. Kwan. 2012. "Efficacy of roll stability control, forward collision warning, and lane departure warning using carrier-collected crash data." *Proceedings of the Transportation Research Board 91st Annual Meeting*.

C9. Flintsch, A. M., J. Hickman, **F. Guo**, R. J. Hanowski, and M. Camden. 2012. "Cost-benefit analysis: Onboard safety system effectiveness evaluation." *Proceedings of the Transportation Research Board 91st Annual Meeting.*

C10. Park, S., H. Rakha, and **F. Guo**. 2011. "Multi-state travel time reliability model: Impact of incidents on travel time reliability." *Proceedings of the 14th International IEEE Conference on Intelligent Transportation Systems (ITSC*), Washington, DC, USA, pp. 2106–2111.

C11. Doerzaph, Z. R., R. Bhagavathulam, and **F. Guo**. 2010. "Identification of factors related to violation propensity using large naturalistic intersection approach-level database." *Proceedings of* the *Transportation Research Board 89th Annual Meeting*.

C12. **Guo, F.**, X. Wang, and M. A. Abdel-Aty. 2009. "Corridor level signalized intersection safety analysis using Bayesian spatial models." *Proceedings of the Transportation Research Board 88th Annual Meeting*.

C13. Yang, S., W. Wang, and **F. Guo**. 2008. "Effective freeway incident response: A Bayesian network based algorithm." *Transportation and Development Innovative Best Practices 2008*: pp. 344-349.

C14. **Guo, F.**, and L. Aultman-Hall. 2005. "Comparing and integrating data sources to update the truck generation model in a state-wide planning model." *Proceedings of the Transportation Research Board 84th Annual Meeting*, Washington, DC.

C15. **Guo, F.**, and L. Aultman-Hall. 2005. "Alternative nationwide freight generation models." *Proceedings of the Transportation Research Board 84th Annual Meeting*, Washington, DC.

C16. ElDessouki, W., J. Ivan, and **F. Guo**. 2003. "Trafficshed approach for estimating hourly traffic volumes on freeways." *Proceedings of the Transportation Research Board 82nd Annual Meeting*, Washington, DC.

C17. **Guo, F.**, and Z. Tan. 2000. "Statistical analysis of traffic flow characteristics in Shanghai highway system." *Proceedings of the Annual Meeting of Shanghai Society of Civil Engineering*.

CONFERENCE PROCEEDINGS (FULL PAPERS, ABSTRACT REVIEWED)

C18. **Guo, F.**, and L. Aultman-Hall. 2003, October. "Towards continental freight transportation planning models." *European Transport Conference*, Strasbourg, France.

REPORTS FOR FUNDED PROJECTS

R1. Hickman, J. S., Scopatz, B., Lantz, B., Bergoffen, G., Wu, Y., Camden, M. C., Mao, H., Guo, F., & Hanowski, R. J. Under agency review. *Hours-of-Service Rules Impact Analysis*. Washington, DC: Federal Motor Carrier Safety Administration.

R2. Hickman, J. S., Han, S., Soccolich, S., & **Guo, F.** (2023) *Effect of the Length of Medical Certification on Safety*, Federal Motor Carrier Safety Administration, report number: FMCSA-RRR-21-008, https://rosap.ntl.bts.gov/view/dot/66620

R3. Klauer, S.G., Turturici, M., Han, S., Russell, S., **Guo, F.**, Noble, A., and Antin, J. F. (2021). *Exploring Driver Adaptation to Lower Levels of Automation (L2) Using Existing Naturalistic Driving Data*. NHTSA Final Report, Contract # 693JJ918D000006, Task Order 693JJ919F000121

R4. Hammond, R. L., Soccolich, S. A., **Guo, F.**, Glenn, T. L., & Hanowski, R. J. (2021). *Analysis of Naturalistic Driving Data to Assess Distraction and Drowsiness in Drivers of Commercial Motor Vehicles*, Federal Motor Carrier Safety Administration. https://rosap.ntl.bts.gov/view/dot/57153

R5. Hickman, J. S., Mabry, J. E., Marburg, L., **Guo, F.,** Huiying, M., Hanowski, R. J., Whiteman, J., & Herbert, W. (2020). *Commercial Driver Safety Risk Factors (CDSRF),* Federal Motor Carrier Safety Administration.

R6. Lord, D., Geedipally, S. R., **Guo, F.**, Jahangiri, A., Shirazi, M., Mao, H., & Deng, X. (2020) *Analyzing Highway Safety Datasets: Simplifying Statistical Analyses from Sparse to Big Data*, SafeD UTC

R7. Owens, J. M., Dingus, T. A., **Guo, F.**, Fang, Y., Perez, M., & McClafferty, J. (2018). Crash Risk of Cell Phone Use While Driving: A Case-Crossover Analysis of Naturalistic Driving Data. AAA Foundation for Traffic Safety

R8. Klauer, S., Ankem, G., **Guo, F.**, Baynes, P., Fang, Y., Atkins, W., Baker, S., Duke, R., Hankey, J., & Dingus, T. (2017). Driver Coach Study: Using Real-time and Post Hoc Feedback to Improve Teen Driving Habits. The National Surface Transportation Center for Excellence

R9. Rizzo, M., Stern, H. S., Blower, D., Czeisler, C. A., Dinges, D. F., Greenhouse, J. B., **Guo, F.**, Hanowski, R. J., Hartenbaum, N. P., Krueger, G. P., Mallis, M. M., Pearson, J. R., Small, D. S., Stuart, E. A., & Wegman, D. H. (2016) *Commercial Motor Vehicle Driver Fatigue, Long-Term Health, and Highway Safety: Research Needs.* Washington, DC: The National Academies Press http://www.nap.edu/catalog/21921/commercial-motor-vehicle-driver-fatigue-long-term-health-and-highway-safety

R10. Klauer, S., Ankem, G., **Guo, F.**, Baynes, P., Fang, Y., Atkins, W., Baker, S., Duke, R., Hankey, J., & Dingus, T. A. (2016) *Driver Coach Study: Using Real-time and Post Hoc Feedback to Improve Teen Driving Habits*. Blacksburg, VA: National Surface Transportation Safety Center for Excellence.

