

Exponent®
Engineering & Scientific Consulting

John Campbell, Ph.D., CHFP, PMP

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Professional Profile

John Campbell, Ph.D., CHFP, PMP, is a principal scientist in Exponent's User Sciences practice with over 35 years of experience leading large-scale research programs to investigate numerous transportation topics, including roadway safety, driver behavior, and advanced driver assistance systems (ADAS). He specializes in roadway design, human-machine interface design, analysis of human factors aspects of the contributing factors to crashes, and expert witness support for matters involving human factors analyses of these areas, including examining driver interactions with roadway elements and with advanced safety and convenience systems.

Dr. Campbell has broad experience in driver behavior research, including driver sensation and perception, perception response time (PRT), nighttime driving and visibility, conspicuity, and distraction/inattention. He regularly leads human factors investigations into issues, incidents, and crashes related to driver behavior and driver performance issues, including speeding behaviors, distracted driving, and in-vehicle technology use, as well as evaluations of environmental factors, including roadway/infrastructure conditions, and other road users (i.e., pedestrians, cyclists, scooter riders, and other vehicles). He is a co-editor of the recently published textbook: "*Human factors handbook for road designers and traffic engineers*."

His research has been supported by the National Highway Traffic Safety Administration (NHTSA), the Federal Highway Administration (FHWA), and the National Academy of Sciences (NAS), among many other organizations.

Areas of Expertise

Support to the roadway design community

On behalf of NAS, Dr. Campbell has developed guidelines, tools, and training resources to support human factors aspects of roadway design, assessments of the human factors aspects of the contributing factors to crashes, and identification of countermeasures to improve roadway safety performance. His roadway design guidelines support practitioners addressing issues related to sight distance, speeding behaviors, work zone signage and related behaviors, curve driving, roundabouts, signalized intersections, and sign comprehension, among many other topics.

Dr. Campbell's recent research projects in this area include (1) leading the development of the 3rd Edition of the Human Factors Guidelines (HFG) for Road Systems, and Tools for Managing Speeding Behaviors and (2) contributing to the 2nd Edition of the Highway Safety Manual, the 8th Edition of A Policy on Geometric Design of Highways and Streets (the Green Book), Guidelines for Reducing Adverse Behaviors in Work Zones, Guidelines for Automated Traffic Enforcement, and a Guidebook on Integrated Strategies for a Speed Management Framework.

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Design and evaluation of advanced vehicle technologies

Dr. Campbell's research projects for NHTSA and the FHWA include efforts to address challenges for vehicles equipped with driver assistance and driving automation systems, including evaluations of alerts and warnings for advanced safety systems, human-machine interface (HMI) requirements, unique display and control configurations, telltales for vehicles with Level 4/5 (L4/L5) automated driving systems, intelligent speeding assistance systems, keyless starting systems, and driver monitoring systems. His experience includes developing user-centered, human factors design guidelines for in-vehicle head-up displays, navigation systems, telltales and icons, collision warning systems, connected vehicles, and HMIs for vehicles equipped with Level 2/3 (L2/L3) features.

Expert witness support and testimony experience

Dr. Campbell has been qualified as a human factors expert and offered testimony in both state and federal courts on topics including, but not limited to, vehicle operator behavior, driver impairment, distraction and inattention, visibility, effects of warnings and safety information on behavior, effects of roadway design elements (e.g., geometrics, traffic control devices, signs, construction, lighting) on road user behavior, human machine interaction, and driver behavior research and testing.

