PHASE 1 OF SHRP 2 DATA IMPLEMENTATION & OVERSIGHT

Student Paper Competition: SHRP 2 Safety Data Bonanza
Pre-Application Webinar

September 6, 2017
Presenters

• Alyssa Hernandez, Transportation Research Board
• Suzie Lee, Virginia Tech Transportation Institute
• Brie Schwartz, Transportation Research Board
  moderating
Topics to Discuss

• Safety Data Program & Competition Background
• Competition Terms and Conditions
• Selection
• Available Data Elements
• Timeline
• Institutional Review Board
• Data Use Licenses
• Question & Answer
SAFETY DATA: Naturalistic Driving Study & Roadway Information Database

Data from 3,500+ volunteer drivers and their vehicles in six sites using passenger cars, vans, SUVs, pickups.

New data collected 12,500 centerline miles consistent across six sites. Acquired data (DOTs, others) on 200,000 centerline miles with varying conditions: roadway, weather, traffic...

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What is in the NDS Database?

**Participant Assessments**
- Demographic Questionnaire
- Driving History
- Driving Knowledge
- Medical Conditions and Meds
- ADHD Screening
- Risk Perception
- Frequency of Risky Behavior
- Sensation Seeking Behavior
- Sleep Habits
- Visual, Physical, and Cognitive Test Results
- Exit Interview

**Continuous Data**
- Face, Forward, Rear, and Instrument Panel Video
- Vehicle Network Data
- Accelerometers/Gyros, Forward RADAR, GPS
- Additional Sensor Data

**Event Data**
- Crashes, Near Crashes, Baselines
- 30s Events With Classifications
- Post-Crash Interviews
- Other Crash Data

**Cell Phone Records**
- Subset of participant drivers
- Call time and duration
- Call type (text, call, pic, etc.)

**Trip Summary Data**
- Characterization of Trip Content
- Start Time and Duration of Trip
- Min, Max, Mean Sensor Data
- Time and Distance Driven at Various Speeds, Headways
- Vehicle Systems Usage

**Vehicle Information**
- Make, Model, Year, Body Style
- Vehicle Condition
- Safety and Entertainment Systems

**Roadway Data**
- Matching trip GPS to roadway database
- Roadway classifications
- Other roadway data

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Mobile Van Data

- New data SHRP 2 collected
- Quality assured to meet project specs
- 25,000 driven/ 12,500 centerline miles across the six NDS sites

Types of Mobile Van Data

- **Horizontal Curvature**: Radius, Length, PC, PT, Direction
- **Grade**
- **Cross Slope**
- **Lane** in terms of the number, width, and type (turn, passing, acceleration, car pool, etc…)
- **Shoulder** type/curb; paved width if exists
- **Intersection** location, number of approaches, and control (uncontrolled, all-way stop, two-way stop, yield, signalized, roundabout). Ramp termini are considered intersections
- **All MUTCD signs**
- **Barriers**
- **Median** presence (Y/N), type (depressed, raised, flush, barrier)
- **Rumble Strip** presence (Y/N) location (centerline, edgeline, shoulder)
- **Lighting** presence (Y/N)

Acquired Roadway Data

Existing roadway inventory data acquired from agencies such as the six State DOTs (Data items not consistent)

- ~ 200,000 centerline miles
- Includes HPMS files for the six states plus:
  - Functional Classification
  - Signals
  - Intersections
  - Access Control
  - Pavement Condition
  - Bridge Location
  - Vertical Alignment
  - Interchanges
  - Rest Areas
  - Terrain
  - Tunnels
  - FRA grade crossings

Acquired Supplemental Data

Existing data and information from State DOTs, Public Agencies, and Private Sources:

- ~ 200,000 centerline miles
- Crash history data
- Traffic information – AADT
- Traffic Data - continuous counts (ATR)
- Traffic Data - short duration counts
- Aerial imagery
- Speed limit data
- Speed limit laws
- Cell phone and text messaging laws
- Automated enforcement laws
- Alcohol-impaired and drugged drivers laws
- Graduated driver licensing (GDL) laws
- State motorcycle helmet use laws
- Seat belt use laws
- Local climatological data (LCD) NOAA
- Cooperative weather observer/other sources
- Winter road conditions (DOT)
- Work zone
- 511 information
- Changes to existing infrastructure condition
- Roadway capacity improvements

What is in the RID Database?

