

SPR RESEARCH PROGRAM

SECOND-STAGE PROPOSAL SUMMARY

PROBLEM NUMBER AND TITLE

12-19 Applying a Novel Merged Crash Data Base to Evaluating Oregon DMV Intervention Programs for Risky Drivers

PROBLEM SUMMARY

Risky behaviors are recognized by the Oregon Department of Transportation's (ODOT) Transportation Safety Action Plan as a contributor to fatal and severe traffic injury. It is the objective of the DMV's risky driver diversion program to reduce the frequency of crashes caused by repeat traffic offenders by removing them from the roadway until they are deemed safe to return. Until recently, based on research performed by ODOT's research office and the Oregon Driver & Motor Vehicle Services supported by NHTSA, it was not possible to robustly evaluate how ODOT's risky driver diversion program strategies such as the habitual traffic offender (HTO) program, the Oregon driver improvement program (DIP), the driving under the influence of intoxicants (DUII) program, and the at-risk driver program perform in making our streets safely. There is a need to evaluate the effectiveness of these programs to maximize our efforts to improve the safety of road users in Oregon.

ODOT OBJECTIVES

This work will leverage a merged crash database of four elements (driver, crash, accident, verdict) constructed for the agency through a completed NHTSA sponsored research effort under contract 24-07. That merged data base allows for the identification of individual driver records matched against crashes and citations. The final product of this research will include an evaluation of the risky driver diversion programs, e.g., HTO, DIP provision and adult, DUII program, and at-risk driver program. The effectiveness of the diversion programs will be measured by shifts in frequencies and types of citations and crashes that occur before and after the program interventions for all program participants. This knowledge will support the following DMV actions: (1) determine if current thresholds for triggering risky driver diversions are optimized for traffic safety risk, (2) ensure that current programs are producing safety improvements as intended, (3) identify if there are programs that are underperforming and therefore should be reconsidered.

BENEFITS

This evaluation will confirm which programs are producing positive safety improvements. Policy recommendations for shifting the triggering thresholds for certain diversion programs or modifying their delivery in other ways based on the risk profiles of Oregon drivers, specifically the relationships between citations and crashes experienced in Oregon, will be developed.

SCHEDULE, BUDGET AND AGENCY SUPPORT

Estimated Project Length: 22 months.

Estimated Project Budget: \$200,000

ODOT Support:

Tiana Tozer, Program Analyst, ODOT

Jonathan Munson, Senior Analyst, ODOT

Greg Griffin, Principal Research Analyst, ODOT

FOR MORE INFORMATION

For additional detail, please see the complete STAGE 2 RESEARCH PROBLEM STATEMENT online at:
<https://www.oregon.gov/odot/Programs/ResearchDocuments/27-19.pdf>

SPR RESEARCH PROGRAM

SECOND-STAGE PROBLEM STATEMENT

FY 2027

PROBLEM NUMBER AND TITLE

12-19 Applying a Novel Merged Crash Data Base to Evaluating Oregon DMV Intervention Programs for Risky Drivers

RESEARCH PROBLEM STATEMENT

Risky behaviors are recognized by the Oregon Department of Transportation's (ODOT) Transportation Safety Action Plan as a contributor to fatal and severe traffic injury. It is the objective of the DMV's risky driver diversion program to reduce the frequency of crashes caused by repeat traffic offenders by removing them from the roadway until they are deemed safe to return. Until recently, based on research performed by ODOT's research office and the Oregon Driver & Motor Vehicle Services supported by NHTSA, it was not possible to robustly evaluate how ODOT's risky driver diversion program strategies such as the habitual traffic offender (HTO) program, the Oregon driver improvement program (DIP), the driving under the influence of intoxicants (DUII) program, and the at-risk driver program perform in making our streets safely. Previously, ODOT has supported development of a statewide database merging crash and emergency medical services data to support evaluation of emergency care outcomes (Newgard et al., 2011), but this study seeks addressing the issues upstream of the crash—with risky drivers. There is a need to evaluate the effectiveness of these programs to maximize our efforts to improve the safety of road users in Oregon.

RESEARCH OBJECTIVES

This work will leverage a merged crash database of four elements (driver, crash, accident, verdict) constructed for the agency through a completed NHTSA sponsored research effort under contract 24-07. That merged data base allows for the identification of individual driver records matched against crashes and citations. The final product of this research will include an evaluation of the risky driver diversion programs, e.g., HTO, DIP provision and adult, DUII program, and at-risk driver program. The effectiveness of the diversion programs will be measured by shifts in frequencies and types of citations and crashes that occur before and after the program interventions for all program participants. This knowledge will support the following DMV actions: (1) determine if current thresholds for triggering risky driver diversions are optimized for traffic safety risk, (2) ensure that current programs are producing safety improvements as intended, (3) identify if there are programs that are underperforming and therefore should be reconsidered.

