

An assessment of traffic safety culture: exploring traffic safety citizenship

by

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TABLE OF CONTENTS

List of Tables	ii
List of Figures	ii
Problem Statement	3
Background Summary	4
Benefits	7
Objectives	8
Research Plan.....	9
TSC-TPF Involvement.....	14
Products.....	15
Project Implementation.....	16
Schedule.....	17
Budget.....	18
Staffing.....	20
Facilities.....	23
Center for Health and Safety Culture.....	23
Information Services.....	23
Graphic and Communication Services.....	24
Administrative Services	24
References.....	25

LIST OF TABLES

Table 1. Examples of Individual-Focused and Prosocial Traffic Safety Behaviors Across the Social Ecology	5
Table 2. Summary of Ongoing and Recently Completed Research on Engagement in Traffic Safety	6
Table 3. Summary of Survey Implementation.....	12
Table 4. Project Budget by Item	18
Table 5. Pay Rate and Benefits	19
Table 6. Project Budget by Task.....	19
Table 7. Project Budget by State and Federal Fiscal Years	19
Table 8. Schedule of Staffing.....	22

LIST OF FIGURES

Figure 1. Model of Traffic Safety Citizenship.....	5
Figure 2. Behavioral Model	9

PROBLEM STATEMENT

The National Toward Zero Deaths (TZD) Safety Initiative is a cooperative and coordinated effort amongst state highway safety agencies and stakeholders. The transformation of the traffic safety culture is a primary element of the TZD strategy. Only through the growth of a positive safety culture can significant and sustainable reductions in crash fatalities and serious injuries be achieved.

Road users have an important role in achieving the goal of zero deaths and serious injuries. In Sweden, the origin of the vision zero strategy, traffic safety leaders recognize that “road users are responsible for showing consideration for having a sense of judgment and responsibility in traffic, and for complying with traffic regulations,” and that growing these elements is a component of the zero deaths initiative (Belin, Tillgren, & Vedung, 2012).

Thus, engagement in traffic safety by road users is an important component of a comprehensive TZD strategy. Also called “safety citizenship,” focusing on growing prosocial, traffic safety related behaviors by everyone is a strategic shift from focusing on directly impacting the behavior of an often small group engaging in risky behaviors. The strategy is to foster more active engagement by the larger majority of safe road users to influence the behaviors of the smaller risk group.

BACKGROUND SUMMARY

The traditional strategy reducing risky or unhealthy behaviors is to affect change within the persons engaging in those behaviors. For example, drunk driving is a common topic in the Strategic Highway Safety Plans (SHSP) of many states. The primary strategies applied to this issue are education and enforcement to change the behavior of those people who decide to drink and drive. However, the proportion of the U.S. population that commits such behaviors tends to be small – about 1.5% of weekend nighttime drivers had blood alcohol percentages over 0.08% (Berning, Compton, & Wochinger, 2015). Therefore, the overwhelming majority of adults does not drink and drive. Similarly, most people (about 87% in 2013) wear their seat belts (Pickrell & Liu, 2014), and most do not exceed the speed limit by more than 10 mph (Atkins, 2009). Nonetheless, drinking and driving, speeding, and not wearing a seat belt are major contributing factors to roadway fatalities. To reach zero deaths and fatalities, we must reach these smaller groups of individuals who continue to engage in these unsafe behaviors.

A novel approach is to empower the vast majority of safe road users to engage in prosocial behaviors to impact this smaller group. This strategy known as “safety citizenship” has been proposed to improve workplace safety (Dov, 2008; Didla, Mearns, & Flin, 2009). Instead of simply trying to reduce risky behaviors among a small group of individuals, the goal is to instill a sense of responsibility in everyone for the safety of others. In essence, safety citizenship with a group of individuals is about creating a shared commitment to the value of safety and the social obligation to behave in ways that supports the safety of each other (“3 Steps to Creating a Culture of Safety Citizenship,” 2013). Safety citizenship can be manifested in a variety of behaviors that extend beyond one’s own safety to support the safety of others including voicing opinions, intervening to help others, reporting unsafe situations, staying informed, initiating change, and being a steward for existing safety programs (Didla et al., 2009).

