

# **Guidance to Promote Workplace Policies and Family Rules to Reduce Cell Phone Use While Driving and Promote Engaged Driving**

by

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**TABLE OF CONTENTS**

|   |    |
|---|----|
| List of Tables .....                      | ii |
| Problem Statement .....                   | 3  |
| Background Summary .....                  | 4  |
| Benefits .....                            | 6  |
| Objectives .....                          | 7  |
| Research Plan .....                       | 8  |
| TSC Pooled Fund Involvement.....          | 10 |
| Products.....                             | 11 |
| Project Implementation.....               | 12 |
| Schedule.....                             | 13 |
| Budget.....                               | 14 |
| Staffing.....                             | 16 |
| Facilities.....                           | 18 |
| Center for Health and Safety Culture..... | 18 |
| Information Services.....                 | 18 |
| Graphic and Communication Services.....   | 19 |
| Administrative Services .....             | 19 |
| References.....                           | 20 |

**LIST OF TABLES**

Table 1. Project Budget by Item ..... 14  
Table 2. Pay Rate and Benefits ..... 14  
Table 3. Project Budget by Task..... 15  
Table 4. Project Budget by State and Federal Fiscal Years ..... 15  
Table 5. Schedule of Staffing..... 17

## **PROBLEM STATEMENT**

Distraction while driving is a significant cause of crashes resulting in fatalities and serious injuries. Distracted driving may be more prevalent among young drivers who are already at greater risk for crashes due to novice driving skills. One source of distraction is using a cell phone. Communication (both spoken and typed) is a primary function of cell phones, and such communication is distracting because it takes the driver's eyes off the road and pulls their attention from the driving task. Safe driving requires the driver to be engaged in the driving task. The family and workplace contexts offer two important opportunities to address cell phone use while driving and promote engaged driving. Families can establish rules about never using a cell phone while driving and never communicating using a phone with a family member who is driving. Workplaces can establish similar policies. Guidance to reach families and workplaces is needed for traffic safety practitioners to promote engaged driving – driving free of distractions like cell phones.

## BACKGROUND SUMMARY

Traffic safety is a significant public health issue. In 2016, over 37,000 people were killed on U.S. roadways (National Center for Statistics and Analysis 2017, 9 pp.) with about 9 percent of these fatal crashes reported as distraction-affected (National Center for Statistics and Analysis 2018, 6 pp.). Younger drivers (15 to 19 years old) had the highest prevalence of distraction at the time of the fatal crashes (National Center for Statistics and Analysis 2018, 6 pp.).

The use of mobile cell phones is one distraction for drivers. Cell phones are often used to communicate with others, and drivers may feel obligated to answer calls or respond to texts due to social pressure. For example, research has shown that youth, even when told not to use their cell phones while driving, feel compelled to answer their cell phones when their parents call them (LaVoie, Lee, and Parkerm 2016, pp. 155–60). Similarly, some workplaces have expectations that drivers are to respond to work-related calls or participate in conference calls while driving (Richardson and Benbunan-Fich 2011, pp. 142–160). These examples demonstrate social expectations impacting decisions about distractions and reveal potential opportunities to reduce distracted driving.

Cultural-based strategies seek to change the behaviors of individuals by connecting their social identity to nested layers of relationships. Relationships between family members (e.g., parent to parent, parent to child) or employers and employees provide opportunities to engage people who are not in the vehicle to influence the behavior of a driver with whom they are communicating. Thus, family rules about not using a cell phone while driving need to apply to everyone in the family and on both sides of a conversation (in and out of the vehicle). Research has shown that parent modeling and expectations influence adolescent cell phone use while driving (Carter et al. 2014, pp. S32–41). A similar strategy can be applied to workplaces where research has shown that policy interventions can be effective at impacting employee safety-related behaviors (Sinelnikov and Wells 2017, pp. 161–70). These approaches leverage strategies aligned with traffic safety citizenship (explored in the Pooled Fund’s previous research).

A review of the Transportation Research Board’s (TRB) Transportation Research International Documentation database revealed four articles referencing the term “cell phone workplace” (only one is relevant and was written by the authors of this proposal). The term “distracted driving workplace” found 10 articles of which five are relevant (one was written by the authors of this proposal). One article examined workplace interventions about distracted driving using stages of change theory – an approach which may have relevance to this project. The second article examined decision making of commercial truck drivers about potentially distracting behaviors and found that the role of supervisors (in particular, the setting of clear expectations) was most associated with reduced crash risk. The third article highlighted the importance of families in addressing potentially risky driving behaviors of young drivers while at work as work-related crashes are more prevalent among young drivers. The last article summarized findings from a symposium held in 2005 in Canada about prevalence, costs, and best practices to address distracted driving. While somewhat dated, these results (as well as others) can be used to inform the current project.