Academic Credentials & Professional Honors

Ph.D., Cognitive Psychology, The Claremont Graduate School, 1993

M.A., Human Factors Psychology, California State University, Northridge, 1988

B.A., Psychology, California State University, Northridge, 1984

Arthur H. Brayfield Award, Claremont Graduate School Faculty in Psychology (1993; Most Meritorious Dissertation)

Licenses and Certifications

Certified Human Factors Professional (CHFP)

Project Management Professional (PMP)

Prior Experience

Battelle Memorial Institute, Research Leader, 1994-2018

Anacapa Sciences, Inc., Senior Scientist, 1990-1994

Hughes Aircraft Company/GM Hughes Electronics, Member Technical Staff, 1985-1990

Professional Affiliations

Transportation Research Board of the National Academies:

Past Chair (2016-2023), ACH40 - Standing Committee on Human Factors of Infrastructure Design and Operations

Member, AQL17 - Standing Committee on Safety, Risk Management, and Tort Liability

SAE International:

Member, Safety and Human Factors Steering Committee

Member, Driver-Vehicle Interface Committee

Vice-chair, Advanced Driver Assistance Systems (ADAS) Committee

Member, Driving Automation Systems Committee

Member, Task Force on Guidelines for Voice Interaction in Driver Vehicle Interface

Past Chair, J3265 Task Force on Naming Methodology for Driving Automation Systems (https://www.sae.org/standards/content/j3265_202211/)

Past Chair, J2830 Task Force on Comprehension Testing of In-Vehicle Symbols (http://standards.sae.org/j2830_201606/)

Reviewer, Human Factors: The Journal of the Human Factors and Ergonomics Society

Reviewer, Transportation Research Record

Reviewer, Accident Analysis and Prevention

Publications

Regan, MA, Morgan, R, & Campbell, JL. "Human factors handbook for road designers and traffic engineers," (editors) 1st ed. Boca Raton, FL: CRC Press/Taylor & Francis; 2027.

Regan, MA, Morgan, R, & Campbell, JL. "Introduction," In: Regan, MA, Morgan, R, & Campbell, JL (editors). Human factors handbook for road designers and traffic engineers. 1st ed. Boca Raton, FL: CRC Press/Taylor & Francis; 2027.

Regan, MA, and Campbell, JL. "Road user behaviour and performance," In: Regan, MA, Morgan, R, & Campbell, JL (editors). Human factors handbook for road designers and traffic engineers. 1st ed. Boca Raton, FL: CRC Press/Taylor & Francis; 2027.

Regan, MA, and Campbell, JL. "Human information processing Part 1," In: Regan, MA, Morgan, R, & Campbell, JL (editors). Human factors handbook for road designers and traffic engineers. 1st ed. Boca Raton, FL: CRC Press/Taylor & Francis; 2027.

Regan, MA, and Campbell, JL. "Human information processing Part 2," In: Regan, MA, Morgan, R, & Campbell, JL (editors). Human factors handbook for road designers and traffic engineers. 1st ed. Boca Raton, FL: CRC Press/Taylor & Francis; 2027.

Regan, MA, Morgan, R, & Campbell, JL. "Human error in road transport," In: Regan, MA, Morgan, R, & Campbell, JL (editors). Human factors handbook for road designers and traffic engineers. 1st ed. Boca Raton, FL: CRC Press/Taylor & Francis; 2027.

Campbell JL, Hoekstra-Atwood L, Fraser A, Monk C. "Overview of human factors guidelines and standards," In: Regan, MA, Morgan, R, & Campbell, JL (editors). Human factors handbook for road designers and traffic engineers. 1st ed. Boca Raton, FL: CRC Press/Taylor & Francis; 2027.

Campbell JL, Hoekstra-Atwood L, Fraser A, Monk C, Brown JL, Lee J, Lichty MG, Prendez DM, et al. Human factors guidelines for road systems. Third Edition (NCHRP Report 1148). Washington, DC: The National Academies Press; 2025.

Campbell JL, Hoekstra-Atwood L, Fraser A, Monk C, Potts I, Torbic D. Development of the human factors guidelines for road systems. 3rd Edition. Washington, DC: The National Academies Press; 2025.

Cades D, Brinkerhoff R, Palac D, Campbell J. Vehicle technology and the driver. In: Krauss D, editor. Forensic aspects of driver perception and response. 5th ed. Tucson, AZ: Lawyers & Judges Publishing Company, Inc.; 2025.