The concept of safety citizenship has been developed in the context of formal groups of individuals such as organizations and industry involved in hazardous processes (Didla et al., 2009). In this project, we seek to translate this concept to the conditions that define the social environment of informal groups of road users. In these conditions, the specific behavior we would seek to affect by growing safety citizenship would depend on the social relationship that exists amongst the target group of road users. For example, an individual might intervene with another individual about not driving after drinking. A family could establish traffic safety rules. A workplace could promote intervening with unsafe coworkers. Community members could advocate for strong traffic safety laws, policies and enforcement within their community.

In summary, Table 1 identifies a variety of potential prosocial, traffic safety behaviors across different levels of society. In general, these behaviors can be summarized as either (1) intervening in the safety of others or (2) enabling effective traffic safety strategies (e.g., policies, laws, enforcement practices, etc.).

Growing traffic safety citizenship is different than traditional strategies of seeking compliance with laws and safe practices. Compliance is often achieved by a heavy focus on enforcement. Growing safety citizenship focuses on commitment as opposed to compliance (Dov, 2008). Individuals must choose to commit to engaging in behaviors for the direct benefit of others. This requires developing a one’s own sense of ownership (whether actual or perceived) in traffic safety (Van Dyne & Pierce, 2004). Understanding and growing commitment and ownership in traffic safety directly relates to research about traffic safety culture.

Table 1. Examples of Individual-Focused and Prosocial Traffic Safety Behaviors Across Levels of Society

Level of Society	Individual-Focused Behavior	Prosocial Traffic Safety Behavior
Individual	Don't speed Don't drive after drinking Wear a seat belt	Ask others not to speed Intervene to prevent others from driving after drinking Ask others to wear a seat belt
Family	Comply with family rules	Establish family rules about not speeding, never driving after drinking, always wearing a seat belt
Workplace	Comply with workplace rules	Intervene with coworkers to not speed, not drive after drinking, always wear a seat belt Advocate for strong safety values, policies and practices
Community	Comply with community laws	Advocate for strong laws, policies and practices that support traffic safety

For this proposal, we propose a simple model of how instilling safety citizenship can increase engagement of prosocial, traffic safety behaviors and thereby improve traffic safety. As shown in Figure 1, values associated with traffic safety citizenship will impact attitudes and beliefs that will predict engaging in prosocial, traffic safety behaviors. Measuring and understanding how these cultural factors interact and predict prosocial, traffic safety behaviors is critical to grow traffic safety citizenship.

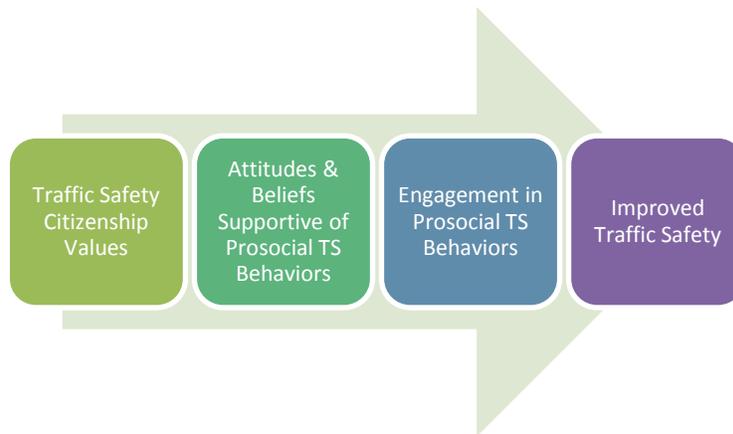


Figure 1. Model of Traffic Safety Citizenship.

This project can make significant and unique contributions to developing a better understanding of traffic safety citizenship.

Table 2 summarizes ongoing and recently completed research related to engagement in traffic safety and traffic safety citizenship. As is evident by the summaries, very little research has

directly addressed this issue. Thus, we believe this model and the focus of this proposal on safety citizenship amongst road users is unique and relevant to supporting the TZD National Strategy.

