



AASHTO SHRP2 Naturalistic Driving Study Task Force

3:30 Identifying Research Priorities

March 19, 2014



U.S. Department of Transportation
Federal Highway Administration



Session Objective: Identify Topics

- Identify topics for research of highest interest to AASHTO members
- How will we do this in this session?
 - Capture your thoughts as you identify your characteristics of a successful project
 - Capture your suggestions of research topics
 - Summarize them tonight and re-state them in morning
 - Spend more time on topic identification, clarification tomorrow if needed

Success Characteristics



- Please suggest characteristics of a successful project for this AASHTO SHRP2 Naturalistic Driving Study effort

Research Topics Suggestions



Research Topic Suggestions



Research Topic Suggestions



Research Topic Suggestions



Three Levels of Complexity

1. Website data studies

1. The SHRP 2 website will contain categorical data on driver demographics and assessments, vehicle descriptors, and summary data on each NDS trip including some roadway data on the segments over which the trip passes.

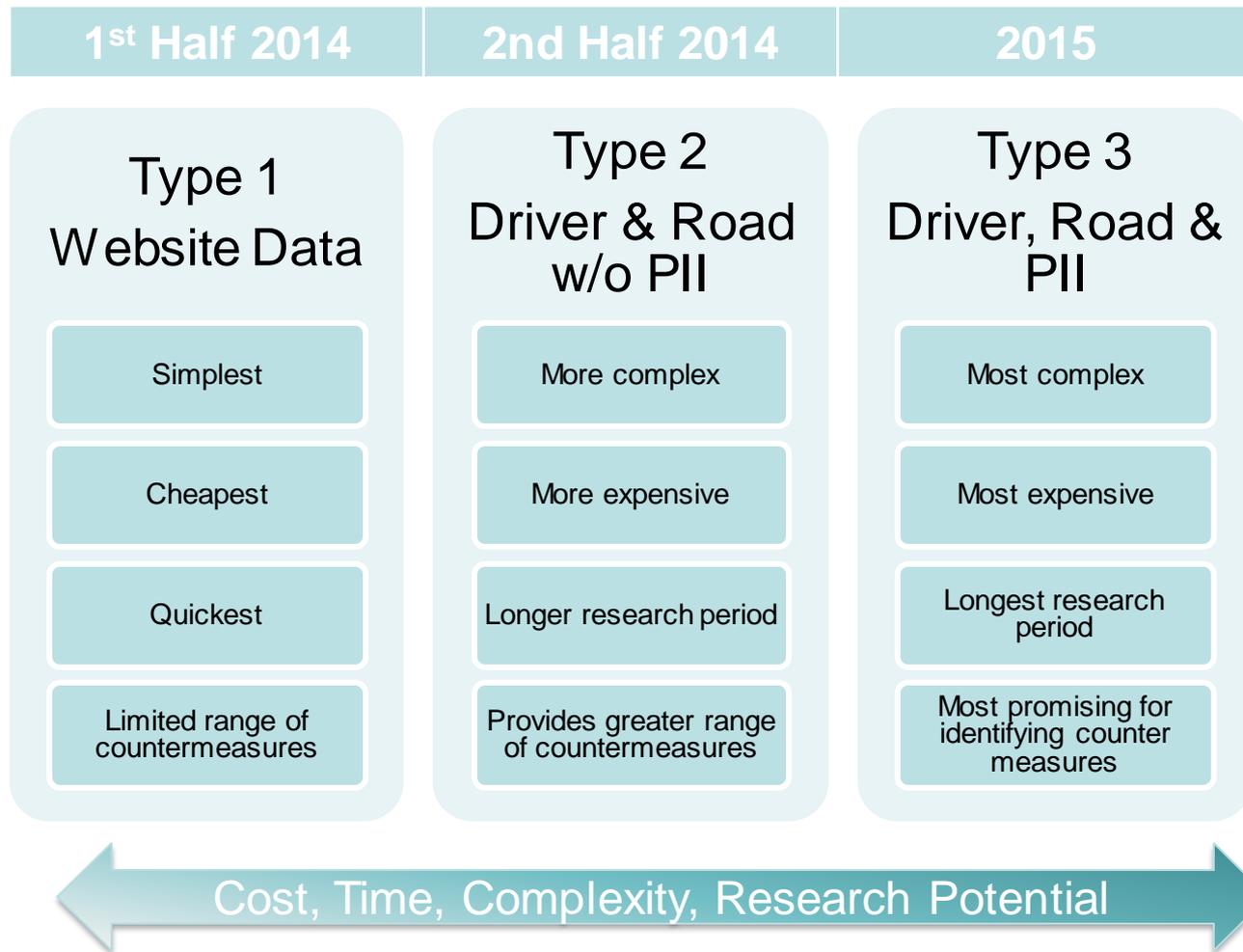
2. Detailed NDS and RID Data without PII or Video