WORK TASKS, COST ESTIMATE AND DURATION

The following four tasks describe the primary research activities required for the success of the proposed project.

Task 1: Acquire all relevant data to perform data linkages. This data would involve License, Crash, Accident, and Verdict Data from the two most recently available years to add to the existing records obtained from previous work. Additionally, information related to the risky driver programs that individuals had participated in (including the start and end dates) will need to be acquired from the Oregon DMV.

Task 2: All data sources will need to be cleaned and validation procedures will be employed. This will ensure that the data can be integrated cohesively.

Task 3: The disparate databases will be integrated into a single merged data base. The database will be cleaned and validation procedures will be employed.

Task 4: Robust analysis will be performed for as many of the risky driver programs as we can acquire data for.

Task 5: The code developed to perform these tasks will be revised and annotated to improve the computational efficiency of the merging process.

Key Deliverables:

- Final Database
- Code for database reproducibility and maintenance
- Final Report

The agency will receive a quantitative evaluation of the Oregon DMV driver improvement program which has not been recently reviewed. The evaluation of the driver improvement program will determine the effectiveness of the existing program and will help to suggest modifications to increase effectiveness. The development of risky driver profiles in Oregon will help to define those drivers that are most at risk for the purpose of directing resources and programs to contribute to crash reduction.

Estimated Project Length: 22 months.

Estimated Project Budget: \$200,000

EXPECTED ODOT IMPLEMENTATION ACTIONS

ODOT staff will plan to implement this study through communication with involved teams, program evaluation, and assessing potential maintenance needs. After completion of the study, Research and DMV staff should meet about the findings and possible implications to support DMV programs. Depending on needs, these may take place through meetings, workshops, and brief presentations of findings. Additionally, Transportation Safety Office (TSO) staff will be involved to review opportunities to support any changes to driver improvement programs. Finally, involved program leadership should evaluate whether periodic or ongoing maintenance is needed for the database integration to address safety program outcomes over time.

POTENTIAL BENEFITS

This evaluation will confirm which risky driver programs are producing positive safety outcomes—a key priority for the agency and Research Advisory Committee (RAC). Policy recommendations for shifting the triggering thresholds for certain diversion programs or modifying their delivery in other ways based on the risk profiles of Oregon drivers, specifically the relationships between citations and crashes experienced in Oregon, will be developed.

PEOPLE

ODOT champion(s):

Amy Joyce, Driver and Motor Vehicle Services, Oregon Department of Transportation

Problem Statement Contributors:

David Hurwitz, Professor, Oregon State University

Greg Griffin, Oregon Department of Transportation

REFERENCES

Newgard, C. D., Zive, D., Malveau, S., Leopold, R., Worrall, W., & Sahni, R. (2011). Developing a Statewide Emergency Medical Services Database Linked to Hospital Outcomes: A Feasibility Study. *Prehospital Emergency Care, 15*(3), 303–319. <https://doi.org/10.3109/10903127.2011.561404>

STAFF REVIEW PAGE

LITERATURE CHECK

TRID&RIP

A review of TRID & RIP databases found no existing research that answers the research question

ODOT DECISION LENSES

Climate: This research is not focused on climate and will not include analysis of climate.

Equity: This research is not focused on equity and will not include analysis of equity.

Safety: This research will support improving safety culture for transportation staff who are involved in evaluation of risky driver programs, and the traveling public who could receive improved program offerings based on the knowledge from this study. Additionally, it will support improving safety through the best available technologies, by leveraging recent investments in database development to evaluate ODOT program investments.

The merged database approach proposed here is a shift in the application of technology. This is a resource previously unavailable in the State of Oregon that will allow for new safety knowledge to be produced. The analysis is systemic in nature because it considers every licensed driver in our state, an analysis that was previously unavailable to us as we were only able to analyze drivers who had been involved in a reported crash.

TECHNOLOGY & DATA ASSESSMENT

No Identified T&D output

At the end of this project, the implementing unit(s) within ODOT will need to coordinate the adoption of new technology or data in order to realize the full potential of this research.

Technology and data assessment will be key for researchers to complete the study, and will inform ODOT staff on whether the T&D output will either be available for use as a point-in-time, or if ODOT would desire to maintain the dataset following the project.

CROSS-AGENCY IMPACTS

- List ODOT partners or impacted units.
 - Oregon DMV, contact Jonathan.MUNSON@odot.oregon.gov
 - Oregon TSO, contact Tiana.TOZER@odot.oregon.gov
- Identify any issues of concern raised by ODOT partners. Note expected mitigation that addresses these concerns.
 - None raised