Table 2. Summary of Ongoing and Recently Completed Research on Engagement in Traffic Safety and Traffic Safety Citizenship

<p>Factors Affecting the Adoption of Evidence-based Approaches to Road Safety by State Policymakers</p> <p>The objective of this study is to examine factors determining policy and political leadership in adopting evidence-based policy countermeasures and integrated performance-based approaches such as Towards Zero Death (TZD) to reduce road fatalities and serious injuries. The study seeks to increase understanding of the policy context for safety and will engage policy and political leaders and institutions at the state and local level in applying these approaches.</p>
<p>Creating a Campaign for Parents of Pre-Drivers to Encourage Seat Belt Use by 13- to 15-Year-Olds</p> <p>This report summarizes the activities and results of a community-wide demonstration project supported by a cooperative agreement from the National Highway Traffic Safety Administration (NHTSA). The demonstration project was designed to engage parents of pre-drivers in encouraging seat belt use among 13- to 15-year-olds.</p>
<p>Measuring the value of community road safety in the safe system framework</p> <p>The safe system approach to road safety has renewed the focus on the need for an informed and engaged community to contribute to the adoption and application of effective road safety strategies. Community road safety programs play an important role in generating the community support, partnerships and engagement in road safety that is recognized as an integral role in achieving a safe system. However traditional evaluation efforts, which have focused primarily on delivery and processes, do not provide a complete picture of the contribution of community road safety programs in this new framework. It is timely to explore new areas of evaluation measurement, such as social capital, which can make an additional contribution to the evaluation picture for community road safety.</p>

BENEFITS

By understanding the cultural factors that predict traffic safety citizenship as evident from (1) intervening in the safety of others and (2) enabling effective traffic safety strategies, it may be possible to grow these conditions in our communities – there by creating a culture that achieves greater improvements in traffic safety.

States that truly embrace a towards-zero-death philosophy will need to develop a variety of strategies to grow safety citizenship around the zero-death vision. This approach could have significant benefits in reaching the remaining small percentage of road users who still engage in such risky behaviors as not wearing a seat belt and impaired driving. Interventions based on this strategy could include efforts involving families, schools, workplaces, healthcare providers and others.

Safety citizenship is also an important issue for workplaces. Many workplaces have safety programs that could benefit from a better understanding of engaging employees to improve safety practices among their coworkers. Providing workplace safety managers with information about these cultural factors will help them develop programs to leverage their safe employees.

Finally, understanding the conditions and contributions of safety citizenship to safety engagement could provide important guidance on how to increase support of evidence-based strategies that are not widely accepted (such as automated enforcement to reduce red-light running and speeding or random alcohol checkpoints to reduce impaired driving).

OBJECTIVES

This project has several objectives defined by the relationship amongst the cultural factors that are hypothesized to support traffic safety engagement in Figure 1:

1. Select and clearly define the prosocial, traffic safety behaviors (across levels of society) that would reduce traffic fatalities and serious injuries. These behaviors will include (1) intervening in the safety of others and (2) enabling effective traffic safety strategies.
2. Measure the prevalence of the identified prosocial, traffic safety behaviors among US adults (aged over 18 years).
3. Identify aspects of traffic safety culture (values, attitudes and beliefs) and safety citizenship that are predictive of these behaviors.
4. Propose methods of increasing traffic safety citizenship based the identified cultural factors.

To support these objectives, this project will need to develop and verify survey tools to measure the cultural factors believed to be the foundation of traffic safety citizenship. Understanding these cultural factors informs interventions to increase engagement in traffic safety. Where possible, we may adapt tools that have already been validated for the purpose of this study.

The final choice of prosocial, traffic safety behaviors will be determined in consultation with the contributors and participating members of the Traffic Safety Culture – Transportation Pooled Fund (TSC-TPF).

RESEARCH PLAN

The project’s findings will be based on the analysis of self-reported responses to surveys that will be developed to measure each component of our underlying model shown in Figure 1.

The questions on the surveys will measure constructs for an augmented, integrated behavioral model based on the theory of reasoned action and the prototype willingness model (Fishbein & Aizen, 2009; Gerrard, Gibbons, Houlihan, Stock, & Pomery, 2008). As shown in Figure 2, the model seeks to predict engaging in prosocial, traffic safety behaviors.

The planned analysis will reveal the relative importance of each construct in Figure 2 for predicting the selected safety citizenship behaviors. The survey will be conducted with individuals across the U.S. and steps will be taken to make sure young adults are included.