1. In general, these data can contain everything in the full NDS-RID datasets with two exceptions: they contain no personally identifying (PII) data and no NDS video data.

3. Full NDS and RID Data

1. These data typically include PII and/or video data. They can be accessed only by qualified researchers with an approved data sharing agreement and IRB approval. Video data, including the driver's face, must be viewed and reduced in a secure enclave.

Decision Matrix



Variables to Consider

Variables

- \$5.8M total available
- Type 3 'guesstimated' at \$1.7M each
- Assume Type 1 and 2 are $> \$1.7M$

Type 1 Website

Guesstimate
of \$1.7M –
2X

N?

Type 2 Driver & Road w/o PII

Guesstimate
of \$1.7 - X

N?

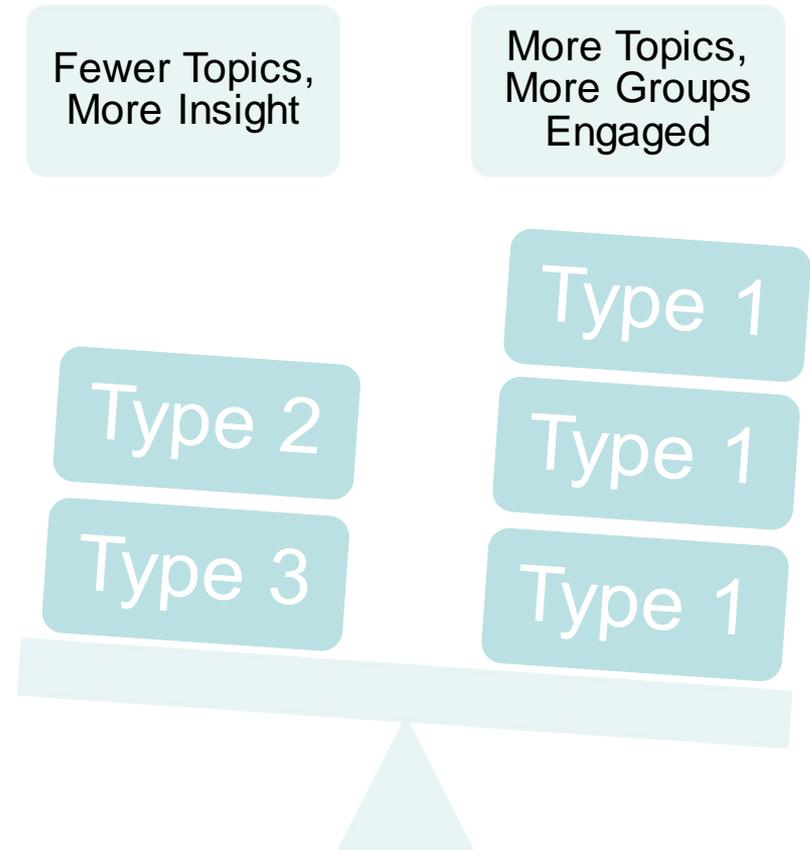
Type 3 Driver, Road & PII

Guesstimate
of \$1.7M per
study

N?

