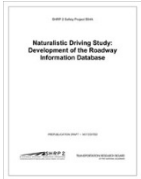


## Naturalistic Driving Study

The SHRP2 Naturalistic Driving Study (NDS) will allow us to record and study the driving behavior of a large sample of drivers in their personal vehicles. Reports related to the SHRP2 NDS are collected on this page.



### **Naturalistic Driving Study: Development of the Roadway Information Database (SHRP2 Project S04A)**

*Posted November 4, 2014*

TRB's second Strategic Highway Research Program (SHRP2) Safety Project S04A has produced a prepublication, nonedited version of a report titled [Naturalistic Driving Study: Development of the Roadway Information Database](#) that documents efforts to design, build, and populate a Roadway Information Database (RID) encompassing data from the SHRP2 mobile data collection project (S04B), other existing roadway data, and supplemental traffic operations data. The RID was designed to provide data that are linkable to the SHRP2 Naturalistic Driving Study (NDS) database and accessible using GIS tools.

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### **Analysis of Naturalistic Driving Study Data: Safer Glances, Driver Inattention, and Crash Risk (SHRP2 Project S08A)**

*Posted September 4, 2014*

TRB's second Strategic Highway Research Program (SHRP2) Safety Project S08A has released a prepublication, nonedited version of a [report](#) that explores the relationship between driver inattention and crash risk in lead-vehicle precrash scenarios (corresponding to rear-end crashes).

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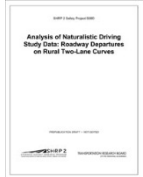
### **Analysis of Naturalistic Driving Study Data: Offset Left-Turn Lanes (SHRP2 Project S08B)**

*Posted September 4, 2014*

TRB's second Strategic Highway Research Program (SHRP2) Safety Project S08B has released a pre-

publication, non-edited version of a [report](#) that evaluates the gap acceptance behavior of drivers at left-turn lanes with offsets ranging from -29 feet to 6 feet.

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**Analysis of Naturalistic Driving Study Data: Roadway Departures on Rural Two-Lane Curves (SHRP2 Project S08D)**

*Posted September 4, 2014*

TRB's second Strategic Highway Research Program (SHRP2) Safety Project S08D has released a prepublication, nonedited version of a [report](#) that analyzes data from the SHRP2 Naturalistic Driving Study (NDS) and Roadway Information Database (RID) to develop relationships between driver, roadway, and environmental characteristics and risk of a roadway departure on curves.

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**Naturalistic Driving Study: Technical Coordination and Quality Control (SHRP2 Report S2-S06-RW-1)**

*Posted June 28, 2014*

TRB's second Strategic Highway Research Program (SHRP2) Safety Project S06 has released a prepublication, non-edited version of a report titled Naturalistic Driving Study: Technical Coordination and Quality Control that documents the coordination and oversight of participant- and vehicle-based operations for an in-vehicle driving behavior field study collected from naturalistic driving data and associated participant, vehicle, and crash-related data. This [report](#) documents the methods used by six site contractors located at geographically distributed data collection sites throughout the United States to securely store data in a manner that protects the rights and privacy of the more than 3,000 participants enrolled in the study.

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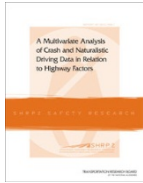
**Naturalistic Driving Study: Field Data Collection (SHRP2 Report S2-S07-RW-1)**

*Posted June 17, 2014*

TRB's second Strategic Highway Research Program (SHRP2) Safety Project S07 has released a prepublication, non-edited version of a report titled Naturalistic Driving Study: Field Data Collection. The [report](#) summarizes the compilation of a comprehensive naturalistic driving database. This database, together with associated roadway, driver, and environmental data provides a resource from which to study the role of driver performance and behavior in traffic safety and how driver behavior affects the risk of crashes. The Naturalistic Driving Study was

tested in several locations with In-Vehicle Driving Behavior Field Studies, including: Bloomington, Indiana (S07A); Central Pennsylvania (S07B); Tampa Bay, Florida (S07C); Erie County, New York (S07D) Raleigh-Durham, North Carolina (S07E); and, Seattle, Washington (S07F).