Krauss D, Campbell J, Kwasniak A, Dewar R. Roadway design and the driver. In: Krauss D, editor. Forensic aspects of driver perception and response. 5th ed. Tucson, AZ: Lawyers & Judges Publishing Company, Inc.; 2025.

Torbic D, Dixon K, Potts I, Wemple E, Cook D, Harwood D, Campbell J, Gowan B, Ogle J. Quantitative Safety Analyses for Highway Applications. (NCHRP Report 1140). Washington, DC: The National Academies Press; 2025.

Campbell, J.L., Hoekstra-Atwood, L., Monk, C., Fraser, A., Torbic, D. & Potts, I. (2024) Diagnostic assessment and countermeasure selection: A toolbox for traffic safety practitioners. (NCHRP Report 1111) Washington, DC: The National Academies Press. https://doi.org/10.17226/27890.

Manser M, Wu L, Fincannon T, Campbell J, Krake A, Hoekstra-Atwood L, and Crump C. (2023). Role of system status information in the development of trust and mental models in automated driving systems. 27th International Technical Conference on the Enhanced Safety of Vehicles (ESV), Paper 23-0342-W, in press. https://www-esv.nhtsa.dot.gov/27th%20ESV%20Abstract.html#25.

Brown, J.L., Prendez, D. M., Lee, J., Romo, A., Campbell, J.L., Hutton, J., Potts, I., & Torbic, D. (2022). Human Factors Guidelines for Road Systems 2021 Update, Volume 2: Conduct of Research Report. Washington, DC: The National Academies Press. https://doi.org/10.17226/26474.

Lee, J., Richard, C.M., Campbell, J.L., Brown, J.L, Hoekstra-Atwood, L., Magee, K., Prendez, D., and Schroeder, J.L. (2021). Principles and Guidance for Presenting Active Traffic Management Information to Drivers. Washington, DC: The National Academies Press. https://doi.org/10.17226/25994.

Brown, J.L., Prendez, D. M., Lee, J., Romo, A., Campbell, J.L., Hutton, J., Potts, I., & Torbic, D. (2021). Guidelines for Road Systems 2021 Update, Volume 1: Updated and New Chapters. Washington, DC: The National Academies Press. https://doi.org/10.17226/26473.

Palac, D., Scully, I. D., Jonas, R. K., Campbell, J. L., Young, D., & Cades, D. M. (2021). Advanced Driver Assistance Systems (ADAS): Who's driving what and what's driving use? Proceedings of the Human Factors and Ergonomics Society Annual Meeting, 65(1), 1220–1224. https://doi.org/10.1177/1071181321651234.

Campbell, J. L., Venkatraman, V., Hoekstra-Atwood, L, Lee, J., & Richard, C. (2020). HMI Design for Automated, Connected, and Intelligent Vehicles. In, D.L. Fisher, W.J. Horrey, J.D. Lee and M. A. Regan, (Eds.), Handbook of Human Factors for Automated, Connected, and Intelligent Vehicles. Boca Raton, FL: CRC Press/Taylor & Francis.

Hoekstra-Atwood, L., Campbell, J. L., Hoover, C., Katz, B., Kehoe, N. (2020). Use of Color Changeable Message Signs (FHWA-HOP-18-067). McLean, VA: Federal Highway Administration.

Campbell, J. L., Tignor, S., Biondi, F., Lingham, V. (2020). Meeting the Information Needs of The Road User. Transportation Research Board. Retrieved from http://onlinepubs.trb.org/onlinepubs/centennial/papers/AND20-Final.pdf

Graving, J. L., Bacon-Abdelmoteleb, P., & Campbell, J. L. (2019). Human factors for connected vehicles transit bus research (Report No. DOT HS 812 652). Washington, DC: National Highway Traffic Safety Administration.