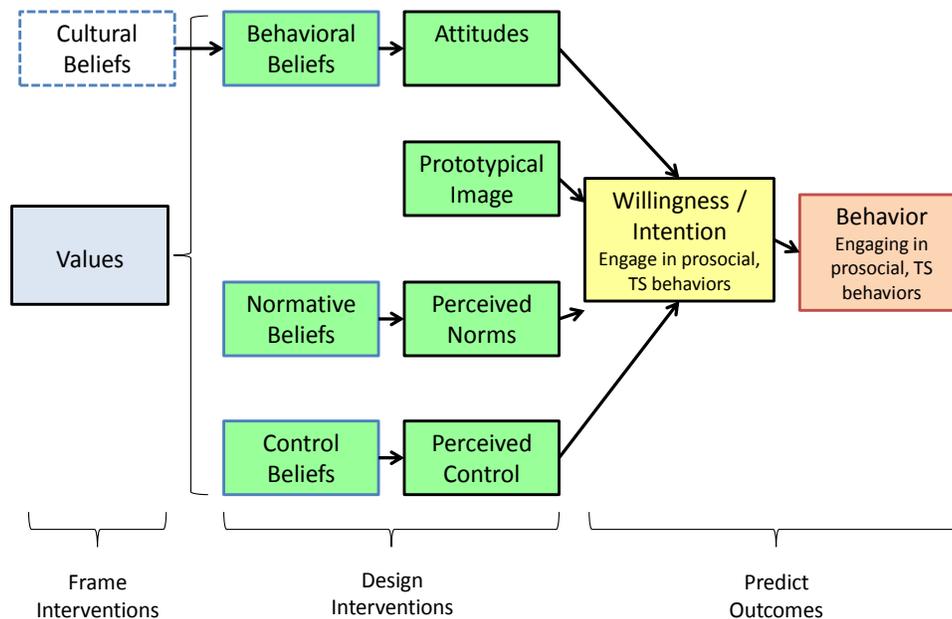


Figure 2. Behavioral Model

1. Method

The method proposed is divided into five tasks:

- Task 0. Project Management
- Task 1. Literature Review
- Task 2. Survey Design
- Task 3. Survey Implementation and Analysis
- Task 4. Recommendations and Final Report

Task 0. Project Management

Nic Ward will be the principal investigator for this project. As the Director of the Center for Health and Safety Culture and from his experience leading other research projects (including international projects on drugged-driving), Ward 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 MDT's expectations. This kickoff meeting will be scheduled to coincide with the May meeting of the TSC-TPF. He will engage in monthly calls with MDT to review progress and will provide quarterly reports of progress addressing time and budget. He will assure quality for all aspects of the project. He will contribute to and edit all task reports. He will be supported by Kelly Green who will assist in gathering required data for the quarterly reports, and Deb Strachan 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 TSC-TPF. To ensure quality of deliverables, the TSC-TPF will be invited to review draft deliverables and the proposed survey. Necessary revisions will then be made for the final products submitted to MDT.

Task 1. Literature Review

A literature review of published research on safety citizenship, prosocial traffic safety behaviors, and cultural factors predicting engagement in traffic safety behaviors (including support for policy) will be completed. This review will inform identification and definition of behaviors as well as question design for various constructs in the model. As this area of research is relatively new, we anticipate the importance of synthesizing the published research from a variety of areas. A graduate student will collect the published research for this literature review. Ward, Otto and Finley will review research and draft the literature review.

We will also recommend specific prosocial, traffic safety behaviors to measure in the survey for discussion and approval by the TSC-TPF.

A task report will be written capturing the findings of the review.

Task 2. Survey Design

Based on this review and previous research completed by the Center, questions for each construct in the model will be created. Typically, multiple questions are used to create a scale for each construct. Questions are designed based on best-practices (Fishbein & Ajzen, 2009; Gerrard et.al, 2008). Additional questions will be created to assess safety citizenship.

Given the multidisciplinary nature of traffic safety culture and the concept of “culture”, this project requires the participation of staff from multiple disciplines. Question design will involve several experts with different specialties including psychology (Ward), sociology (Swinford), behavior (Finley), and prevention (Otto). In addition, Swinford has extensive experience in question design. Careful attention to both question and answer language is critical to improve validity and reliability.