Task Force to Balance:

- Highest priorities for research that can produce most meaningful results and countermeasures
- The ability to research more topics if we pursue lower-cost research based on website data
- Potential to engage more groups if we chose more, lower-cost, topics
- Balanced against potential for more breakthrough findings if we pursue more complex Type 3 study



Survey Results

- Survey should contribute to, but not solely determine topics
- Survey open for two weeks
- 108 responses received
- Committees surveyed were
 - Standing Committee on Highway Traffic Safety (SCOHTS)
 - SCOHTS –Subcommittee on Safety Management
 - Subcommittee on Traffic Engineering
 - Standing Committee on Highways
 - Subcommittee on Design
 - Standing Committee on Research
 - Research Advisory Council
 - Governors Highway Safety Administration members

Data set rankings

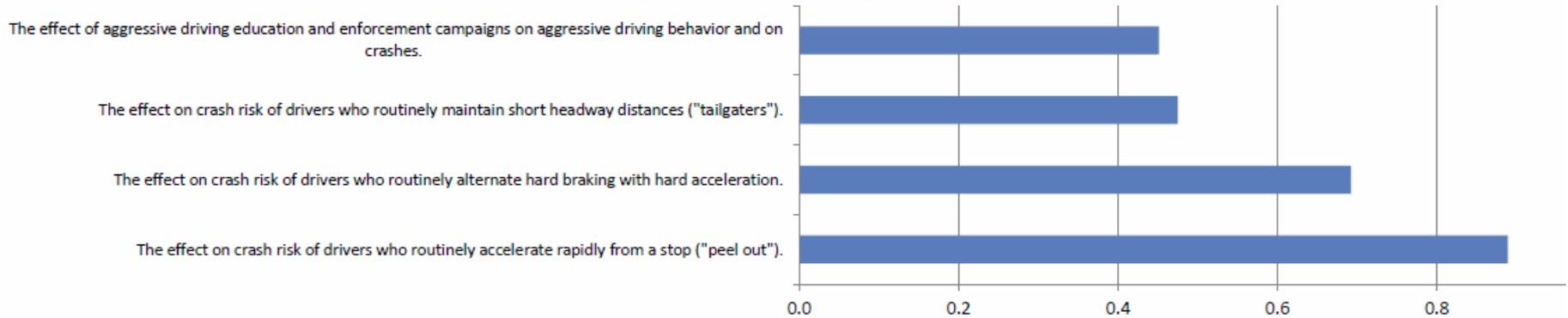
Ranking by Data Sets	
Aggressive driving	.78
Intersection related	.64
Driver behavior	.58
Driver distraction	.52
Speed related	.50
Lane departure	.49
Scale of 0 to 1.0	