Cades, D., Senatore, C., Campbell, J.L., Harrington, R., & Wood, D. (2019) Automated and assistive vehicle technology: Opportunities and challenges. The Brief, Tort Trial and Insurance Practice Section Vol. 49(1)

Hoekstra-Atwood, L., Prendez, D., Campbell, J. L., & Richard, C. M. (2019). Some on-road glances are more equal than others: Measuring engagement in the driving task. In, Proceedings of the Human Factors and Ergonomics Society 63rd Annual Meeting, Seattle, WA.

Lee, J., Venkatraman, V., Campbell, J. L., & Richard, C. M. (2019). Workload and Attention Management in Automated Vehicles. In, Human Performance in Automated and Autonomous Systems: Current Theory and Methods. Boca Raton, FL: CRC Press.

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Campbell JL, Brown JL, Graving JS, Richard CM, Lichty MG, Bacon LP, … Sanquist T. Human factors design guidance for level 2 and level 3 automated driving concepts. (Report No. DOT HS 812 555). Washington, DC: National Highway Traffic Safety Administration; 2018.

Pan, D., Hamdar, S.H., Campbell, J.L., & Farrahi, A., (2018). Measuring the impact of motivations on travelers' strategic decisions in different traffic conditions: Data collection, analysis, and modeling. In, Proceedings of the Transportation Research Board 97th Annual Meeting, No. 18-05179

Brown, J., Morgan, J. F., Campbell, J., Hoover, C., & Jerome, C. (2017). Validations of Integrated Driver Vehicle Interface (DVI) Configurations. In Proceedings of the Human Factors and Ergonomics Society Annual Meeting (Vol. 61, No. 1, pp. 1431-1435). Sage CA: Los Angeles, CA: SAGE Publications.

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Campbell, J. L., Richard, C. M., Bacon, L. P., and Doerzaph, Z. R. (2014). Human factors design principles for the driver-vehicle interface (DVI). AutomotiveUI '14 Adjunct Proceedings of the 6th International Conference on Automotive User Interfaces and Interactive Vehicular Applications. New York: ACM. doi: 10.1145.2667239.2667305

Campbell, J.L., Richard, C., Atkins, R., Lichty, M., and Brown, James L. (2013). Not So Fast! An Investigation of Real-World Speeding Behaviors and Underlying Attitudes. In: Proceedings of the Seventh International Driving Symposium in Human Factors in Driver Assessment, Training and Vehicle Design, June 17-20, 2013, Bolton Landing, New York. Iowa City, IA: Public Policy Center, University of Iowa, 2013: 2-8. https://doi.org/10.17077/drivingassessment.1459.

Jackson, J. E., Sanquist, T., Campbell, J., Lee, E. B., and van Dongen, H. P. A. (2013) Fatigue in highway construction workers: Risks and countermeasures in rapid renewal project schedules. Transportation Research Record, 2347, 11-18. doi: 10.3141/2347-02

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Richard, C. M., Campbell, J. L., and Brown, J. L. (2008). A procedure for developing warning message prioritization rules in integrated collision warning systems for heavy trucks. Proceedings of the 52nd Annual Meeting of the Human Factors and Ergonomics Society, vol. 52: pp. 1860-1864.

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Campbell, J. L., Kludt, K., and Kiefer, R.J. (2007). Evaluation of in-vehicle symbols for an intersection crash avoidance system. 14th Asia Pacific Automotive Engineering Conference (2007-01-3518). Warrendale, PA: Society of Automotive Engineers.

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Society, 48, 2247-2251.

Campbell, J. L., Hoffmeister, D.H., Kiefer, R.J., Selke, D.J., Green, P., and Richman, J.B. (2004). Comprehension testing of active safety symbols (SAE Paper No. 2004-01-0450). Warrendale, PA: Society of Automotive Engineers. (Also published by SAE in SP-1877, Human Factors in Driving and Telematics, and Seating Comfort.)

