

First national study of driving behavior will yield safety benefits for decades.

Challenge: Drivers cause or contribute to 90% of crashes

Traffic crashes result in more than 33,000 fatalities and 2.2 million injuries annually in the United States. Driver behavior is a significant factor in more than 90 percent of these crashes. Research to date has studied driver behavior only indirectly, by examining crashes and attempting to reconstruct the events that produced them. To progress further, detailed, direct observational data on driver behavior are needed.

Response: Massive in-vehicle study of driver behavior

The Second Strategic Highway Research Program (SHRP2) is carrying out the largest, most comprehensive naturalistic driving study (NDS) ever conducted.

- ▶ 2,800 participants, ages 16–80
- ▶ 6 sites across the U.S.
- ▶ Volunteers' vehicles heavily instrumented, including video of driver, vehicle location, forward radar, vehicle control positions, and many other data elements
- ▶ Continuous records from all trips taken over one or two years
- ▶ 18,000,000 travel miles
- ▶ Over 1,000,000 driving hours
- ▶ 4 petabytes of data

In parallel, the Roadway Information Database (RID) will contain detailed roadway data collected on approximately 12,000 centerline miles of highways in and around the study sites plus additional information about crash histories, traffic and weather conditions, work zones, and active safety campaigns in the study areas.

Linking Data Sets

The NDS and RID data sets will be linked to provide researchers with a uniquely powerful data source. Both data sets are geo-referenced, allowing for driver behavior to be indexed to the physical environment, such as signs and other roadside hardware, road design details, as well as to transient elements of the driving environment such as work zones and weather.

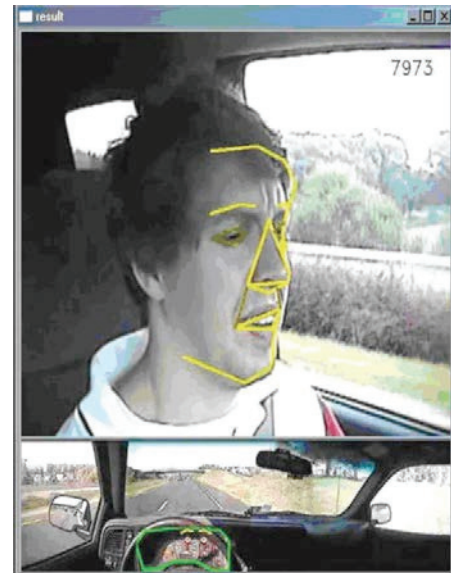


Photo credit: Courtesy of Virginia Tech Transportation Institute

The databases will be broadly available to qualified researchers in academia, government, and the private sector.

SHRP2 Safety studies underway using NDS data include:

- ▶ Iowa State University – Studying the relationship of driver behavior and roadway characteristics to road departure on rural curves
- ▶ Chalmers University, Sweden – Developing a method to relate driver glance behavior to the risk of rear-end collisions
- ▶ MRIGlobal – Developing guidelines for offset left turn lanes based on gap acceptance
- ▶ The University of Minnesota – Studying the role of driver inattention in rear-end collisions on congested freeways



Safety Benefits

An in-depth understanding of how drivers interact with their vehicles and the roadway will support life-saving improvements in many arenas, including:

- ▶ Development and deployment of new safety countermeasures
- ▶ Updating current design guides and associated practices
- ▶ Driver training programs
- ▶ Vehicle design
- ▶ Infrastructure improvements
- ▶ Public policy and enforcement

Access and User Support

Schedule

- ▶ Data collection will continue until fall of 2013.
- ▶ The SHRP2 program ends in March of 2015.
- ▶ The Federal Highway Administration, the Transportation Research Board, the National Highway Traffic Safety Administration, and the American Association of State Highway and Transportation Officials are currently defining access protocols and long-term organizational structures for housing the data and assisting users.

Development of Research Tools

These data sets are large and complex. Several measures will be undertaken to make these data more accessible, including:

- ▶ De-sensitized data sets, where personally identifiable information is removed or obscured
- ▶ Reduced data sets – Data subsets allowing some research questions to be studied without accessing the full data set
- ▶ Methods to extract key information from video data



About SHRP2 Implementation

The second Strategic Highway Research Program is a national partnership of key transportation organizations: the Federal Highway Administration, the American Association of State Highway and Transportation Officials, and the Transportation Research Board. Together, these partners conduct research and deploy products that will help the transportation community enhance the productivity, boost the efficiency, increase the safety, and improve the reliability of the Nation's highway system.

STRATEGIC HIGHWAY RESEARCH PROGRAM

U.S. Department of Transportation | Federal Highway Administration
American Association of State Highway and Transportation Officials • Transportation Research Board



Save Lives

By identifying the driver, vehicle, and infrastructure factors that cause and avert crashes, better safety solutions can be developed to reduce the number of traffic-related injuries and fatalities.



Save Money

For every 1 percent reduction in traffic-related injuries and fatalities, our country saves an estimated \$2.3 billion annually. Reducing crashes may also reduce fuel consumed during accident-related delays.



Save Time

Traffic crashes are a leading cause of nonrecurring congestion. Fewer crashes mean less congestion.

To Learn More

- ▶ NDS: <http://www.shrp2nds.us>
 - ▶ Reports: <http://www.trb.org/StrategicHighwayResearchProgram2SHRP2/naturalisticdrivingstudy.aspx>
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