The term “distracted driving family” found five articles, four of which were somewhat relevant. The articles explore such issues as the role of technology addiction in distracted driving among adolescents (Mirman et al. 2017, pp. 18–23); experiential interventions to change beliefs about

perception of risk from distracted driving; the distracting role of children in the vehicle; and parental concerns about distracted driving in the context of supporting graduated driver licensing.

A review of Transportation Research Board's Research in Progress database revealed 52 projects addressing distracted driving, although only one addressing distracted driving in the workplace (a project involving the authors), and none involved distracted driving in the family.

## **BENEFITS**

Many traffic safety agencies could benefit from practical resources to share with families (and agencies serving families) and workplaces to promote engaged driving and reduce distracted driving. These resources could be integrated with existing projects or used as standalone guidance. Reducing distracted driving will reduce crashes and improve traffic safety.

## OBJECTIVES

The objectives of this project are to identify strategies for families and workplaces that foster engaged driving (i.e., practices that promote engagement by the driver in the driving task). Specifically, the project will seek to answer the following questions:

- How do expectations within families and workplaces influence cell phone use while driving?
- What beliefs and attitudes need to shift to change these expectations and increase engaged driving?
- What are potentially effective strategies (and associated messages) to promote engaged driving within families and workplaces to reduce cell phone use?

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## RESEARCH PLAN

The Center for Health and Safety Culture is proposing to build on existing research about family rules and workplace policies to address cell phone use by drivers.

### 1. Method

The method proposed for this project is divided into four tasks:

- Task 0. Project Management
- Task 1. Literature Review
- Task 2. Develop and Implement Surveys
- Task 3. Develop Guidance for Families and Workplaces
- Task 4. Create Resources and Complete Final Report

#### **Task 0. Project Management**

Jay Otto will be the principal investigator for this project. As a Research Scientist at the Center for Health and Safety Culture (CHSC) and from his experience leading other projects, Otto is well qualified to lead the project. He will participate in the kick-off meeting to review the details of the project and to make sure all policies and procedures are followed to align with Montana Department of Transportation's (MDT's) expectations. Otto will be supported by Dr. Nic Ward who will engage in monthly calls with MDT to review progress and will provide quarterly reports of progress addressing time and budget. Otto will assure quality for all aspects of the project. Otto will be supported by Kelly Green who will provide financial data. As part of project management, communications will leverage existing communication plans from the support contract including the monthly phone call with MDT and the quarterly meetings with the Pooled Fund Board. To ensure quality of deliverables, the Pooled Fund Board will be invited to review draft deliverables. Necessary revisions will then be made for the final products submitted to MDT.

#### **Task 1. Literature Review**

A literature review on family rules and workplace policies to address distracted driving (with a special focus on cell phone use) will be conducted. This review will inform the design of the surveys. In addition, the literature review will provide guidance on potential messages to foster engagement by families and workplaces. Kari Finley, Senior Research Scientist, will lead this task. The literature review will be summarized in the Task 1 Report and updated in the Final Report.

#### **Task 2. Develop and Implement Surveys**

Based on the literature review, surveys will be developed to better understand how expectations within families and workplaces influence cell phone use while driving. A behavioral model will inform the development of surveys to explore which beliefs to target to change expectations and increase engaged driving. The surveys will be pilot tested with a small sample and provided to the Pooled Fund Board for approval prior to full implementation. The surveys will use purchased panels of adult respondents from Qualtrics. We will recruit parents with teenage children as well as adults who may drive as a part of their work. Otto will summarize the findings in the Task 2 Report.

#### **Task 3. Develop Message Guidance**

Based on the results from Task 2, guidance for families and workplaces will be developed and tested with a convenience sample. Several written messages will be developed and tested with a

series of convenience samples recruited by Qualtrics with opportunities to refine in between tests. The intent is to develop materials and messages that foster engagement by adults (as family members and as employees). The guidance and messages will be assessed based on self-reported attitudes and beliefs about the messages (but will not be substantiated by observed behaviors). Morrison Creative, Inc. will be hired to provide a “look” for the materials that will make them attractive and suitable for distribution. Otto will summarize the methods and recommendations in the Task 3 Report.