McCallum, M. C., Campbell, J. L., Richman, J., Brown, J. L., and Wiese, E. (2004). Speech recognition and in-vehicle telematics devices: Potential reductions in driver distraction. International Journal of Speech Technology, 7, 25-33.

Campbell JL, Richman JB, Carney C, Lee JD. (2004). In-vehicle display icons and other information elements. Volume I: Guidelines (FHWA-RD-03-065). McLean, VA: Federal Highway Administration; 2004.

Campbell, J. L. (2004). In-vehicle display icons and other information elements, Volume II: Final Report (FHWA-RD-03-063). McLean, VA: Federal Highway Administration.

McCallum, M.C., Campbell, J. L., Richman, J., Brown, J. L., and Wiese, E. (2003). Speech recognition and in-vehicle telematics devices: Potential reductions in driver distraction. Proceedings of AVIOS 2003 Speech Developers Conference, March 31 - April 3, 2003, San Jose, CA.

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Campbell, J. L. (1999). Commentary on: Elderly and Disabled Travelers: ITS Designed for the 3rd Millennium. Transportation Human Factors, 1(2), 135-140

Campbell, J. L., Carney, C., & Kantowitz, B. H. (1999). Developing effective human factors design guidelines: A case study. Transportation Human Factors, 1(3), 207-224.

Campbell, J. L., Pittenger, J. L., & Everson, J. H. (1999). Human factors research issues for the integration of ITS devices (SAE Technical Paper Series No. 99-01-0815). In: Intelligent Vehicle Initiative (IVI) Technology: Advanced Controls (SP-1428). Warrendale, PA: Society of Automotive Engineers.

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Campbell, J. L., Carney, C., & Kantowitz, B. H. (1997). Design guidelines for advanced traveler information systems (ATIS): The user requirements analysis. Proceedings of the Human Factors and Ergonomics Society 41st Annual Meeting, Vol. 41, 954-958.

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Lecture, Panel, Workshop, and Webinar Presentations

Designing roadways for the road user- Application of the Human Factors Guidelines for Road Systems (HFG). Webinar. Transportation Research Board, August 2026

SAE Level 3 and 4 Features: Coming Soon to a Vehicle Owned by You. Panel Session, Automated Transportation Symposium, San Diego, CA, 2026

Communicating Safety: the L2 (plus) and L3 Puzzle. Panel Session, Automated Transportation Symposium, San Diego, CA, 2026

Forensic Crash Reconstruction Lab: Deconstructing the “Swiss Cheese” Failure. Workshop, Automated Transportation Symposium, San Diego, CA, 2026

Ctrl + Alt + Drive: Remote Driving. Panel Sesson. Automated Transportation Symposium, San Diego, CA, 2026

Legal implications of the use of engineering judgment in transportation operations (human factors considerations). Transportation Research Board Annual Meeting, Washington, DC, 2025.

Human factors guide for roadway systems. National County Engineer Conference, Schaumberg, IL, 2025.

When an AV crashes, who is responsible & who pays? – A case study of the Tempe, Arizona tragedy (human factors considerations). Transportation Lawyers Association, Mirage, CA, 2025.

Legal and risk management considerations related to safe system and road to zero strategies. International Association of Defense Counsel Annual Meeting, Quebec, CA, 2025.

Diagnostic assessment and countermeasure selection in the safe system. Transportation Research Board Webinar, 2025.

Legal Implications of the Use of Engineering Judgment in Transportation Operations. The Role of Human Factors in Engineering Judgement. July, 2024. TRB 62nd Annual Workshop on Transportation Law.