<table>
<thead>
<tr>
<th>Site</th>
<th>Total miles collected</th>
<th>% Rural/Urban Routing purposes only</th>
</tr>
</thead>
<tbody>
<tr>
<td>FL</td>
<td>4,366</td>
<td>Rural: 45% Urban: 55%</td>
</tr>
<tr>
<td>IN</td>
<td>4,635</td>
<td>Rural: 64% Urban: 36%</td>
</tr>
<tr>
<td>NC</td>
<td>4,558</td>
<td>Rural: 59% Urban: 41%</td>
</tr>
<tr>
<td>NY</td>
<td>3,570</td>
<td>Rural: 68% Urban: 32%</td>
</tr>
<tr>
<td>PA</td>
<td>3,670</td>
<td>Rural: 83% Urban: 17%</td>
</tr>
<tr>
<td>WA</td>
<td>4,277</td>
<td>Rural: 31% Urban: 69%</td>
</tr>
<tr>
<td>Total</td>
<td>25,076</td>
<td></td>
</tr>
</tbody>
</table>

All data (mobile van data and acquired data) are referenced to a common basemap that covers the continental US
Phase 1 Implementation Program

- Phase I operates under a Cooperative Agreement between TRB and FHWA.
- It is a 5-year phase to make the data available to a wide variety of researchers, and to determine a long-term operations and data access plan.
- Oversight Committee for Use and Oversight of SHRP 2 Safety Data, Phase 1 (aka Safety Data Oversight Committee) oversees the work of Phase 1
- Sponsors the Student Paper Competition
Student Competition

• To promote the use of Safety Data in research for new insights and applications and to encourage young researchers working with this new dataset

• Students propose how they would use the NDS and/or RID to address a research question

• Topics are not limited. Safety, driver behavior, roadway design, and beyond--operations, planning, health, data modeling, vehicle systems
Awards

• Winning students will be awarded:
  – Data export with the fee waived to conduct their analysis - subject to certain restrictions on data that can be exported
  – Admission & travel to 2019 TRB Annual Meeting for 1 person
  – A slot to present their research during a poster session at the TRB Annual Meeting
  – Opportunity to publish their full research paper in TRB’s Transportation Research Circular pending panel review
  – Top 2 paper authors will receive TRB Student Affiliate membership for 1 year
Eligibility

• Primary author must meet the following criteria:
  – From August 15, 2017 through December 31, 2018 you are both:
    
    (1) citizen or permanent resident of the United States, or have a current US student visa, and
    (2) officially enrolled as a full-time student at an accredited North American institution of higher learning for the academic year in a course leading to a master’s or doctorate degree.

• Paper is not previously published or accepted for publication or presentation at a conference

• Must have faculty sponsorship
Other Eligibility Questions

• There is 1 presenting author. Co-authors are permitted; they can be students, faculty, professors.

• No limit to number of authors. However only 1 student presenter will be covered to travel to and attend the TRB Annual Meeting.

• Submitting more than 1 proposal by the same author/s is permissible but research questions must differ substantively.
Application Instructions

• Follow abstract template; do not exceed 1500 words. Template in PDF and application website.

• Abstract should cover:
  – Analysis topic or general area
  – Data variables to be used
  – Analysis method or methods
  – Potential applications of results

• Quality is evaluated in content and communication. Typos and grammatical errors are unacceptable.

• Must have faculty sponsor who will advise and oversee the work and ensure that Institutional Review Board regulations are followed.
Proposal Selection

• Panel review will look for proposals that demonstrate
  – Understanding of the Safety Data (including feasibility)
  – Originality and practicality of methods
  – Originality and usefulness of applications

• Master’s and doctoral evaluated separately

• Maximum 8 abstract proposals to be selected

• Selection Panel is comprised of members of TRB committees, including experts who are familiar with the Safety Data
## Timeline

<table>
<thead>
<tr>
<th>Date</th>
<th>Event Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>October 29, 2017</td>
<td>Abstracts proposals due by 11:59 pm PDT</td>
</tr>
<tr>
<td>December 1, 2017</td>
<td>Decision notification of selected students</td>
</tr>
<tr>
<td>January 15, 2018</td>
<td>Abstract revisions due and deadline to start data request</td>
</tr>
<tr>
<td>October 1, 2018</td>
<td>Full papers due for publication review</td>
</tr>
<tr>
<td>November 1, 2018</td>
<td>Comments returned from review</td>
</tr>
<tr>
<td>December 1, 2018</td>
<td>Full paper revision due for final review</td>
</tr>
<tr>
<td>December 15, 2018</td>
<td>Final publication decision and top two papers announced</td>
</tr>
<tr>
<td>January 13-17, 2019</td>
<td>TRB Annual Meeting poster session</td>
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</tbody>
</table>

**exact date TBD**
Which Data Elements Are Available to You

- InSight-only Data
- Dataverse
- Roadway Information Database
InSight Data Access Website

- https://insight.shrp2nds.us/
- Create an account
- Become a qualified researcher

Background Information

Click + to show, or − to hide, additional information about each data item.