#### **Task 4. Create Resources and Complete Final Report**

The following products will be developed to foster dissemination of the results:

- Two information sheets (for families and workplaces, respectively) that summarize the findings and guidance;
- Two, brief, readily accessible documents providing guidance for families and workplaces to promote engaged driving (specifically about cell phone use);
- A few slides summarizing the results of the project;
- A recorded webinar summarizing the results;
- A poster suitable for use at TRB (provided as a pdf document); and
- A comprehensive research report of the project.

Otto will be responsible for completing the products. The Pooled Fund Board will review and approve the final products.

## **TSC POOLED FUND INVOLVEMENT**

We anticipate the assistance of the TSC Pooled Fund Board in contributing to the review and approval of the survey and the project deliverables.

## PRODUCTS

1. Task 0 Quarterly Progress Reports
  - Progress reports based on MDT template for each quarter of project
2. Task 1 Report: Literature Review
3. Task 2 Survey to assess values, attitudes, and beliefs about family and workplace rules to promote engaged driving and reduce cell phone use while driving
4. Task 2 Report summarizing findings of assessment
5. Task 3 Report summarizing guidance and message recommendations
6. Information Sheets (addressing families and workplaces)
7. Guidance Briefs
  - A brief, readily accessible document providing guidance for families and workplaces to promote engaged driving addressing cell phone use
8. A few PowerPoint slides summarizing the results of the project
9. A recorded webinar summarizing the results
10. A poster suitable for use at TRB (provided as a pdf document)
11. A comprehensive research report of the project

## **PROJECT IMPLEMENTATION**

This project will provide guidance and messaging that agencies can share with families (and agencies that serve families) and workplaces to promote engaged driving and reduce cell phone use while driving. The products can be shared on a website and readily disseminated.

### SCHEDULE

The timeline for the main tasks and deliverables is summarized below for this 20-month project:

|   | Month  |   |   |        |   |   |        |   |   |        |    |    |        |    |    |        |    |    |        |    |   |
|---|--------|---|---|--------|---|---|--------|---|---|--------|----|----|--------|----|----|--------|----|----|--------|----|---|
|   | 1      | 2 | 3 | 4      | 5 | 6 | 7      | 8 | 9 | 10     | 11 | 12 | 13     | 14 | 15 | 16     | 17 | 18 | 19     | 20 |   |
| <b>Task 0. Project Management</b><br>Quarterly Report | X<br>X | X | X | X<br>X | X | X | X<br>X | X | X | X<br>X | X  | X  | X<br>X | X  | X  | X<br>X | X  | X  | X<br>X | X  | X |
| <b>Task 1. Literature Review</b>                      | X      | X | X | X      | X | X |        |   |   |        |    |    |        |    |    |        |    |    |        |    |   |
| <b>Task 2. Surveys</b>                                |        |   |   |        | X | X | X      | X | X | X      | X  | X  |        |    |    |        |    |    |        |    |   |
| <b>Task 3. Develop Guidance</b>                       |        |   |   |        |   |   |        |   |   |        | X  | X  | X      | X  | X  | X      | X  |    |        |    |   |
| <b>Task 4. Resources and Final Report</b>             |        |   |   |        |   |   |        |   |   |        |    |    |        | X  | X  | X      | X  | X  | X      | X  |   |

## **BUDGET**

The project costs are summarized below. Table 1 summarizes the costs by budget item; Table 2 summarizes the pay rate and benefit rate for project staff;

Table 3 summarizes the costs by task; and

Table 4 summarizes the project costs by fiscal year. Note that a variety of staff are included in the budget because of (1) the need for skills and knowledge across a range of disciplines, and (2) the need to control the budget by using staff from lower salary ranges.

**Table 1. Project Budget by Item**

| <b>Item</b>               | <b>Total</b>     |
|---------------------------|------------------|
| Salaries                  | \$73,860         |
| Benefits                  | \$24,965         |
| Contracted Services       | \$1000           |
| Supplies                  | \$450            |
| Communications            | \$0              |
| Other: Qualtrics          | \$21,300         |
| <b>Total Direct Costs</b> | <b>\$121,575</b> |
| Indirect Costs (25%)      | \$30,393         |
| <b>Total Project Cost</b> | <b>\$151,968</b> |

Contracted Services

- Morrison Creative, Inc. (\$1,000) to develop graphic design and layout for the resources and associated materials.