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**A Multivariate Analysis of Crash and Naturalistic Driving Data in Relation to Highway Factors (SHRP2 Report S2-S01C-RW-1)**

*Posted August 6, 2013*

In anticipation of the large volume of data to be collected during the SHRP2 naturalistic driving study (NDS), several projects were undertaken to demonstrate that it is possible to use existing NDS data and data from other sources to further the understanding of the risk factors associated with road crashes. More specifically, the four projects conducted under the title Development of Analysis Methods Using Recent Data examined the statistical relationship between surrogate measures of collisions (conflicts, critical incidents, near collisions, or roadside encroachment) and actual collisions. This [report](#) describes the approach developed in Project S01C, which is based on a unified statistical analysis of crash data and surrogate events using a spatial referencing system and a common measure of exposure.

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**Initial Analyses from the SHRP2 Naturalistic Driving Study: Addressing Driver Performance and Behavior in Traffic Safety (SHRP2 Project S08)**

*Posted April 8, 2013*

SHRP2 is conducting the largest and most comprehensive naturalistic driving study (NDS) to date. In parallel, the Roadway Information Database (RID) will contain detailed roadway data collected on approximately 12,000 centerline miles of roads in and around the six regional study sites plus additional information about crash histories, traffic and weather conditions, work zones, and active safety campaigns in the study areas. In 2012, four analysis contracts were awarded under SHRP2 Project S08 (Analysis of the SHRP2 Naturalistic Driving Study Data) to study specific research questions, such as using the early SHRP2 NDS and RID data to study lane departures on two-lane rural roads. In Phase 1, which concluded in December 2012, each contractor obtained an initial set of data, tested and refined their research plan, and developed a detailed plan for their full analyses. This [report](#) summarizes each contractor's Phase 1 work.

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**Analysis of Existing Data: Prospective Views on Methodological Paradigms (SHRP2 Report S2-S01B-RW-1)**

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Posted May 30, 2012

In anticipation of the large volume of data to be collected during the SHRP2 naturalistic driving study (NDS), several projects were conducted to demonstrate that it is possible to use existing data from previous naturalistic driving studies and data from other sources to further the understanding of the risk factors associated with road crashes. More specifically, the four S01 projects, entitled Development of Analysis Methods Using Recent Data, examined the statistical relationship between surrogate measures of collisions (conflicts, critical incidents, near collisions, and roadside encroachment) and actual collisions. SHRP2 Report S2-S01B-RW-1: [Analysis of Existing Data: Prospective Views on Methodological Paradigms](#) presents the results of one of these projects. The primary objective of this project was to investigate structured modeling paradigms for analysis of naturalistic driving data (NDD). Five research questions were identified and various models (such as, event-based models and categorical-outcome models) were applied to NDD to determine appropriateness for analysis and suggestions for future analyses.

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**Development of Analysis Methods Using Recent Driving Study Data (SHRP2 Report S2-S01A-RW-1)**

Posted April 9, 2012

In anticipation of the large volume of data to be collected during the SHRP2 naturalistic driving study (NDS), several projects were undertaken to demonstrate that it is possible to use existing NDS data and data from other sources to further the understanding of the risk factors associated with road crashes. More specifically, the four projects conducted under the title Development of Analysis Methods Using Recent Data examined the statistical relationship between surrogate measures of collisions (conflicts, critical incidents, near collisions, or roadside encroachment) and actual collisions. SHRP2 Report S2-S01A-RW-1, [Development of Analysis Methods Using Recent Data](#), presents the results of one of these projects. The primary objective of this work was to establish an analytic foundation for using conflicts and near crashes as surrogate measures. The project introduced a counterfactual analytic approach suggesting that a traffic event qualifies as a crash cause under two conditions: (a) both the event and the crash occurred and (b) had the event in question not occurred, then the crash also would not have occurred. Data from site-based field studies and vehicle studies were used to extend these ideas from a trajectory model to more complicated scenarios. The report introduces an approach to microscopic (i.e., individual event) modeling of crash related events, where driver actions, initial speeds, and vehicle locations are treated as inputs to a physical model describing vehicle motion.