AASHTO Naturalistic Driving Study Survey Results

Product	Average Ranking
Speed-Related Data Sets	
Frequency of red light running under different speed conditions.	3.07
The effectiveness of work zone and school zone signing on achieving the desired speed.	2.72
The effectiveness of changes in speed limits in changing driver speeds.	2.51
The effect of speed on crash risk in different roadway and traffic conditions.	1.69
Driver Distraction Data Sets	
The effect of passengers of various ages on distraction and crash risk.	3.95
The length of time a driver's eyes are away from the road while dialing a cell phone. While answering a cell phone call. While conducting a cell phone call.	3.69
The effects of cell phone laws and enforcement campaigns on cell phone use while driving and on crashes.	3.00
The effect of distraction on crash risk for crashes of different types or in different circumstances (e.g., lane departure and rear end crashes; intersection crashes).	2.41
The major sources of driver distraction and their effect on driver behavior and crash likelihood.	1.95
Aggressive Driving Data Sets	
The effect on crash risk of drivers who routinely accelerate rapidly from a stop ("peel out").	3.56
The effect on crash risk of drivers who routinely alternate hard braking with hard acceleration.	2.77
The effect on crash risk of drivers who routinely maintain short headway distances ("tailgaters").	1.90
The effect of aggressive driving education and enforcement campaigns on aggressive driving behavior and on crashes.	1.81
Driver Behavior Data Sets	
How frequently and in what circumstances do part-time seat belt users buckle up?	3.96
How drivers react to bicycles in the roadway under different types of signing, marking, and bike lane designation.	3.23
The effectiveness of safety campaigns such as Click It or Ticket on driver behavior.	2.89
The effect of congestion on risky driver behavior and crash risk.	2.66
The effect of weather on driver behavior and crash and near crash rates under different geometric conditions.	2.26
Lane Departure Data Sets	
The effect of pavement markings on reducing lane departures.	3.88
Frequency of and factors associated with lane departures on horizontal curves of different radiuses, super elevation, approach conditions, etc.	3.10
The effectiveness of centerline and edge line rumble strips on preventing lane departures under different geometric conditions.	2.77
What key driver, roadway, and environmental factors affect lane keeping and road departure?	2.72
The effectiveness of countermeasures in curves such as advanced warning signs, changes in speed limit, warning chevrons, illumination, rumble strips.	2.53
Intersection Related Data Sets	
The effect of lighting on speeds through intersections at night.	4.16
The effectiveness of signing and crosswalks for pedestrians on driver behavior when pedestrians are present.	3.77
The effect of different lengths of acceleration lanes and weave areas on driver behavior in merging and weaving under different traffic conditions.	3.69
Gap acceptance for left turns in intersections under various speed conditions and with different types of traffic control.	3.54
The effect of various types of signing on driver behavior in intersections.	3.02
The effect of different types of left turns lanes on driver behavior and crash probability.	2.83
All Data Sets	
Aggressive Driving Data Sets	4.66
Intersection Related Data Sets	3.83
Driver Behavior Data Sets	3.48
Driver Distraction Data Sets	3.10
Speed-Related Data Sets	2.97
Lane Departure Data Sets	2.95