**Table 2. Pay Rate and Benefits**

| <b>Individual</b>  | <b>Hourly Rate</b> | <b>Benefit Rate</b> |
|--------------------|--------------------|---------------------|
| Arpin, Jamie       | \$24.52            | 44.80%              |
| Finley, Kari       | \$44.77            | 33.59%              |
| Green, Kelly       | \$27.49            | 42.12%              |
| McMahill, Annmarie | \$39.23            | 35.51%              |
| Otto, Jay          | \$53.86            | 34.12%              |
| Ward, Nic          | \$87.78            | 26.93%              |

**Table 3. Project Budget by Task**

| <b>Item</b>                                    | <b>Total</b>     |
|--|------------------|
| 0 – Project Management                         | \$5,446          |
| 1 – Literature Review                          | \$16,684         |
| 2 – Surveys                                    | \$44,271         |
| 3 – Develop Guidance                           | \$64,632         |
| 4 – Create Resources and Complete Final Report | \$20,935         |
| <b>Total Project Cost</b>                      | <b>\$151,968</b> |

**Table 4. Project Budget by State and Federal Fiscal Years**

| <b>Item</b>               | <b>State Fiscal Year</b> |                |              | <b>Federal Fiscal Year</b> |                |
|---------------------------|--------------------------|----------------|--------------|----------------------------|----------------|
|                           | <b>2019</b>              | <b>2020</b>    | <b>2021</b>  | <b>2019</b>                | <b>2020</b>    |
| Salaries                  | 12,516                   | 58,584         | 2,759        | 21,404                     | 52,455         |
| Benefits                  | 4,283                    | 19,756         | 926          | 7,338                      | 17,627         |
| Contracted Services       | 0                        | 1,000          | 0            | 0                          | 1,000          |
| Supplies                  | 150                      | 250            | 50           | 150                        | 300            |
| Other                     | 3,000                    | 18,300         | 0            | 3,000                      | 18,300         |
| <b>Total Direct Costs</b> | <b>19,949</b>            | <b>97,890</b>  | <b>3,735</b> | <b>31,892</b>              | <b>89,682</b>  |
| Indirect Costs (25%)      | 4,987                    | 24,473         | 934          | 7,973                      | 22,421         |
| <b>Total Project Cost</b> | <b>24,936</b>            | <b>122,363</b> | <b>4,669</b> | <b>39,865</b>              | <b>112,103</b> |

## STAFFING

Staffing for this project involves members of the Center for Health and Safety Culture. Each staff member contributes to the project in a unique way based on their specific expertise and background. Table 5 summarizes staff time by task for the 20-month duration of this project. Overall, this effort can be interpreted as the equivalent of one person working on this 45% of the time for 20 months (see FTE in Table 5). We believe this FTE equivalent effort is reasonable to satisfy the goals of this project in a cost-effective manner.

**Jay Otto, M.S.**, will serve as the PI for the project and oversee all efforts. Otto is the principal scientist of the Center for Health and Safety Culture. He oversees all of the Center's projects and fosters integration and dissemination of research findings across projects. He routinely provides presentations and leads trainings. He has developed, implemented, and analyzed surveys of students, parents, adults, key leaders, schools, and law enforcement regarding a variety of safety issues. He is a contributing author on several of WTI's traffic safety reports and is presently leading pilot projects to reduce impaired driving and increase seat belt use.

**Kari Finley, Ph.D.**, will complete the literature review and contribute to the survey development and task reports. Finley will contribute to all aspects of this project and will contribute as a lead writer for the communication tools in this project. Finley is a Behavioral Specialist with extensive experience in behavior change.

**Annmarie McMahill, MS**, will contribute to the development of family resources and contribute to the development of all resources. McMahill is the manager for the Center and has extensive experience on traffic safety projects. She is a research scientist with extensive experience at the community level with prevention.

**Nic Ward, Ph.D.**, will communicate on a monthly basis with MDT and the Pooled Fund on the progress of the project. Ward will contribute to the project bringing nearly 20 years of international research in human factors applied to traffic safety. Professor Nicholas Ward (F. Erg. S) is currently a Professor of Mechanical and Industrial Engineering at Montana State University and Director for the Center for Health and Safety Culture at WTI. Professor Ward has led several successful interdisciplinary and international consortia for traffic safety research including intelligent transportation systems, driver behavior (impairment), and traffic safety culture.