Who Is Responsible and Who Pays When an Automated Vehicle Crashes: A Case Study of the Tempe, Arizona Tragedy. Human Factors Considerations. January, 2024, TRB 103rd Annual Meeting, Event

4009

Roadway Infrastructure Facts for Automated Vehicle Developers: Human factors aspects of infrastructure design and AV development. September, 2023 (TRB Straight to Recording: Roadway Infrastructure Facts for Automated Vehicle Developers)

Human Factors Challenges for AVs Panel Discussion, Session 3: Game Changer or Same Law, Different Day: Consumer Expectations, Liability, Regulations and Policy for AV's, TRB 61st Annual Workshop on Transportation Law; July 2023

Legal and Risk Management Considerations Related to Safe System and Road to Zero Strategies. Panel Discussion, Event 3013, TRB 102nd Annual Meeting, January 2023

Legal and Risk Management Considerations Related to the Safe System/Road to Zero Strategies. Panel Discussion, Session 12; July 2022

The Development of Mental Models and Trust in ADS. Panel discussion, Session 2126: Mental Models of Automated Driving at the 2020 Automated Vehicles Symposium; July, 2020

Disruption in Dealerships. Panel discussion at the SAE International Government/Industry Meeting, Washington, DC: January, 2020

Human-Machine Interface (HMI) Design Recommendations and Considerations. Lecture and panel presentation at the 2019 AAA Foundation for Traffic Safety Forum: Impact of Vehicle Technologies and Automation on Users Design & Safety Implications, San Diego, CA: November 2019

How I Stopped Worrying and Learned to Love My AV: Design Strategies for Improving Driver-vehicle Interactions. Lecture presentation at the 2019 Automated Vehicles Symposium, Orlando, FL: July 2019

Guiding the Design of Partially Automated Vehicles; HF Guidelines for the HMI. Workshop presentation at the 98th Annual Meeting of the Transportation Research Board, Washington, D.C.: January, 2019

Shared Responsibility in AVs – Opportunities for Improved Human-machine Interfaces. Lecture presentation at the University of Michigan, Center for Connected Automated Transportation (U-M CCAT) Global Symposium on Connected and Automated Transportation, Ann Arbor, MI: February 2019

Highly Automated Vehicle Technology: The Good, the Bad, & The Ugly. Lecture and panel presentation at the ABA 2019 Emerging Issues in Motor Vehicle Product Liability Conference, San Diego, CA: April, 2019

The Driver-Vehicle Interface (DVI) for Heavy Vehicles: Current Research Status and Future Research Needs. Lecture presentation at the 2018 SAE Government/Industry Meeting, Washington, D.C.: January 2018

Roadway Design and Operation - Using Human Factors to Guide Data-Driven Decision-Making. Workshop presentation at the 97th Annual TRB Meeting, Washington, D.C.: January, 2018

Emphasizing Human Factors in Highway Safety: Recognizing Road User Needs. Lecture presentation (Session 565) at the 95th Annual TRB Meeting, Washington, D.C.: January, 2016

Human Factors in Engineering and Design. Lecture presentation to the Washington Traffic Safety Conference, Seattle, WA: October, 2015

Human Factors of Connected Vehicles: Development of DVI Design Principles. Lecture presentation at the SAE 2014 World Congress, Detroit, MI: April, 2014

SHRP2 Naturalistic Driving Study: Data Collection is Complete - Now What? Keynote speech presented at the 2014 Northwest Transportation Conference, Corvallis, OR: March, 2014

Human Factors DVI Design Principles for Heavy Trucks: Development Procedures and Future Applications. Lecture presentation at the SAE Commercial Vehicle Congress, Washington, DC: October 2013

Road Weather Messages and 511: Driver Information Needs. Lecture presentation at the 90th Annual TRB Meeting, Washington, D.C.: January, 2011

Impact of Information on Traveler Decision and Driver Behavior: US Research. Panel presentation at the 90th Annual TRB Meeting, Washington, D.C.: January, 2011

Human Factors for the Integrated Vehicle-Based Safety Systems (IVBSS) Program. Lecture presentation at the 2010 SAE Government Industry Meeting, Washington, D.C.: January, 2010

Developing Useful Human Factors Guidelines for Transportation Systems: Practical Tools and Procedures. Workshop presentation at the 87th Annual TRB Meeting, Washington, D.C.: January, 2008