R11. Grove, K., Atwood, J., Hill, P., Fitch, G., Blanco, M., **Guo, F.**, Russell, S., Marchese, M., Bartholomew, P., & Richards, T. (2016). *Field Study of Heavy-Vehicle Crash Avoidance Systems: Final Report* (DOT HS 812 280). Washington, DC: National Highway Traffic Safety Administration.

R12. **Guo, F.,** Fang, Y., & Antin, J. (2014). *Older Driver Fitness-to-Drive Evaluation using Naturalistic Driving Study.* Blacksburg, VA: National Surface Transportation Center for Excellence.

R13. Gibbons, R., **Guo, F.,** Medina, A., Terry, T., Du, J., Lutkevich, P., & Li, Q. (2014). *Design Criteria for Adaptive Roadway Lighting* (Report No. FHWA-HRT-14-051). Washington, DC: Federal Highway Administration.

R14. Gibbons, R., **Guo, F.**, Medina, A., Terry, T., Du, J., Lutkevich, P., Corkum, D., & Vetere, P. (2014). *Guidelines for the Implementation of Reduced Lighting on Roadway* (Report No. FHWA-HRT-14-050). Washington, DC: Federal Highway Administration.

R15. Hickman, J. S., Camden, M. C., **Guo, F.**, Dunn, N. J., & Hanowski, R. J. (2014). *Evaluating the Potential Safety Benefits of Electronic Hours-of-Service Recorders* (Report RRR-13-059). Washington, DC: Federal Motor Carrier Safety Administration.

R16. Fitch, G. M., Soccolich, S. A., **Guo, F.**, McClafferty, J., Fang, Y., Olson, R. L., Perez, M. A., Hanowski, R. J., Hankey, J. M., & Dingus, T. A. (2013). *The Impact of Hand-held and Hands-free Cell Phone Use on Driving Performance and Safety-Critical Event Risk* (Report No. DOT HS 811 757). Washington, DC: National Highway Traffic Safety Administration.

R17. Hickman, J. S., **Guo, F.,** Camden, M. C., Flintsch, A. M., Hanowski, R. J., & Mabry, E. J. (2013*) Onboard Safety Systems Effectiveness Evaluation: Final Report* (Report No. FMCSA-RRT-12-012). Washington, DC: Federal Motor Carrier Safety Administration.

R18. Hanowski, R. J., Bergoffen, G., Hickman, J. S., **Guo, F.,** Murray, D., Bishop, R., Johnson, S., & Camden, M. C. (2012). *Research on the Safety Impacts of Speed Limiter Device Installations on Commercial Motor Vehicles*. Washington, DC: Federal Motor Carrier Safety Administration.

R19. Blanco, M., Hanowski, R. J., Olson, R. L., Morgan, J. F., Soccolich, S. A., Wu, S. C., & **Guo, F.** (2011). *The Impact of Driving, Non-Driving Work, and Rest Breaks on Driving Performance in Commercial Motor Vehicle Operations* (Report FMCSA-RRR-11-017). Washington, DC: Federal Motor Carrier Safety Administration.

R20. Rakha, H., Du, J., Park, S., **Guo, F**., Doerzaph, Z., Viita, D., Golembiewski, G., Katz, B., Kehoe, N., & Rigdon, H. (2011). *Feasibility of Using In-Vehicle Video Data to Explore How to Modify Driver Behavior That Causes Nonrecurring Congestion* (Report S2-L10-RR-1). Washington, DC: Transportation Research Board of the National Academies.

R21. **Guo, F.**, Wotring, B. M., & Antin, J. F. (2010). *Evaluation of Lane Change Collision Avoidance Systems Using the National Advanced Driving Simulator* (Report number: DOT HS 811-332). Washington, DC: National Highway Traffic Safety Administration.

R22. Klauer, S. G., **Guo, F.,** Sudweeks, J., & Dingus, T. A. (2010*) An Analysis of Driver Inattention Using a Case-Crossover Approach on 100-Car Data* (Report DOT-HS-811-334). Washington, DC: National Highway Traffic Safety Administration.

R23. **Guo, F.**, Klauer, S. G., McGill, M. T., & Dingus, T. A. (2010). The Relationship Between Near-Crashes and Crashes: Can Near-Crashes Serve as a Surrogate Safety Metric for Crashes (Report DOT-HS-811-382). Washington, DC: National Highway Traffic Safety Administration.

R24. **Guo, F.,** & Hankey, J. M. (2009). *Modeling 100-Car Safety Events: A Case-Based Approach for Analyzing Naturalistic Driving Data*. Blacksburg, VA: National Surface Transportation Safety Center for Excellence.

R25. Klauer, S. G., **Guo, F.,** Neale, V. L., & Ramsey, D. J. (2008). *Estimating the Relationship between Highway Infrastructure and Environmental Factors to Traffic Safety*. Virginia Tech Transportation Institute Center for Automotive Safety Research.

