Understanding law enforcement attitudes and beliefs about traffic safety

by

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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.

Law enforcement plays a critical role in traffic safety. However, traffic safety is one of many issues that law enforcement agencies must address. A variety of factors including budget limitations, political support, and agency culture can influence engagement in traffic safety. A decrease in law enforcement's engagement in traffic safety could make a reduction in fatalities and serious injuries less likely.

Recently, some traffic safety professionals have noted a change in the prioritization of traffic safety among law enforcement. It is difficult to determine whether this perception is accurate or not and the reasons and nature of this possible change. Therefore, understanding the attitudes and beliefs of law enforcement leaders and officers regarding traffic safety is critical to growing a positive traffic safety culture and ultimately achieving a goal of zero deaths on the nation's roadways.

BACKGROUND SUMMARY

Law enforcement in the U.S. involves a variety of organizations including statewide agencies (e.g., highway patrol, state police), county agencies (e.g., sheriff's departments), and municipal agencies (e.g., police departments). Political, financial, and cultural factors may affect the level of engagement in traffic safety enforcement by these agencies. For example, leaders of such agencies that are appointed or elected may feel political pressure to not enforce laws that are perceived to be unpopular amongst voters or changes in the workforce like reduction in staff through budget cuts or retirement may result in changes in the level of engagement with traffic safety. Traffic safety enforcement may be viewed as a lower priority than criminal enforcement. In some communities with close social affiliations, officers may be reluctant to enforce laws because they anticipate being socially ostracized.

From a public health standpoint, issues impacting public safety have changed. Ten years ago, motor vehicle incidents were the leading cause of death among those ages 15 to 44. However, with recent improvements in traffic safety and growing problems with drug overdoses, motor vehicle incidents are no longer the leading cause of death among this population (see Figure 1). It is unclear what impact, if any, these changes in public health issues have on community and law enforcement agency prioritization of traffic safety.

Nonetheless, traffic safety remains a critical issue. Motor vehicle incidents are still the leading cause of death of those age 15 to 24 years and are the second leading cause of death for those age 25 to 54 years. Other potential factors affecting law enforcement and its engagement in traffic safety may involve funding, perception of public support, competing priorities, perception of support by elected officials, and others.

Source: National Center for Health Statistics (NCHS), National Vital Statistics System
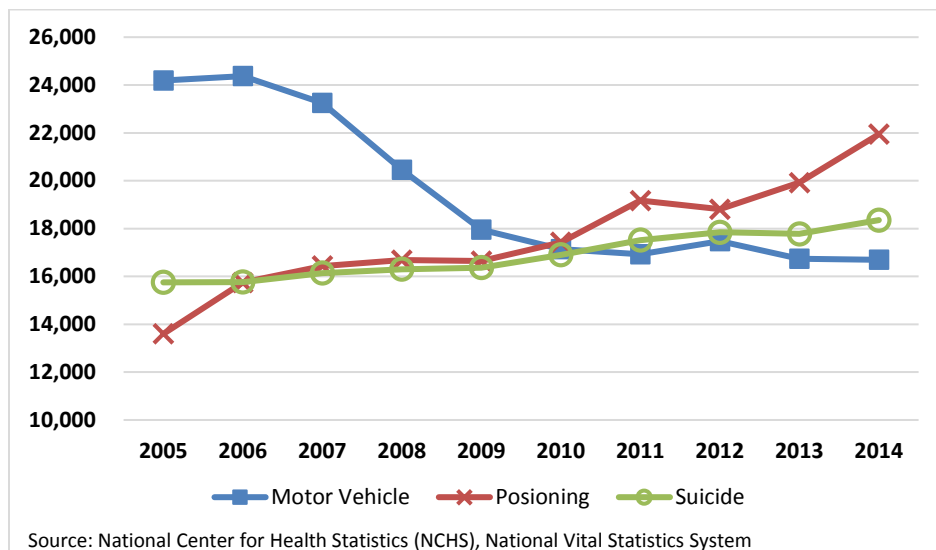
Figure 1. Number of Deaths Among People Age 15 to 44

The research is clear that law enforcement efforts impact traffic safety. When budget cuts significantly reduced the size of the Oregon State Police in 2003, researchers measured a

significant increase in injuries and fatalities on the roads (even after controlling for a variety of other factors) (DeAngelo and Hansen 2014).

Much research has examined support by the general public for traffic safety enforcement. A survey of California drivers showed that, despite the state's heavy seat belt enforcement efforts, more than half of the respondents supported "very strict" enforcement ("Drivers opt for more, not less, safety belt law enforcement" 2003). In another study, public opinion data collected from two experimental target areas and one comparison area suggested that citizens strongly supported aggressive traffic enforcement practices and that the implementation of such strategies did not reduce their support (Chermak, McGarrell, and Weiss 2001). The Center for Health and Safety Culture has conducted several surveys of adults and has found support for traffic safety enforcement as well (Linkenbach et al. 2012).