- Frequently Asked Questions
- SHRP2 NDS Naturalistic Driving Study Overview
- SHRP2 NDS Data Versioning
- SHRP2 NDS Data Dictionaries
  - Vehicle Detail Table Data Dictionary
  - Trip Summary Table Data Dictionary
  - Time Series Data Dictionary
  - Post Crash Interview Data Dictionary
InSight-only Data

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TRANSPORTATION RESEARCH BOARD
InSight-only Data

Available for student papers

Not available for student papers
Dataverse

• Searchable repository of reusable datasets with descriptions and documentation: 61 currently
  – FHWA Reduced Curves Data Set: aggregate data for NDS traversals of roadway defined as curves in RID
  – Naturalistic Engagement in Secondary Tasks (NEST) Dataset: de-identified, detailed time-series data and high-level data about secondary task engagement and distraction-related safety-critical events
• A few include personally identifying information - must be viewed in enclave. SHRP 2 not covering visit.
  – For most datasets a non-PII version exists
  – Exception is Crash Roadway Characteristics: Roadway attributes at crash locations are considered identifying
Roadway Information Database

• No personally identifying information
• Contact the RID operator and complete a simple Terms of Use Agreement
  – Agree not to copy or distribute the dataset
  – Proper citation
• SHRP 2 will cover cost to ship drive to you
NDS Data Request Process

• Students selected by review panel will go through data request process

• Whether using InSight data or dataset on Dataverse, Data Use Licenses (DULs) are needed to get an export of the data because of data constraints
Using the SHRP 2 Data: IRB and Data Use License Processes

Suzie Lee
Director of Research Compliance and Data Access
Virginia Tech Transportation Institute
slee@vti.vt.edu
Why?

• Promises were made to participants and to the Institutional Review Boards overseeing the data collection
  – Additional use of data is subject to IRB approval
  – Any additional use of original data (whether identifying or not) requires a data use license
  – Identifying data (PII) can only be used in a secure data enclave
  – Only de-identified summary data can be readily shared
    • But this term is still not fully defined or vetted
• All original data must eventually be deleted
  – So usage must be tracked
InSight Website Users

• Some original data can be viewed and queried from the website (cannot be downloaded because of tracking requirement)

• Need some minimal qualifications for users of original data on website
  – Proof of training in human subjects protection (e.g., IRB training certificate, training in the protection of human subjects)

• Users can only view background information about the study

• Qualified researchers can view and query all data available on the website
  – Have submitted an IRB training certificate
Other Data Users

• Those who want to hold a subset of the data locally or come to the secure data enclave to work with PII must submit a data use license application
  – Includes Purpose, Scope, and Data Specification (exactly which subset of the data do you need?)
  – Requires proof of IRB approval (or proof of exemption)
  – Requires a data security affirmation (to ensure data will be held at the level of security promised to participants)
  – If there is a cost associated with extracting the data, the contract must be executed prior to the DUL (DUL is a license to use the data, does not mention money)
Common Misunderstandings

• The IRB training certificate is NOT proof of IRB approval for a project
  – IRB training certificates are issued to individuals upon completion of a course and do not confer approval for specific research projects
  – IRB approval or proof of exemption is granted to a project (typically involving a group of researchers)

• Training certificate – issued to individual, used to become Qualified Researcher

• IRB approval – issued to project, used to obtain data use license

• Data use license – agreement between institutions, not individuals (if a researcher moves to a new institution, they will need a new DUL to continue working with the data)
Data Use License Detail

- Walk through typical data use license and data security affirmation (double-click PDF to open)

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Questions?

Please submit questions through the chat box to the organizers.
Thank you and good luck!

<table>
<thead>
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<th>Contact Us</th>
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</table>
| **SHRP2@nas.edu**  
David Plazak  
Transportation Research Board |

| For the NDS: Dr. Miguel Perez & Dr. Suzie Lee  
Virginia Tech Transportation Institute  
datasharing@vtti.vt.edu |

| For the RID: Dr. Omar Smadi  
Iowa State University, Center for Transportation Research & Education  
smadi@iastate.edu |