R26. Aultman-Hall, L., **Guo, F.**, Scott, D., & Grossardt, T. (2002) *Development of Freight Commodity Generation Models.* Washington, DC: Bureau of Transportation Statistics, US Department of Transportation.

R27. Aultman-Hall, L., **Guo, F.**, O'Brien, C., Padlo, P., & Hogge, B. (2004) Incorporating *Truck Flows into the State-wide Planning Traffic Model* (Report #04-299). Final Report to the Connecticut Cooperative Highway Research Program.

R28. Ivan, J., ElDessouki, W., Zhao, M., & **Guo, F.** (2002) *Estimating Link Traffic Volumes by Month, Day of Week, and Time of Day* (Joint Highway Research Advisory Council Report 02-287).

GRANTS

G1. PI, Synthesis of Artificial Intelligence Training and Validation Method, National Highway Traffic Safety Administration, $445,000, September 2023- July 2024

G2. Co-PI, Outcomes of Variability in Teen Driving Experience and Exposure: Evidence from the Naturalistic Driving Study , National Academy of Science, 9-12-2022-9-11-2024, $399,993, PI. Klauer.

G3. PI, Driver Status Risk Assessment using Naturalistic Driving Study Data, $420,000, Industry Sponsor

G4. PI: Deep Learning Video Feature Representation Models for Driving Scenario Assessment (5-15-2022 - 12-15-2022), SafeD UTC, $9,000

G5. Co-PI, Longitudinal Study of Adverse Driving Outcomes among Adolescents with ADHD, NIH R01, Primary: The Children's Hospital of Philadelphia, VT portion $113,250, (09-01-2021 - 08-31-2022)

G6. PI, Evaluating relationship between crashes and near-crashes, $73,264 Ford, 25 May 2022 - 30 Sep 2022

G7. PI, Introductory Research into Artificial Intelligence Uses in ADAS and ADS Technologies Funder Name: National Highway Traffic Safety Administration, $ 497,052; (09-13-2021 - 03-13-2023)

G8. Co-PI: Safety Implications of Heavy Vehicle Monitoring Data Sponsor (451679): National Highway Traffic Safety Administration, $794,351 Sep 25, 2020 - Feb 24, 2022

G9. PI: ADAS Crash Safety Analysis via OBMS (451686/693JJ420F000058), Federal Motor Carrier Safety Administration, $1,015,565.00, Sep 25, 2020-Sep 24, 2023

G10. Co-PI: Effect of the Length of Medical Certification on Safety (451688), Federal Motor Carrier Safety Administration, $221,173. Sep, 2020 - Sep, 2021

G11. Co-PI: Continuous Pavement Friction Measurement and Pavement Friction Management for Safety (451655/693JJ320F000259), Federal Highway Administration, $634,754, Jul 23, 2020 – Sep 22, 2022

G12. PI: Refining Testable Cases and Scenarios for Evaluating Level 3 Through Level 5 Automated Driving System Concepts, National Highway Traffic Safety Administration (693JJ920F000065) (2020-2021), $789,269

G13. Co-PI: Guidance for and Effectiveness of Low Cost Delineation Treatments, Virginia Department of Transportation, $199,669 May,2019-May,2021

G14. Co-PI: An integrated approach to establish the scientific foundation for driving among adolescents with autism, National Institute of Health (subcontract to the Children's Hospital of Philadelphia $753,531 6-1-2019 - 5-31-2023

G15. Co-PI: Risk Evaluation Methodology Analysis Pilot Project, Jan-July 2020. 130,000, Industrial Sponsor.

G16. PI: Driving Risk Assessment based on High-frequency, High-resolution Telematics Data, SafeD UTC $75,000 2020-2021

G17. Co-PI, An Assessment of the Canadian Naturalistic Driving Study Related to Distracted Driving Events Transport Canada, $59,227, 2019

G18. PI: Telematics-Based Traffic Safety Risk Prediction for Ridesharing Driver, Xiaoju Science and Technology Limited, $100,000, 2018-2019

G19. PI: "Driver Lane Change Behavior Evaluation", National Surface Transportation Safety Center for Excellence, $45,000, 2018-2020.

G20. Co-PI, "North American Fatigue Management Program Effectiveness in Reducing Commercial Truck Driver Fatigue," National Institute of Occupational Safety and Health. $746,50800 9/1/18-8/31/2021

G21. Co-PI: "Impact of Access Spacing Standards on Crash Risk after Controlling for Access Volumes" $149,535, The Virginia Department of Transportation, 9/1/2018 to 2/1/2010.

G22. Co-PI: Truck Driver Crash Risk Analysis II", the Federal Motor Carrier Safety Administration, $1,498,969, 2018-2022

G23. Co-PI: "Estimate the 2016 Lives Saved, Injuries Prevented, and Benefit-Cost Ratio for Two or More Infrastructure Categories," $197,663, The Federal Highway Administration, 06/06/2018 to 10/05/2021.

G24. Co-PI: "Developing a Sentinel Surveillance System for Drug Use by Drivers on the Road and in Crashes," The AAA Foundation for Traffic Safety, $128,274, 2018-2020

G25. Co-PI: "How Risky Is Your Teen Driver? Developing a Grading Scale for Parents and Teens," General Motors, $126,616, 2018-2019

G26. PI (VT part): "Big Data Methodologies for Simplifying Traffic Safety Analyses," Safe-D National UTC, $109,608, May 2017 to August 2018.