Depending on the results of the literature review, additional formative research may be required. For example, there are many potential behavioral beliefs that predict attitudes. If the literature review does not provide guidance on which behavioral beliefs are most important, additional research may be required. This may be completed using focus groups or small survey samples (< 25 respondents).

A draft version of the survey will be created online using Montana State University’s Qualtrics System. Qualtrics provides a very high quality, secure platform that also allows for survey completion on mobile devices. Initial testing online allows for an assessment of how much time the survey requires to complete. A long survey typically results in a smaller response rate. The time assessment will be completed using a convenience sample recruited by the Center. The creation of the online survey and preliminary testing will be completed by Otto. Green will assist with obtaining review by Montana State University’s Institutional Review Board prior to performing any time testing.

Upon approval of the survey by the TSC-TPF, the online version of the survey will be pilot tested with a variety of respondents. The survey will be analyzed by Otto for floor and ceiling effects (a high prevalence of responses in an extreme answer), lack of variability in responses, skipped questions, internal consistency of questions within a single scale, and basic model predictability. Green will assist with obtaining review by Montana State University’s Institutional Review Board prior to performing any pilot testing.

Based on the results of the pilot testing analysis, the survey will be revised by Otto with input from Ward, Finley and Swinford. A version of the survey suitable for paper implementation will be created with the assistance of a graphic artist. Proper layout is important to improve quality of results and enhance participation rates.

A task report will be written that summarizes the survey development process and includes the final survey. The report will be written by Otto, Finley, Ward and Green.

Task 3. Survey Implementation and Analysis

We will conduct the survey using two methodologies (see Table 3). We recommend using both an internet and mail-based protocol. A mail-based protocol is most effective for reaching a random sample of respondents. However, typically mail-based surveys do not reach young adults as well as older adults because young adults are often more transient and their addresses are less likely to be maintained on mailing databases. Therefore, an internet-based protocol is recommended to augment the mail-based protocol to reach younger adults.

The mail-based protocol will follow the tailored design method (Dillman, Smyth, & Christian, 2014) . We will use the P4 Marketing Group to prepare and disseminate four mailed contacts: a pre-survey letter introducing the survey; a survey packet with a pre-stamped, return envelope and a \$2 cash incentive; a reminder post-card; and a follow-up survey packet. This approach has been

found to yield the best results with a reasonable cost. The Center has worked previously with the P4 Marketing Group and they are familiar with the standards required and have met our quality requirements.

In addition, we will use a purchased panel from Qualtrics (Montana State University's online survey provider) to increase participation by individuals age 18 to 30. A purchased panel from Qualtrics will guarantee a specific number of responses by age of respondent. These responses may not be representative of the general population (like a random sample) because these individuals are recruited and paid to participate in online surveys. However, these responses are appropriate for use in the behavioral model (we will compare these responses with those gathered from the mailed survey).

We propose to include all states in the survey sample.

Table 3. Summary of Survey Implementation

Demographic	Geography	Method	Recruitment
Adults age 18 and older	All states	internet	Purchased panel (400 responses age 18-30; 400 responses age 31 and older)
Adults age 18 and older	All states	mail	Random sample of households, \$2 cash incentive (800 responses) ¹

In the first phase of analysis, participation rates and demographic variables will be summarized to understand who completed the survey. Next, scales for each construct in the model will be created. The internal consistency of the scale will be assessed and items with low internal consistency may be removed. Next, analysis suitable to address each question will be performed. These analyses will be completed by Otto and reviewed by Ward, Swinford and Finley. Next, analysis suitable to address each research objective will be performed.

- *Measure the prevalence of the identified prosocial, traffic safety behaviors among adults in U.S.*

A frequency analysis will be performed to assess the prevalence of the identified behaviors among adults in the U.S. The prevalence will be further examined based on geography (e.g., rural, urban, suburban).

- *Identify values, attitudes and beliefs predictive of these behaviors and their relationship to measures of safety citizenship.*

¹ Number of responses cannot be guaranteed in each wave and is based on a low estimate of a 25% response rate. The use of multiple waves with a conservative estimation for response rate is standard procedure in survey work on human behavior. This conservative approach in our previous research has provided good data for useful conclusions.