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**Integration of Analysis Methods and Development of Analysis Plan (SHRP2 Report S2-S02-RW-1)**

Posted February 23, 2012

The objective of the SHRP2 Naturalistic Driving Study (NDS) is to reduce traffic injuries and fatalities by preventing or reducing the severity of collisions. Every 1% reduction in crashes can prevent 330 deaths and about \$2 billion in annual medical expenses and other losses from these crashes. SHRP2 Research Report S2-S02-RW-1: [Integration of Analysis Methods and Development of Analysis Plan](#) describes the analysis plan for the SHRP2 NDS. High-priority research questions were identified in Phase I. Phase II identified the critical elements and issues to address in the analysis of the SHRP2 NDS data and provided sample work plans for five high-priority

research questions. The resulting analysis plan will guide the development of the subsequent Safety Project S08, Analysis of In-Vehicle Field Study Data and Countermeasure Implications, and assist researchers planning to use the SHRP2 NDS data.

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**Evaluation of Data Needs, Crash Surrogates, and Analysis Methods to Address Lane Departure Research Questions Using Naturalistic Driving Study Data (SHRP2 Report S2-S01E-RW-1)**

*Posted October 13, 2011*

A large component of the safety research undertaken in SHRP2 is aimed at reducing injuries and fatalities that result from highway crashes. Through a naturalistic driving study (NDS) involving more than 3,000 volunteer drivers, SHRP2 expects to learn more about the interactions among driving behavior and vehicle and roadway characteristics. In anticipation of the large volume of data to be collected during the SHRP2 NDS, several projects were conducted to demonstrate that it is possible to use existing NDS data and data from other sources to further the understanding of the risk factors associated with road crashes. More specifically, the four projects conducted under the title Development of Analysis Methods Using Recent Data examined the statistical relationship between surrogate measures of collisions (conflicts, critical incidents, near collisions, or roadside encroachment) and actual collisions. SHRP2 Report S2-S01E-RW-1: [Evaluation of Data Needs, Crash Surrogates, and Analysis Methods to Address Lane Departure Research Questions Using Naturalistic Driving Study Data](#) presents the results of one of these projects.

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**Roadway Measurement System Evaluation (SHRP2 Report S2-S03-RW-1)**

*Posted August 18, 2011*

SHRP2 Research Report S2-S03-RW-1: [Roadway Measurement System Evaluation](#) documents the evaluation of automated/mobile data-collection services to provide data on roadway features and characteristics considered important for safety analysis, especially analysis of data from the SHRP2 Naturalistic Driving Study (NDS). The Safety research program requires data on roadway features and characteristics to support analysis of the NDS data. To obtain these roadway data, SHRP2 set out to procure the services of a vendor to collect data at highway speed. However, at the time, no validation of vendors' capabilities to collect these data was publicly available. As a result, SHRP2 conducted its own evaluation—the rodeo. The objectives of the rodeo were to determine the capabilities of the industry (as represented by 10 participating vendors) and to prequalify a list of vendors to bid on the project that would collect new roadway data in the six NDS sites throughout the United States.

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Design of the  
In-Vehicle Driving  
Behavior and  
Crash Risk Study

**Design of the In-Vehicle Driving Behavior and Crash Risk Study: In Support of the SHRP2 Naturalistic Driving Study (SHRP2 Report S2-S05-RR-1)**

*Posted March 30, 2011*

SHRP2 Report S2-S05-RR-1: [\*Design of the In-Vehicle Driving Behavior and Crash Risk Study\*](#) provides a summary of the key aspects of the planning effort supporting the SHRP2 Naturalistic Driving Study (NDS). SHRP2 Safety Project S05: Design of the In-Vehicle Driving Behavior and Crash Risk Study (Study Design) designed the SHRP2 NDS, which will collect data—on the order of 1 petabyte (1,000 terabytes)—on “naturalistic,” or real-world, driving behavior over a 2-year period beginning in fall 2010. The resulting data will provide a wealth of information regarding driving behavior, lane departures, and intersection activities, which is anticipated to be of interest to transportation safety researchers and others for at least 20 years.