G27. PI "Case-Crossover Methodology for Naturalistic Driving Study", National Surface Transportation Center for Excellence $46,000, 2017-2019

G28. PI: "Evaluating Driving Time by Day Using SHRP2 Naturalistic Driving Study (SHRP2 NDS) Data," CSAA Insurance Service Inc., $39,670, 11/15/2016 to 04/30/2017.

G29. Co-PI (Co-PI: Sheila G. Klauer): "Secondary Task Prevalence, Odds Ratios vs. Relative Risk, Absolute Risk and Alternative Baselines in SHRP2 Naturalistic Driving," University of Michigan - Ann Arbor, (VT portion $314,000), 10/06/2016 to 05/31/2018.

G30. Co-PI: (Co-PIs: Ryan C. Smith, Thomas A. Dingus): "Examination of the Legalization of Recreational Marijuana on the Driving While Intoxicated (DWI) System - Phase II," National Highway Traffic Safety Administration, Department of Transportation, $304,959, 09/23/2016 to 03/22/2019.

G31. Co-PI: (Co-PIs: Richard J, Hanowski, Rebecca Hammond): "Naturalistic Driving Study," Federal Motor Carrier Safety Administration, Department of Transportation, $1,799,676, 09/20/2016 to 09/19/2018.

G32. Co-PI: (Co-PIs: Andrew Krum, Richard Hanowski): "Truck and Bus Maintenance Requirements and Their Impact on Safety," Federal Motor Carrier Safety

Administration, Department of Transportation, $335,627, 09/19/2016 to 03/18/2019.

G33. PI, “Evaluating Driver Reaction and Adaptation for Active Safety System”, General Motors, $100,000, 2016-2017

G34. Co-PI: (Co-PI: Sheila Klauer): “Risk of Eyes-Off-Road Behavior for Different Roadways and Traffic Demands: An Analysis Using SHRP2 NDS Data,” Federal Motor Carrier Safety Administration, $53,712, 06/01/2016 to 07/30/2016.

G35. PI: “Evaluating Interactions among Driver Behaviors and the Impacts on Safety Outcomes,” National Surface Transportation Safety Center for Excellence, $40,000, 2016–17.

G36. Co-PI (PI: Miguel Perez): “Driving Maneuver Statistics using Shanghai NDS Data,” 2016–2017 General Motors, $36,054.

G37. Co-PI: (PI: Miguel Perez): “SHRP2 and Shanghai NDS Front Impact Avoidance Maneuver Analysis,” General Motors, $128,946, 2016–2017.

G38. Co-PI (PI: Tom Dingus): “Case-Crossover Analysis of The Crash Risk of Cell Phone Use While Driving,” AAA Foundation, $218,177, 2016–2016.

G39. Co-PI (PI: Tom Dingus): “Crash Risks of Cognitive Distractions and Driver Drowsiness,” AAA Foundation, $294,853, 2014–2015.

G40. PI (Co-PI: Jon Hankey): “Moped-Vehicle Conflicts Evaluation using Shanghai NDS Data,” General Motors, $71,833, 2014–2015.

G41. PI: “Automation and Collision Avoidance Efficacy Using SHRP2 NDS,” National Surface Transportation Safety Center for Excellence, $43,000, 2015–2016.

G42. Co-PI (PI: Gerardo Flintsch): “Development and Demonstration of Pavement Management Programs,” Federal Highway Administration, $716,627 (Phase II), 2014~2015.

G43. Co-PI: (PI: Greg Fitch): “Investigating the Relationship between Crashes/Near-Crashes and Cell Phone Call Duration and User Types,” National Surface Transportation Safety Center for Excellence, $70,000, 2015–2016.

G44. Co-PI (PI: Sheila Klauer): “Further analysis of the 100-Car Case-Crossover Baseline Data,” Association of Global Automakers, $25,233, 2014–2015.

G45. Co-PI (PI: Ron Gibbons; Co-PI: Suzie Lee): “Evaluating the Efficacy of Lighting, Markings, and Paint Schemes in Reducing the Incidence of Law Enforcement Vehicle Crashes,” US Department of Justice, $806,199, 2013–2015.

G46. Co-PI (PI: Greg Fitch, Co-PI, Richard Hanowski): “Cell-Phone Naturalistic Driving Study (NDS) Dataset: Additional Analyses,” National Highway Traffic Safety Administration, $350,296, September 2013 to December 2014.

G47. PI (Co-PI: Rich Hanowski): “Evaluate the Safety Impacts of Sleeping and Activity Patterns for Commercial Truck Drivers,” National Institute of Occupational Safety and Health, $43,000, 2014~2015.

G48. Co-PI (PI: Myra Blanco): "Field Study of Heavy Vehicle Crash Avoidance Systems," National Highway Traffic Safety Administration, $1,997,955, 2013–2016.

G49. PI (Co-PI: Hesham Rakha): "Development of Bayesian Multi-State Travel Time Reliability Models," Mid-Atlantic Universities Transportation Center, $45,011.

G50. Co-PI (PI: Jeff Hickman; Co-PI: Rick Hanowski): "Technical Approach: Evaluating the Potential Safety Benefits of Electronic On-Board Recorders," Federal Motor Carrier Safety Administration, $350,000, 2012~2013.

G51. PI: (Co-PI: Jon Hankey): "International Driver Behavior Comparison using Shanghai NDS," National Surface Transportation Safety Center for Excellence, $140,000, 2012~2019.

G52. PI: (Co-PI: Jon Hankey): "Shanghai Naturalistic Driving Study," Tongji University, $121,000, 2012~2015.

G53. PI: "Old Driver Fitness-to-Driver Analysis Using Naturalistic Driving Data," National Surface Transportation Safety Center for Excellence, $25,000, 2012~2014.