Development of the Technical Compendium and Summary of IVI Human Factors Research. Lecture presentation at the 48th Annual Meeting of the Human Factors and Ergonomics Society, New Orleans, LA: October, 2004

Comprehension testing of active safety symbols. Lecture presentation at the SAE World Congress, Detroit, MI: February, 2004

Improving safety in transportation systems: Strategies and tactics for human factors programs. Lecture presentation at 10th Brazilian Ergonomics Congress, Rio de Janeiro, November, 2000

Project Experience

Roadway Design and Driver Behavior

- ***Human Factors Guidelines (HFG) for Road Systems, 3rd Edition (NCHRP 22-46 (National Cooperative Highway Research Program (NCHRP)/National Academies of Science (NAS)) 2022-2025.*** Led a project to develop the 3rd Edition of the HFG. The project synthesized and incorporated relevant ongoing and completed research, related documents, and user feedback to expand the scope and quality of the HFG to increase application and improve usability. New guideline topics included chapters on pedestrians, bicyclists, roundabouts, older road users, and expanded tutorials.
- ***Informing the Selection of Countermeasures by Evaluating, Analyzing, and Diagnosing Contributing Factors that Lead to Crashes (NCHRP/NAS 22-45) 2021-2024.*** Led a project to (1) develop new methods and tools for diagnosing contributing factors leading to crashes supporting practitioners in selecting appropriate countermeasures in modally diverse contexts and (2) address a wide variety of contributing factors leading to crashes to further practitioner understanding of how to most effectively balance tradeoff decisions in a given modal priority and facility context.

- *Motivations for Speeding (NHTSA) 2008-2011*. Led a project to identify the reasons why drivers speed; model the relative roles of situational, demographic, and personality factors in predicting travel speeds; classify speeders; and identify interventions and strategies to decrease speeding behavior. In Phase I, conducted an on-road field study using GPS devices to track driving patterns over a 3-week period for 160 drivers in Seattle and rural Texas. Demographic and personality information and travel and speed data was gathered and analyzed. Phase II of the project included further data analysis and more direct information collection through focus groups.

- *In-Vehicle Driving Behavior Field Study (Strategic Highway Research Program (SHRP 2)/Transportation Research Board (TRB)) 2010-2013*. Managed one of the six S07 data collection sites of the SHRP2 program, which implemented a large-scale naturalistic driving study across the U.S. This study examined thousands of volunteer drivers using a state-of-the art instrumentation package to record the movements of all vehicles at specific road sites, such as an intersection, as well as in-vehicle driver behaviors. Dr. Campbell managed one of the largest data collection sites, with 450 driver/vehicle pairs per year in an urban setting.

- *Examination of Episodic Speeding on Washington State Roads (Washington State Department of Transportation) 2015-2016.* Led a project to conduct analyses of the SHRP 2 Naturalistic Driving Study (NDS) data to examine the effects of specific roadway locations and infrastructure features on episodic speeding (e.g., 10 MPH or more over the posted speed) by NDS participants in and around Seattle, Washington.

- *Integrated Strategies for Managing Excessive Travel Speed to Improve Safety Performance (NCHRP/NAS 17-114, Subcontractor to Iowa State)* 2023-present. Participating in a project to develop a guidebook to manage excessive travel speeds. Responsible for chapters on deflection, educational, incentive, and vehicle-based countermeasures. The guidebook is designed for state and local transportation agencies and provides a comprehensive summary of countermeasures including their use in specific roadway contexts, identification of countermeasures for roadways not traditionally included in speed management toolboxes, development of speed modification factors, and application of the Safe System approach in speed management.

- *Tools for Managing Speed Based on Factors Influencing Driver Speed Selection (NCHRP/NAS) 2026-present.* Leading a project to develop (1) a guide for use by state DOTs and their law enforcement partners to discourage speeding behavior, with emphasis on rural and tribal roads, and (2) tools to support implementation of the guide. The project includes developing a unique and effective approach for identifying speeding crashes and fatalities in rural/tribal areas that will lead to a focused investigation into the relationships between (1) roadway, traffic, driver demographics and personality, and speed choices and (2) available roadway, educational, and in-vehicle countermeasures.