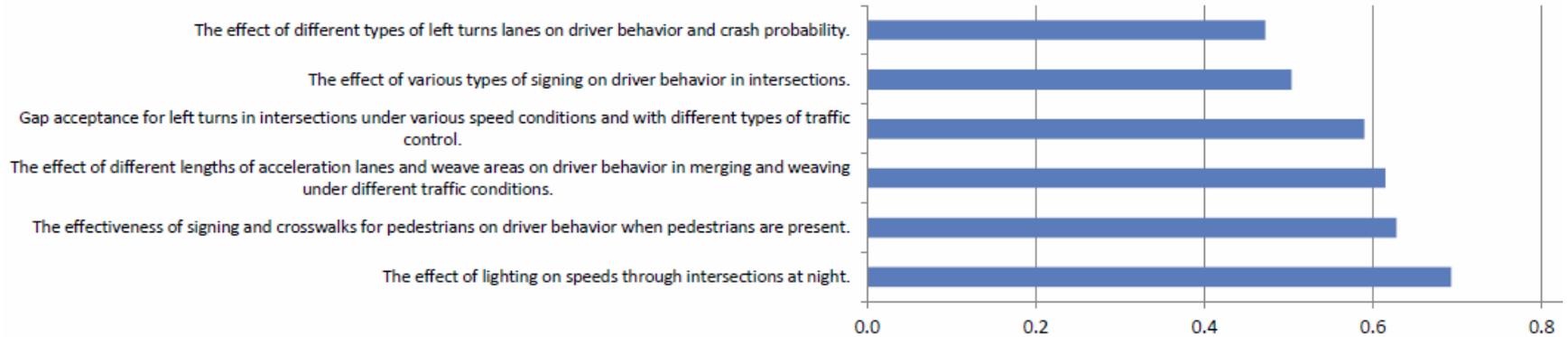
Aggressive Driving

Aggressive Driving Data Sets



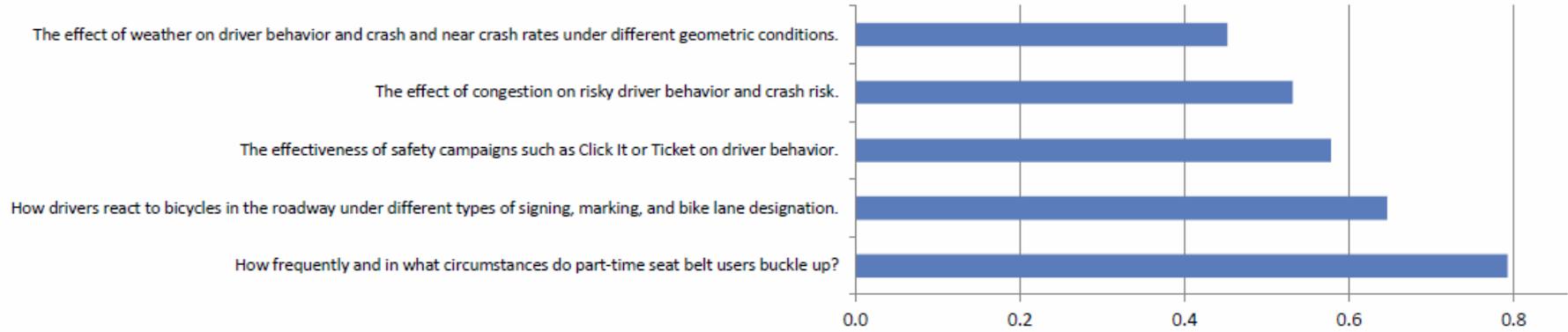
Intersection related

Intersection Related Data Sets

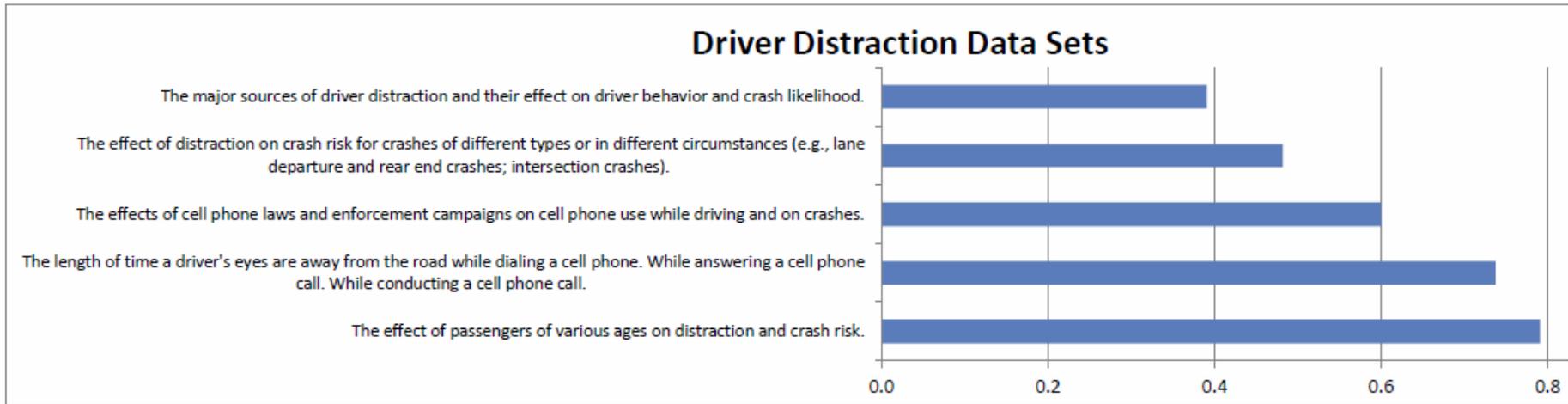


Driver behavior

Driver Behavior Data Sets

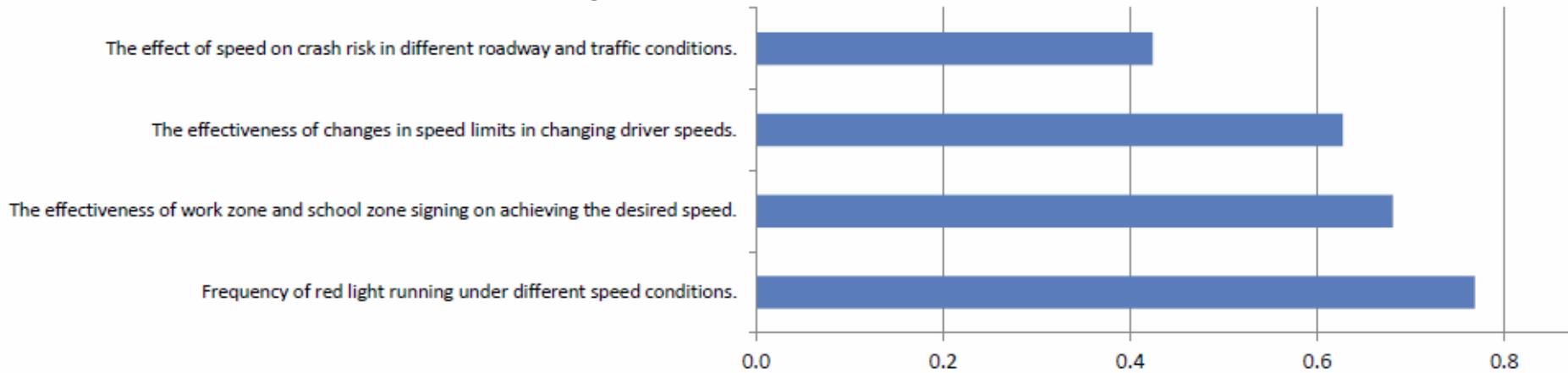


Driver distraction



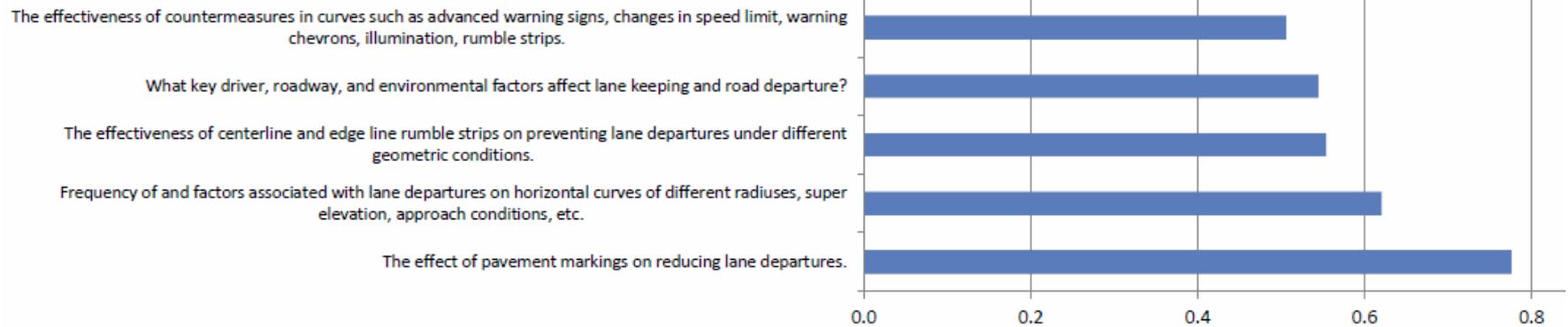
Speed related

Speed-Related Data Sets



Lane departures

Lane Departure Data Sets



Crash causation

Crash-Related Factors in Highway Fatalities from AASHTO Highway Safety Plan*		
Run off road	18781	44%
No seat belt	18019	42%
Impaired	17013	40%
Speed	11990	28%
Suspended licenses	6973	23%
Older	6630	22%
Intersections	6903	16%
Distraction	4898	16%
Heavy Truck	4986	12%
Pedestrian	4749	11%
Reckless	3565	11%
Work Zones	1028	11%
Young Drivers	3571	8%
Bicyclists	622	1%
Train	324	1%
*Distraction from 2009 NHTSA		
** Factors exceed 100% because of multiple factors in many crashes		