G54. PI: "The Impacts of Safety Critical Events on Driver Behaviors," National Surface Transportation Safety Center for Excellence, $25,000, 2012~2014.

G55. Co-PI "Evaluation of retention time on truck driver safety", the Federal Motor Carrier Safety Administration, $305,007, 2012-2013

G56. PI: "Traffic Safety Predictive Modeling," The CEI Group, $85,000, 2011~2012.

G57. Co-PI (PI: Ron Gibbons; Co-PI Alejandra Medina): "Strategic Initiative for Evaluation of Reduced Lighting on Roadways," Federal Highway Administration, $886,542, 2011~2013.

G58. Co-PI (PI: Gerardo Flitch): "Development and Demonstration of Pavement Management Programs," Federal Highway Administration, $131,268 (Phase I), 2011~2013.

G59. Co-PI (PI: Sheila Klauer): "A Trip Level Analysis of Driver Distraction Using 100–Car Study Database," Insurance Institute of Highway Safety, $284,252, 2010~2012.

G60. Co-PI (PI: Jeff Hickman; Co-PIs: Richard Hanowski, Erin Mabry): "Commercial Driver Individual Differences Study," Federal Motor Carrier Safety Administration, $3,000,000, 2010–2015.

G61. PI: "Final Report for NADS Lane Change Collision Avoidance System Study," National Highway Traffic Safety Administration, $29,967, 2009~2010.

G62. Co-PI (PI: Gerardo Flintsch): Sponsor confidential, $48,992, 2009~2010.

G63. PI: "Developing Bayesian Models for Naturalistic Driver Study," National Surface Transportation Safety Center for Excellence, $59,755, 2008–present.

G64. Co-PI (PI: Jon Hankey): "Modeling 100-Car Naturalistic Driving Study Data," National Surface Transportation Safety Center for Excellence, $30,000, 2007–2008.

G65. Co-PI (PI: Lisa Aultman-Hall): "Development of an Optimal Nationwide Freight Planning Zone System," New England University Transportation Center, $54,772, 2004–2005.

INVITED TALKS

1. "Driving Risk Assessment via High-Frequency, High-Resolution Telematics Data." Google, Feb. 24, 2021
2. "Driving Risk Assessment using High Frequency Driving Data", Waymo, Dec. 3rd. 2021.
3. "Statistical models for Naturalistic Driving Study", Naturalistic Driving Studies with focus on Novice Teenage Drivers: Research Challenges & Opportunities, Risk Section; Transportation Statistics Interest Group of American Statistical Association. Nov. 4, 2021.
4. Discussant for Special Invited Session, SIPS 72 - ASMBI session, ISI World Statistics Congress, Virtual, July 12, 2021
5. "Crash Risk Assessment via High-Frequency, High-Resolution Telematics data", Invited Session IPS60, ISI World Statistics Congress, Virtual, July 15, 2021
6. "Modeling Crash Risk", International Conference on Frontiers of Data Science, Hangzhou, China, May 27, 2019
7. "Driving Scenario and ADS Research using Naturalistic Driving Studies", Intelligent and Connected Vehicle Data Collaboration Seminar, Sacramento, CA, November 5, 2018.
8. "Modeling Driving Risk", University of Connecticut, Storrs, CT, October 18, 2018.
9. "Modeling Naturalistic Driving Study Data", DiDi Research Institute, Beijing, China, August 10,2018.
10. "Statistical Models for Naturalistic Driving Study," GP IDeA-CTR BERD, Omaha, NE, May 18, 2018.
11. "Using SHRP 2 Data to Capture the Most Dangerous Phase of Cell Phone Use," Transportation Research Board 2018 Annual Meeting, Washington, DC.
12. "Statistics Inference and Big Data: Risk Assessment and Prediction using NDS," Tongji University, December 9, 2017.
13. "NDS and Driving Safety," Beijing Jiaotong University, December 11, 2017.
14. "Driver Risk Prediction and Behavior Intervention," The 5th Annual Distracted Driving Summit, Norfolk, VA, October 29, 2017.
15. "Causal Inference on Commercial Motor Vehicle Driver Fatigue, Long-term Health and Safety," The 10th International Conference on Managing Fatigue, San Diego, March 2017.
16. "Statistical Challenges in Evaluating the Impact of Driver Behavior for Naturalistic Driving Study," Invited Session: Using the Extraordinary Power of Statistics for Transportation Safety Research at the Federal Highway Administration, Joint Statistical Meeting, August 3, 2016.
17. "The Impact of Driver Behavior on Safety: Results from Naturalistic Driving Study," Traffic Safety Symposium, Shanghai, July 10, 2016.