Two models will be created using linear regression techniques to see how well the constructs predict behavior. One model will focus on behaviors related to intervening with others, and the second model will focus on behaviors associated with enabling effective traffic safety strategies. The models will be created using a combined database of all respondents as well as internet-only and mail-only respondents. These models will reveal which constructs dominate engagement in prosocial, traffic safety behaviors.

Correlational analyses will be used to assess the relationship between measures of safety citizenship and other cultural factors and related behaviors.

Understanding these relationships will help inform recommendations.

A task report will be written that summarizes the survey implementation and analyses. The report will be written by Otto, Finley, and Ward with support from Green.

Task 4. Recommendations and Final Report

Based on the results of the analysis, recommendations will be made on potential interventions to grow traffic safety citizenship. These recommendations will be developed jointly by Ward, Otto, Finley and Swinford. Each individual's multidisciplinary background will contribute to the interpretation and integration of the analyses and the development of recommendations.

The entire project will be documented in a report following MDT's reporting guidelines. This report will be written by Ward, Otto, and Finley. The TSC-TPF will review the draft report and provide feedback.

A final report based on the feedback from the TSC-TPF will be completed by Ward, Otto, and Finley. In addition, a webinar summarizing the results will be recorded and information will be provided for the project summary report. Green will assist in recording of webinar; Otto and Ward will lead webinar.

TSC-TPF INVOLVEMENT

We anticipate the assistance of the TSC-TPF in contributing to the review and approval of project deliverables. This will include the review of the developed surveys. Indeed, some of the TSC-TPF member states may be invited to participate in the pilot testing of that survey. Finally, we will need the input of the TSC-TPF to approve the specific prosocial, traffic safety behaviors to become the focus of this project. This would include identifying (1) a particular behavior for bystander engagement and (2) a particular traffic safety program to be championed by citizens. Ideally, the program would be one that addresses the selected behavior. It is necessary to limit the number of topics (e.g., two) in a survey to limit its size and keep it focused.

PRODUCTS

1. Task 0 Quarterly Progress Reports
 - Progress reports based on MDT template for each quarter of project.
2. Task 1 Report: Literature Review
 - A summary of the findings of the literature review will be provided. This review will guide survey development and include recommended behaviors to address in the survey.
3. Task 2 Report: Survey Instrument
 - The survey instrument used to measure values, beliefs, attitudes, and behaviors regarding prosocial, traffic safety behaviors will be a tool that others can use to replicate the work with other populations.
4. Task 3 Report: Survey Implementation and Analysis
 - A statistical report of the survey results and summary of the analyses will be provided.
5. Task 4 Final Report
 - The final report will provide comprehensive documentation of the project and include the final section on recommendations.
 - Dissemination of results will be made through the TSC-TPF members as well as potential conference presentations (if travel budget and permission is granted) and journal articles. The research team will also disseminate through relevant committee participation.
6. Task 4 Project Summary Report
 - Provide text and graphics to support products of project summary report (e.g., http://www.mdt.mt.gov/other/research/external/docs/research_proj/seismic/phaseii/project_summary.pdf)
7. Task 4 Video Webinar of Results (recorded)
 - A webinar overviewing the results of the project will be recorded and available for viewing by others. This will provide a brief (15 to 20 minutes) summary of the major findings and recommendations.
 - This video will be made publically accessible on YouTube (e.g., for use by interested families etc).

PROJECT IMPLEMENTATION

This research will help safety leaders (e.g., governments, private sectors, community leaders) proactively develop and promote strategies to increase engagement in traffic safety by growing traffic safety citizenship. Individuals can engage in behaviors to improve traffic safety as individuals (e.g., asking others in a vehicle to wear their seat belts), as family members (e.g., promoting family rules about traffic safety), in workplaces (e.g., promoting training and policies regarding traffic safety including engaging coworkers), and in support of policies (e.g., automated enforcement or sobriety checkpoints).