Human Factors Design Guidelines for In-Vehicle Technologies

- *Human Factors Evaluation of Level 2 and Level 3 Automated Driving Concepts (NHTSA/Virginia Tech Transportation Institute [VTTI]) 2012-2014.* Led a project to study the human factors needs for automated and assisted driving Levels 2 and 3 within the context of function allocation, driver

acceptance, driver concerns, fault/failure recovery, backup systems, redundancy, driver-vehicle interface design considerations, and transfer of control strategies.

- *Connected Vehicle Integration Research and Design Guideline Development (NHTSA) 2013-2015*. Led the Connected Vehicle Integration Research and Design Guidelines Development project to develop the Human Factors Design Guidelines product for the Human Factors Connected Vehicle (HFCV) Program, the key product of the program. As a subcontractor to Virginia Transportation Technical Institute (VTTI), Battelle's guideline development team focused on providing a clear, relevant, and easy-to-use reference guide of human factors principles for in-vehicle driver-vehicle interface (DVI) design and operation within the CV environment.

- *Crash Warning System Interfaces: Human Factors Insights and Lessons Learned (NHTSA) 2005-2007*. Led a project to develop human factors insights and lessons learned for crash warning devices that emphasize driver performance and safety. The project reflects a review of the human factors literature associated with the effective implementation of crash warning system interfaces; the lessons learned from this literature were characterized in terms of guidelines for interface design and driver performance. This document is intended to highlight issues to be addressed and provide guidance in the development of Collision Warning Systems (CWSs). Information is presented on a variety of topics relevant to the DVI of CWS devices.

Evaluations of Advanced Vehicle Systems

- ***Intelligent Speed Assistance (ISA) – Technology Assessment (NHTSA) 2024-present.*** Leading a project to study state-of-the-art ISA enabling technologies and implementation approaches, ISA applicability to addressing the speeding safety problem, ISA testing, and ISA potential hazards and risks. The project focuses on understanding current and near-term ISA capabilities and limitations, performance and reliability of a range of ISA approaches under real-world driving conditions, and driver acceptance of ISA.
- *Alert and Warning Characteristics for Advanced Driver Assistance Systems (NHTSA) 2024-present.* Leading a project to identify and address critical knowledge gaps regarding the characteristics of in-vehicle advanced driver assistance systems (ADAS) alerts and warnings associated with detection, comprehension, perceived urgency, appropriate and timely responses, and user acceptance. Key questions include:
- What are the characteristics of alerts and warnings used in current and near-term production vehicles?
- How are they similar or different across comparable ADAS features (e.g., different manufacturers' forward collision warning systems)?
- What methods, measures, and metrics are appropriate for evaluating in-vehicle alerts and warnings?
- *Driver Monitoring Strategies in Driving Automation Systems (NHTSA) 2020-2022.* Led a project to model driver behavior and assess current implementation of driver monitoring in production level vehicles. The project yielded numerous insights into the real-world outcomes of DMS systems, including failure scenarios in DMS driver state detection.

- *Driver Monitoring System (DMS) in SAE L2 Driver Support Systems (NHTSA). 2022-Present.* Leading an ongoing project to address the interrelationships among the broader L2/DMS/HMI ecosystem and how well DMS in SAE L2 implements distraction detection strategies, detects unintended uses of the system, and is effective under known use cases involving drivers trying to circumvent the DMS.

- *Telltales & HMI Concepts in the Development of Trust and Mental Models in L3–L5 ADS. (NHTSA). 2019-2023.* Led a project to examine the role of mental models and trust in L3-L5 ADS in a project that included industry outreach, focus groups, simulator studies, and on-road research. The on-road studies examined driver understanding of DMS in L2 and yielded a number of hazards and risks associated with ADS/DMS performance.