18. "The Impact of Driver Behavior on Safety: Results from Naturalistic Driving Study," Transportation Research Congress Inaugural Meeting, Beijing, June 7, 2016.
19. "Driving Risk Assessment with Novel Data Sources," INFORMS Seminar, Virginia Tech, April 6, 2016.
20. "Context Sensitive Selection of Crash Surrogates for Naturalistic Driving Studies," Transportation Research Board Annual Meeting, January 12, 2016.
21. "New Tools for Transportation Statistics," Invited Session Discussant, JSM 2015, Seattle, WA, August 13, 2015.
22. "A Case-Based Approach to Assessing Time-variant Risk Factors for Naturalistic Driving Study," Invited Session: Innovative Statistical Methodology for Studying Driving: Opportunities for Biostatisticians, WNAR 2015, Boise, Idaho, June 16, 2015.
23. "Driving Behavior and Active Safety System Evaluation using Naturalistic Driving Study," The 9th China Road Safety Forum, Beijing, August 25, 2015.
24. "Fundamentals of Highway Safety Modeling," Research Institute of Highway of the Minister of Transport, Beijing, China, August 28, 2015.
25. "Driver Behavior Evaluation," China Academy of Railway Science, Beijing, China, August 27, 2015.
26. "Modeling Crash Likelihood Using Naturalistic Driving Study Data," Southeast University, Nanjing, China, June 4, 2014.
27. "Sampling Strategy and Analysis Method," Federal Highway Administration Naturalistic Driving Study Workshop, August 4–5, 2014, Washington, DC, and September 24–25, 2014, Blacksburg, VA.
28. "Analysis of Naturalistic Driving Data," Recent Advances in Young Driver Research: New Analytic Approaches from Recent and On-going Research Workshop, Washington, DC, January 2013.
29. "Analysis of Naturalistic Driving Study Data," Naturalistic Driving Study Workshop at the Federal Highway Administration, McLean, Virginia, October 2012.
30. "Developing Data Analysis Plan for Naturalistic Driving Study," Naturalistic Driving Study Workshop at the Transportation Research Board, Washington, DC, January, 2012.
31. "Estimating Crash Risk Using Naturalistic Driving Study Data," The Second International Naturalistic Driving Symposium, Blacksburg, VA, September 2010.
32. "Modeling Crash Likelihood Using Naturalistic Driving Study Data," Workshop for euroFOT research group, Blacksburg, VA, May 2010.
33. "Modeling Crash Likelihood Using Naturalistic Driving Study Data," National Institute of Child Health and Human Development, March 2010.
34. "Assessing Driving Risk Using Naturalistic Driving Studies," Joint Sino-German Symposium on Urban Road Traffic Safety, Shanghai, China, October 2009.
35. "Modeling 100-Car Data," INFORMS seminar, Virginia Tech, April 2009.

36. "Modeling Safety Outcomes of Naturalistic Driving Study," Naturalistic Driving Study Workshop at the Transportation Research Board, Washington, DC, January 2009.
37. "Cohort and Case-control Approaches," First Human Factors Symposium: Naturalistic Driving Methods & Analyses, Blacksburg, VA, August 2008.

CONFERENCE PRESENTATIONS

1. Qian C. & **Guo, F.** "A New Surrogate for Safety Evaluation Based on Microscopic Driving Model", Transportation Research Board Annual Meeting, Washington DC, Jan 11, 2023
2. Xu, J. & **Guo F.** "Does the Timing of Eye Glance Matter During Lane Change?: An Embedding-Based Kernel Test Analysis", Transportation Research Board Annual Meeting, Washington DC, Jan 11, 2023
3. Han, S. & **Guo F.** "In-Depth Investigation on Lane Changes: Driver Behavior Analysis and Cluster Analysis" Poster presentation at the Transportation Research Board Annual Meeting, Washington DC, Jan 9, 2023
4. Lu, D. & **Guo, F**. "Crashes and Near Crashes Causation Analysis Using Naturalistic Driving Data" the Transportation Research Board Annual Meeting, Washington DC, Jan 11, 2022
5. Shi, L. & **Guo F.** "A Hybrid Approach for Traffic Crash Identification Using Deep Learning and Xgboost", JSM, Virtual, Aug 10, 2021
6. Qian C. & **Guo F.** "C'est La VIE: Variational Inference of Extremal for Rare Event Modeling". Presented by my student Chen Qian, JSM, Virtual, Aug 8, 2021
7. Xu, J. & **Guo F."**Evaluating Risk of Eye Glance Patterns by Embedding Based Kernel Two Sample Test". JSM, Virtual, Aug 10, 2021
8. Qian, C. **F.Guo,** L. Shi, Ride-Hailing Driver Risk Assessment, JSM 2020
9. **Guo, F.** & Liu Y. "Time-Varying Coefficient Model for Evaluating Commercial Truck Driver Performance" October 17th 2018 The 7th National Occupational Injury Research Symposium, Morgantown, WV.
10. Liu, Y., **F. Guo** and R. J. Hanowski, "Impact of Sleep Time on Truck Driver Performance Over Long Driving Shift", The 7th Naturalistic Driving Symposium, August 27-28, 2018, Blacksburg VA.
11. Mao, H., **F. Guo,** and X. Deng, 2018, "Optimal Threshold of Kinematic Signature in Predicting Crashes", The 7th Naturalistic Driving Symposium, August 27-28, 2018, Blacksburg VA.
12. **Guo, F.** S. G. Klauer, S. Han, J. Peterson, J. M. Hankey, 2018, "How driver behavior differs in Canada and US?", The 7th Naturalistic Driving Symposium, August 27-28, 2018, Blacksburg VA.
13. Almannaa, M., Bareiss, M., Riexinger, L. & **F. Guo**, "Does arthritis affect the behavior of drivers?" The 7th Naturalistic Driving Symposium, August 27-28, 2018, Blacksburg VA.
14. **Guo, F.**, "Model Driving Risk Through Naturalistic Driving Studies" August 1st, 2018," Joint Statistical Meeting, Vancouver, Canada.