**Jamie Arpin** will contribute to supporting the survey work, message development, and task report writing.

**Kelly Green** will be involved in the financial and contract management of this project.

**Table 5. Schedule of Staffing**

| Name               | Role                   | FTE*        | Hours by Task |            |            |            |            | Total        |
|--------------------|------------------------|-------------|---------------|------------|------------|------------|------------|--------------|
|                    |                        |             | 0             | 1          | 2          | 3          | 4          |              |
| Arpin, Jamie       | Research Staff         | 0.05        | 0             | 30         | 65         | 45         | 45         | <b>185</b>   |
| Finley, Kari       | Research Staff         | 0.10        | 0             | 75         | 95         | 115        | 74         | <b>359</b>   |
| Green, Kelly       | Financial Management   | 0.03        | 100           | 0          | 0          | 0          | 0          | <b>100</b>   |
| McMahill, Annmarie | Research Staff         | 0.09        | 0             | 30         | 60         | 180        | 60         | <b>330</b>   |
| Otto, Jay          | Principal Investigator | 0.12        | 0             | 55         | 135        | 165        | 75         | <b>430</b>   |
| Ward, Nic          | Research Staff         | 0.05        | 0             | 20         | 25         | 100        | 19         | <b>164</b>   |
| <b>Total</b>       |                        | <b>0.44</b> | <b>100</b>    | <b>210</b> | <b>380</b> | <b>605</b> | <b>273</b> | <b>1,568</b> |

\*based on 20 months

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## FACILITIES

The Western Transportation Institute (WTI) is the nation's largest transportation institute focusing on rural transportation issues and is designated as a National University Transportation Center sponsored by the U.S. Department of Transportation. The Institute was established in 1994 by the Montana and California Departments of Transportation in cooperation with Montana State University (MSU). WTI has a 50+ person multidisciplinary staff of professionals, students, and associated faculty from engineering (mechanical/industrial/civil/electrical), computer science, fish and wildlife, ecology, business, and economics.

WTI has an annual budget of approximately \$8 million, which is obtained from a diverse sponsor base including 26 state departments of transportation, the U.S. Department of Transportation (USDOT), and other federal agencies such as the National Science Foundation, Department of Homeland Security, Transportation Research Board, and the National Park Service. WTI also receives funding from private foundations, Parks Canada, and several companies.

WTI draws from eight integrated research areas to create solutions to rural transportation issues and manages seven laboratories. The 30,000 square feet of space provides dedicated onsite space and laboratories for project staff as well as facilities for archiving and transmitting data. As a department within the College of Engineering at MSU, WTI is also supported by the College and by the umbrella of MSU administrative, academic, and research resources.

### **Center for Health and Safety Culture**

In 2009, WTI established a research center labeled the Center for Health and Safety Culture (CHSC) which is made up of an inter-disciplinary team of researchers and practitioners from across North America dedicated to using science to address social issues. The mission of the CHSC is to develop methods to grow positive norms that support health and safety. The Center works with a variety of clients and sponsors including local, state, federal governmental agencies (e.g., state departments of transportation), private businesses, corporations, community coalitions, and private foundations.

### **Information Services**

The Western Transportation Institute is housed in the Transportation and Systems Engineering Building on the Montana State University (MSU) campus, which provides ready access to MSU's library, computing, and other facilities. The MSU Library system has licenses with the largest databases of published literature as well as open access to published articles in numerous peer reviewed journals. These resources will be critical in researching past studies and identifying evidence-based strategies. Literature and information gathering is performed through the Carnegie Research Level 1 Library (Renne Library). In addition to an extensive collection of printed material, the library subscribes to dozens of databases and hundreds of refereed journals in print and electronic format. Specific items not accessible through these sources can be located and retrieved by the Interlibrary Loan service, which is affiliated with other research libraries across the United States. Typical sources used to aid literature searches include: TRIS Online (Transportation Research Information Services), E-Science Server, Transportation Research Board Research Records and Annual Meeting CD-ROMs, Google Scholar, Google, and Montana Local Technical Assistance Program library.

## **Graphic and Communication Services**

Communications staff provides technical editing, layout, graphic design, and web page support. Information Technology staff maintains network servers and individual computers, software, and hardware. Relevant university communication facilities include a video and conference room facilities. WTI routinely conducts internet-based meetings with clients and staff located across the United States and Canada. Webinars are hosted to facilitate training and information dissemination and recorded for later access by stakeholders and clients.

## **Administrative Services**

The researchers at WTI are assisted by a highly-qualified group of experienced support staff. Administrative staff members assist with budgeting, procurement, contracts, and accounting. The university provides Extended University services for online educational course development and publications and an Institutional Review Board (IRB) to oversee all research engaging humans.

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