SCHEDULE

The timeline for the main tasks and deliverables are summarized below for this 14 month project (Note that updates on this project will be made during regular scheduled TSC-TPF meetings):

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Task 0. Project Management Quarterly Reports	X	X	X	X X	X	X	X X	X	X	X X	X	X	X X	X
Task 1. Literature Review Report	X	X	X	X X										
Task 2. Survey Design Survey			X	X	X	X	X X							
Task 3. Survey Implementation / Analysis Report							X	X	X	X	X	X		
Task 4. Final Report / Webinar Final Report Project Summary Report Recorded Webinar												X	X	X X X X

BUDGET

The project costs are summarized below. Table 4 summarizes the costs by budget item; Table 5 summarizes the pay rate and benefit rate for project staff; Table 6 summarizes the costs by task; and Table 7 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. In addition to the funds requested below, WTI will provide match in the amount of \$1,500. This match will consist of \$1196 in salary for Nic Ward, and \$304 in fringe benefits.

Table 4. Project Budget by Item

Item	Total
Salaries	\$57,098
Benefits	\$18,067
Contracted Services	\$38,000
Communications	\$300
Other: incentive for survey participation	\$6,400
Total Direct Costs	\$119,864
Indirect Costs (25%)	\$29,966
Total Project Cost	\$149,830

Notes

Contracted services include:

- a) The P4 Market Group (\$28,500) to provide four mailings to random sample of 3,200 households across the U.S. The first mailing will be a single letter informing the household of their selection in the survey. The second mailing will include a letter, a survey, a return envelope and a \$2 cash incentive. The third mailing will be reminder postcard. The fourth mailing will be a follow-up survey packet including a letter, a survey and a return envelope. All printing and postage is provided by P4 Market Group and uses first class, hand-affixed postage. All correspondence includes a unique tracking number. Individuals who respond to the survey are removed from future mailings. P4 Market Groups provides the database of household addresses.
- b) Qualtrics, LLC, (\$9,500) will provide 800 respondents to the internet-based survey that meet the age requirements. A version of the online survey will be made available to Qualtrics. Quality control questions and criteria will be added to the survey to bolster the quality of the responses. Qualtrics will recruit individuals to complete the surveys and the responses will be accessible through the MSU existing account.

Communications includes conference calls and webinars with members of the to discuss progress, review the draft survey, and discuss results.

Other: incentive for survey participation includes a \$2 incentive sent to each of 3,200 mailed surveys.

Table 5. Pay Rate and Benefits

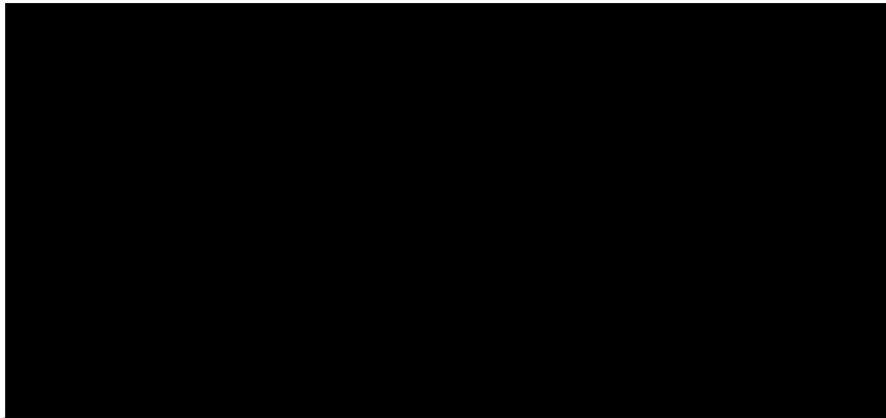


Table 6. Project Budget by Task

Item	Total
0 – Project Management	\$6,140
1 – Literature Review	\$16,658
2 – Survey Design	\$32,743
3 – Survey Implementation and Analysis	\$74,792
4 – Final Report and Webinar	\$19,497
Total Project Cost	\$149,830

Table 7. Project Budget by State and Federal Fiscal Years

Item	State Fiscal Year		Federal Fiscal Year	
	2015	2016	2015	2016
Salaries	7,489	49,609	26,639	30,459
Benefits	2,370	15,697	8,429	9,638
Contracted Services	0	38,000	0	38,000
Communications	43	257	107	193
Other: incentive for survey participation	0	6,400	0	6,400
Total Direct Costs	9,901	109,963	35,174	84,690
Indirect Costs (25%)	2,476	27,4910	8,794	21,173
Total Project Cost	12,377	137,453	43,968	105,862

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 8 summarizes staff time by task for the 14-month duration of this project. Overall, this effort can be interpreted as the equivalent of one person working on this 57% of the time for 14 months (see FTE in Table 8). We believe this FTE equivalent effort is reasonable to satisfy the goals of this project in a cost-effective manner.