15. Mao, H., **F. Guo**, X. Deng, "Decision-Adjusted Predictive Modeling Approach for Driver Risk Assessment", August 1st, 2018, Joint Statistical Meeting, Vancouver, Canada.
16. Lu, D., **Guo, F.** & Li, F. "Inference for the Risk of Cellphone Use While Driving" August 1st, 2018, Joint Statistical Meeting, Vancouver, Canada.
17. Almannaa, M. E., **Guo**, **F.** & Rakha, H. "Incremental learning models of bike counts at bike sharing systems." 21st IEEE International Conference on Intelligent Transportation Systems, November 4-7, 2018, Maui, Hawaii.
18. Owens, J. M., Dingus, T. A., Guo, F., Fang, Y., Perez, M., McClafferty, J., & Tefft, "Estimating the prevalence and crash risk of drowsy driving using data from a large-scale naturalistic driving study" (Paper No. 18-04410). TRB 2018 Annual Meeting, Washington, DC.
19. Owens, J. M., Tefft, B., Guo, F., Fang, Y., Perez, M., McClafferty, J., & Dingus, T. A. "Crash risk of cell phone use while driving: Case-crossover study of SHRP 2 Naturalistic Driving Data" (Paper No. 18-03148). TRB 2018 Annual Meeting, Washington, DC.
20. Antin, J. F., Guo, F., Fang, Y., Dingus, T. A., Hankey, J. M., & Perez, M. A, "The influence of functional health on seniors' driving risk and mobility using naturalistic driving study data." 6th International Symposium on Naturalistic Driving Research, June 7–9, 2017, The Hague, Netherlands.
21. Chen, G. X., Fang, Y., **F. Guo**, & Hanowski, R. J., "Truck driver sleep patterns influence driving performance." 10th International Conference on Managing Naturalistic Driving Research, March 20–23, 2017, San Diego, CA.
22. *Statistical analysis of naturalistic driving study data: How you slice and dice matters*, Discussant. 2017. Joint Statistical Meeting, August 3, 2017, Baltimore, MD.
23. Li, Qing, **Guo, F.** & Kim, I. 2017. "Non-Parametric Bayesian change-points methods for detecting driving risk changes." Joint Statistical Meeting, August 2, 2017, Baltimore, MD.
24. Atwood, J., & **Guo, F.** "The prevalence of cell phone use overall and while driving and the association with crash risk." Joint Statistical Meeting, August 3, 2017, Baltimore, MD.
25. Chen, G. X., Fang, Y., **Guo**, **F.** &. Hanowski, R. J "The influence of daily sleep patterns of commercial truck drivers on driving performance." The 5th International Symposium on Naturalistic Driving Research, Aug. 30–Sep. 1, 2016, Blacksburg, VA.
26. Glaser, Y., Guo, F., Fang, Y., Deng, B., & Hankey, J. "Investigate moped-vehicle conflicts in China using a naturalistic driving study approach." The 5th International Symposium on Naturalistic Driving Research, Aug. 30–Sep. 1, 2016, Blacksburg, VA.
27. Liu, Y., & **Guo, F.** "A Semiparametric frailty model with time-varying coefficients based on penalized B-splines with application to the Naturalistic Truck Driving Study." Joint Statistical Meeting, August 3, 2016, Chicago, IL.

28. Du, J., **Guo**, F., & Rakha, H. "Study of high occupancy toll lane usage by single occupancy vehicles." Transportation Research Board 96th Annual Meeting, 2017, Washington, DC.
29. Wang, W., & **Guo**, **F.** "Big data for user-focused identification of road infrastructure conditions and safety concerns." Transportation Research Board 96th Annual Meeting, 2017, Washington, DC.
30. Hickman, J. S., Hanowski, R. J., Mabry, J. E., **Guo, F.,** Herbert, W., Hallquist, T., & Walker, M.. "The Commercial Driver Individual Differences Study." The 9th International Conference on Managing Fatigue, 2015, Fremantle, Australia.
31. Hickman, J. S., Hanowski, R. J., **Guo, F.,** Medina, A., & Kwan, Q. "Efficacy of roll stability control, lane departure warning, and forward collision warning using carrier-collected crash data." The Annual Society of Automotive Engineers Commercial Vehicle Engineering Congress, 2015,Chicago, IL.
32. **Guo, F**. "Crowd-sourcing big data from smartphone apps for transportation research: Role of statistics and challenge." Joint Statistical Meeting, August 10, 2015, Seattle, WA.
33. Li, Q., & **Guo**, **F.** "Change-points detection in driving risk allowing for varying change-points among subjects by Bayesian parametric models." Joint Statistical Meeting, August 10, 2015, Seattle, WA.
34. Fang, Y., & **Guo**, **F.** "Bayesian random exposure Poisson regression models for evaluating the safety impact of cellphone visual-manual tasks." Joint Statistical Meeting, August 12, 2015, Seattle, WA.
35. Gibbons, R., **Guo, F.,** Du, J., Medina, A., Terry, T., Lutkevich, P., & Li, Q. "Linking Roadway Lighting and Crash Safety." The Transportation Research Board 94th Annual Meeting, January 2015, Washington, DC.
36. Medina-Flintsch, A., Gibbons, R. B., Du, J., Guo, F., & Terry, T. N. "Moving toward MAP-21 and beyond: Creating GIS multistate database to support safety analyses." The Transportation Research Board 94th Annual Meeting, January 2015, Washington, DC.
37. Gibbons, R., Guo, F., Du, J., Medina, A., Terry, T., Lutkevich, P., & Li, Q. "Approaches to adaptive lighting on roadways." The Transportation Research Board 94th Annual Meeting, January 2015, Washington, DC.
38. Li, Q., & **Guo F.** "Recurrent-event models for detecting the change-points of driving risk for teenage drivers." Joint Statistical Meeting, August 2014, Boston, MA.
39. Chen, C., & **Guo F.** "Assessing time-varying crash effect using semi-parametric recurrent event model." Joint Statistical Meeting, August, 2014, Boston, MA.
40. Chen, C., & **Guo, F.** "Evaluate the impact of crashes on driving risk using recurrent event models." Joint Statistical Meeting, August, 2013, Montreal, Canada.
41. Fitch, G. M., Guo, F., Yang, Y., Soccolich, S., Perez, M., Hanowski, R., Hankey, J., & Dingus, T. "The impact of hand-held and hands-free cellphone use on driving

performance and safety-critical event risk." The 3rd International Conference on Driver Distraction and Inattention, September 2013, Gothenburg, Sweden.

