



Volpe, The National Transportation Systems Center

# Center for Human Factors Research and System Applications

The Center for Human Factors Research and System Applications provides internationally recognized human factors research, engineering, development, and evaluation capabilities supporting all modes of transportation within a human systems integration framework. We pioneer new relationships between humans and policies, processes, automation, and technologies to improve transportation safety, security, and productivity with due concern for unintended consequences.



U.S. Department of Transportation  
**Research and Innovative Technology Administration**

John A. Volpe National Transportation Systems Center

## What We Do

### Surface Transportation and Aviation Human Factors

- Analyze and characterize surface vehicle and aircraft operator performance capabilities and behavior under normal, abnormal, and emergency conditions.
- Design, perform, and evaluate simulations and laboratory, field, and statistical studies of operator, crew, equipment, vehicle, and facility characteristics, leading to the evaluation of methods and procedures for enhancing productivity and reducing accident frequency.
- Design and conduct studies evaluating the effectiveness of vehicle displays, controls, and other ergonomic considerations that influence safety, comfort, and user acceptance.
- Evaluate, develop, design, and implement user-related aspects of microcomputer systems for the improvement of transportation productivity.
- Evaluate, design, and conduct studies of the impacts of substance use and abuse on transportation safety, and of the effectiveness of countermeasures in reducing these impacts.
- Develop and evaluate guidelines and materials for the selection and training of commercial and non-commercial vehicle operators.

- Develop methods and procedures for modifying and enhancing operator, crew, passenger, and pedestrian attitudes, behavior, and performance through the use of public information training, market incentives, regulatory and legal mechanisms, and vehicle subsystem design.

### Databases

- Develop and maintain transportation safety-related databases through the development and application of data collection and analysis methodologies, and through monitoring the quality, content, and dissemination of automated data management techniques.

### Analyses

- Formulate and evaluate mathematical and analytical models representing operator, crew, pedestrian, and passenger characteristics.
- Perform statistical and econometric analyses on the relationships among accidents, transportation system characteristics, socioeconomic issues, and other factors for the purposes of system evaluation, safety forecasting, trend projection, and risk analysis.

### Users Supported

- Support regulatory agencies in the analysis of the safety consequences of vehicle defects, and in the identification of high-risk models and components.
- Design, conduct, and evaluate national and local assessments of mode-specific safety innovations and regulations.
- Provide technical assistance to federal, state, and local offices in transportation safety-related program design, data collection, database management, training, and equipment evaluation and selection.

### Capabilities

- An understanding of human-machine interactions in transportation system design and operation
- A multi-modal center for the study of human centered automation in transportation
- Links between behavioral science, computer science, systems engineering, and statistics

- A history of collaborating with universities, government, and the transportation industry to address nationally significant transportation human factors problems

### Our Sponsors

- Federal Aviation Administration
- Federal Railroad Administration
- National Highway Traffic Safety Administration
- National Park Service
- Research and Innovative Technology Administration
- U.S. Department of Transportation's Safety Council

### Technical Centers at Volpe

- Transportation Policy and Planning
- Safety Management Systems
- Environmental and Energy Systems
- Transportation Logistics and Security
- Infrastructure Systems and Engineering
- Air Traffic Systems and Operations
- Human Factors Research and System Applications
- Advanced Transportation Technologies

### Contact Us

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