Dr. Nic Ward will serve as the Principal Investigator (PI) for this research project and brings nearly 20 years of international research in human factors applied to traffic safety. Ward will manage the project, monitor all progress for quality, and communicate on a monthly basis with MDT and the TSC-TPF on the progress of the project.

Professor Nicholas Ward (F. Erg. S) obtained his Ph.D. in Human Factors Psychology from Queen's University (Canada). He 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. He is a national leader in the definition and advancement of traffic safety culture as a new traffic safety paradigm. In this capacity, his research has contributed to the development of the National TZD Strategy to transform traffic safety culture. Professor Ward organizes, chairs and presents many conference sessions and panels on traffic safety including co-founding the National Summit for Rural Traffic Safety Culture with the AAA Foundation for Traffic Safety. He is one of the founding member of the TRB Subcommittee on Roadway Safety Culture (AND0001). Professor Ward has recently authored a book chapter overviewing methods for measuring traffic safety culture and strategies to transform traffic safety culture. He is currently editing a special edition on “traffic safety culture” for the international journal Transportation Research Part F: Traffic Psychology and Behavior.

Jay Otto will assist with all steps of the project and lead the survey design and analysis. Otto is a research scientist and manager 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 usage.

Dr. Steve Swinford is responsible for the development of the sampling methodologies to measure traffic safety culture across layers of society. He is also responsible for obtaining the selected samples and managing the survey database, survey design and implementation, data analysis, and report generation. Swinford is an Associate Professor in the Sociology and Anthropology department at Montana State University. He has worked as a research scientist

with the Center for Health and Safety Culture since 2008 and has produced over 50 of the organization's Key Findings Reports.

Kari Finley, Ph.D. will contribute to the literature review and other formative research (e.g., focus groups) as well as contribute to the final report. Finley is a Behavioral Specialist with extensive experience in behavior change.

Kelly Green, M.P.A., will contribute to the design and formatting of the survey (paper and online versions) as well as managing the survey implementation process including IRB approval. Green will code all surveys into a database suitable for additional analysis. She will also support Ward with project management duties like project communication and quality assurance. Green will also coordinate with the university's Institutional Review Board. Green is a Research Associate with training in public administration.

Subconsultants:

The P4 Market Group will print, package and mail the paper-based version of the survey. The Center has worked with this agency in the past and trained them on our protocol. Their standards meet the necessary levels of quality to support a good response rate.

Qualtrics provides purchased panels of respondents for online surveys. MSU uses the Qualtrics survey system – a high quality, subscriber system that assures safe, protected methods for collecting data and works on a variety of platforms including mobile devices.

Table 8. Schedule of Staffing

Name	Role	FTE*	Hours by Task					Total
			0	1	2	3	4	
Nic Ward	Principal Investigator	0.087	20	45	71	35	40	211
Jay Otto	Survey design, data analysis, recommendations, final report, webinar	0.099		50	95	30	65	240
Steven Swinford	Select and obtain samples, manage survey database	0.021			10	40		50
Kari Finley	Literature review, formative research, final report	0.078		60	75		55	190
Kelly Green	Survey formatting, implementation and coding, IRB process	0.191		15	190	203	55	463
Deb Strachan	Financial support, contracts for survey implementation,	0.025	60					60
Student	Obtain literature, literature review, manage literature database	0.033		80				80
Graphics	Figures and graphics for survey, final report, and project summary	0.016			20		20	40
staff writer	Edit final report	0.019					45	45
Total		0.568	80	250	461	308	280	1,379

*based on 14 months

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). CHSC is an interdisciplinary center that serves communities and organizations through research, training and support services to cultivate healthy and safe cultures. This center works with a variety of clients and sponsors including local, state and 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 fully 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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