42. Fang, Y., & **Guo**, **F.** "Model distraction-related driving risk using Bayesian hierarchical models." Joint Statistical Meeting, August 2013, Montreal, Canada.
43. Medina, A., Hickman, J. S., Hanowski, R. J., **Guo, F**., & Kwan, Q. "A formal economic analysis of roll stability control and lane departure warning using carrier-collected crash data." The Annual Society of Automotive Engineers Commercial Vehicle Engineering Congress, Chicago, IL.
44. Medina-Flintsch, A., Hickman, J. S., **Guo, F.**, Camden, M. C., & Hanowski, R. J. "Cost benefit analysis - onboard safety systems effectiveness evaluation." The Annual Transportation Research Board Conference, Washington, DC.
45. Hickman, J. S., **Guo, F.,** Camden, M. C., Hanowski, R. J., Medina, A., Mabry, J. E., & Kwan, Q. "Efficacy of roll stability control, forward collision warning, and lane departure warning using carrier-collected crash data." Annual Transportation Research Board Conference, Washington, DC.
46. Camden, M., Guo, F., Hickman, J. S., & Hanowski, R. J. "Onboard safety system effectiveness evaluation for commercial motor vehicles." Joint Statistical Meeting, August 2011, Miami Beach, FL.
47. Hickman, J. S., Hanowski, R. J., Mabry, J. E., **Guo, F.**, Herbert, W., Hallquist, T., & Walker, M. "A methods overview of a case-control approach to assess obstructive sleep apnea in commercial vehicle drivers." The Biannual International Conference on Managing Fatigue in Transportation, Resources and Health, 2011, Perth, Australia.
48. Kim, I., **Guo F.**, & Park, C. G. "Conditional logistic mixed effects model for matched case-control studies with traffic accident application." The Joint Statistical Meeting, August 2011, Miami Beach, FL.
49. Kim, I., & **Guo**, **F.** 2010. "Conditional logistic mixed effects model for unbalanced matched case-control studies." Eastern North American Region/International Biometric Society, March 2010, New Orleans, LA.
50. **Guo, F**. 2010. "Assessing the crash and near-crash rate for teenage drivers." Joint Statistical Meeting, 2010, Denver, CO.
51. **Guo, F**. "A case-crossover study for evaluating the safety impact of driver behavior." 2009. Joint Statistical Meeting, Washington, DC.
52. **Guo, F**. 2008. "Safety analysis of signalized intersections using Bayesian spatial models." Joint Statistical Meeting, Denver, CO.
53. **Guo, F**. 2008. "Statistical reasoning and study design in transportation safety study." Virginia Tech Transportation Institute.
54. **Guo, F**. 2007. "On detecting stabilizing or divergent selection using patterns of variation at SNP loci." Joint Statistical Meeting, Salt Lake City, UT.

55. **Guo, F**. 2006. "A hierarchical Bayesian approach for estimating origin of mixed population." Contributed session at the Twentieth New England Statistics Symposium, Worcester Polytechnic Institute, Worcester, MA.
56. **Guo, F**. 2005. "Comparing and integrating data sources to update the truck generation model in a state-wide planning mode." 84th Transportation Research Board Annual Meeting, Washington, DC.

INVITED LECTURE:

1. "Fundamentals of Highway Safety Modeling," June 5 to June 7, 2014, Southeast University, Nanjing, China.
2. "Statistical Inference for Naturalistic Driving Study Data" August 27, 2018, The workshop at the 7th International Naturalistic Driving Study Symposium, Blacksburg, VA.

CONFERENCE ORGANIZER AND CHAIR

- Chair and Special Invited Session Organizer: Frontier of Bayesian Modeling, EAC-ISBA Conference, Nov 17, 2021
- Organizer, The SAMSI Transportation Statistics Workshop, December 2020.
- Chair, The Future of Transportation: The Predicting Power of Driver Behavior Data, JSM 2020
- Organizer, The SAMSI Summer Institute on Transportation Statistics, August 14–18, 2017, Durham, NC.
- Chair, "The Essential Role of Statistics for the Future of Mobility,", Joint Statistical Meeting 2017, Baltimore, MD.
- Chair, "Americans on the Move: Challenges and Solutions in Modeling Transportation Data," Joint Statistical Meeting 2016, Chicago, IL.
- Organizer, "Advanced Statistical Models for Driving Risk and Driving Behavior," Joint Statistical Meeting, August 10, 2015, Seattle, WA.
- Chair, "Innovative Approaches to Administrative Records," Joint Statistical Meeting, August 10, 2015, Seattle, WA.
- Organizer and Chair, "Modeling Driver Behavior Using Advanced Data Collection Method," Joint Statistical Meeting, August 3, 2014, Boston, MA.
- Chair of Invited Panel Discussion on Transportation Statistics and Data Needs, Joint Statistical Meeting 2013, Montreal, Canada.
- Organizer for the session on transportation statistics at Joint Statistical Meeting 2011, Miami, FL.