However, less research has been conducted to explore how law enforcement officers feel about traffic safety enforcement. One study in Western Australia sought to determine how law enforcement agencies understand their own impact on traffic safety and how this understanding impacts their enforcement activities and effectiveness ("Are We There yet? How WA Police Determines Whether Traffic Law Enforcement Is Effective" 2015). This study found that law enforcement did not fully understand the effectiveness of the strategies they were employing to increase roadway safety and therefore unable to adequately measure their own impacts. However, the study does make it clear law enforcement are "key players in instituting the behavior change that is critical to improving safety on our roads (p.10)." In 2013, Florida's Department of Transportation (FDOT) conducted a survey of 46 law enforcement offices. Perceived effectiveness of enforcement of different violations correlated with the officers' sense of the seriousness of the violations as well as with their sense of the frequency of violations (Haleem et al. 2014). However, neither study measured attitudes or beliefs about enforcement. Law enforcement's attitudes and beliefs about traffic safety may contribute to intention and use of strategies to directly impact roadway safety.

Beliefs of officers about the relationships between traffic safety enforcement and criminal enforcement may influence engagement in traffic safety efforts. Traffic safety enforcement is enforcement of safe road behaviors like following the speed limit, never driving when impaired, always using a seat belt and child restraints. Criminal enforcement is law enforcement that deals with criminal behavior. The National Highway Traffic Safety Administration (NHTSA) has developed resources for state and local law enforcement officers about using aggressive traffic law enforcement techniques as an effective means to detect and deter criminal behavior ("Crime vs Traffic Overview" 2000).

Research has explored why some officers engage in more enforcement activities (i.e. citing or warning citizens when they were not wearing a seatbelt or enforcing a DWI law) than others. A survey by the Center for Health and Safety Culture of law enforcement officers in rural Utah revealed that officers who perceived strong community support for enforcement were twice as likely to report regular enforcement as compared to officers who perceived low community support. Perceived support for enforcement among supervisors as well as the perceived norm of enforcement behavior within the agency were also found to be important predictors of enforcement behavior. A study in Canada revealed that many factors influenced driving while impaired enforcement. The results suggested that while many officers wanted to enforce DWI laws, procedural and legal barriers often reduced enforcement actions (Jonah et al. 1999). Research in New Zealand also found that procedural and legal barriers resulted in reduced enforcement actions

(Hurst 1980). This research indicates that law enforcements perceived beliefs and attitudes toward enforcement directly affects their likelihood to engage in these activities.

Other political and social factors can influence enforcement as well. Studies about enforcing underage drinking laws found that political factors can influence enforcement – especially among sheriff's departments (Wolfson, Wagenaar, and Hornseth 1995). Another study examined the impact of place on enforcement behaviors. Traffic citations were more likely issued in neighborhoods with violence and that were disadvantaged as well as areas with higher concentrations of Hispanic and Black populations (Ingram 2007). One study that did examine the culture of the agency focused on searches performed during traffic stops. Researchers found that the culture within an agency impacted the likelihood an officer conducted a search. Analysis showed that cultural fragmentation (the degree to which an officer's attitudes aligned or did not align with the agency's culture) impacted search practices (Paoline and Terrill 2005). These political and social factors play a role in increasing or decreasing enforcement but they are not the only factors affecting law enforcement's engagement in traffic safety.

While existing research has examined a variety of factors impacting enforcement activities, no research was found that examined the shared attitudes and beliefs of law enforcement and its support for traffic safety enforcement.

BENEFITS

By understanding the shared beliefs and attitudes that influence law enforcement engagement in traffic safety, transportation and public health leaders can take appropriate steps to bolster engagement. These steps may involve addressing funding issues, educating other stakeholders about the efficacy of enforcement (on both traffic safety and overall criminal activities), as well as providing specialized training to law enforcement leaders and officers.

For example, if officers do not believe that traffic safety enforcement makes a difference, they may be less likely to engage. If, on the other hand, they knew how much of a difference they are making (for example, that fatalities have been reduced over the past 10 to 15 years), they may be more likely to engage in consistent enforcement.

OBJECTIVES

The objectives of this case study are to understand:

1. How law enforcement leaders and officers within the agencies selected prioritize traffic safety relative to other public safety issues;

2. Self-reported attitudes, beliefs, and enforcement behaviors;

3. Law enforcement's perceptions of how traffic safety enforcement behaviors have changed in recent years; and

4. How prioritization of traffic safety; attitudes, beliefs, and enforcement; and perceptions of change vary between leaders and officers, agency types, and urban and rural settings.

Furthermore, the project would:

5. Propose methods of increasing engagement in traffic safety efforts based on the beliefs identified in this study.

To support these objectives, this project will develop and implement interviews and a survey to measure the beliefs and attitudes among law enforcement that influence traffic safety enforcement.

RESEARCH PLAN

The Center for Health and Safety Culture is proposing to use a comparative case study design to better understand law enforcement's attitudes and beliefs about traffic safety. This case study will examine the differences between two rural and two urban states. A case study design will limit the generalizability of the results but is the most appropriate form of study given the financial constraints of this project. The researchers will conduct both qualitative and quantitative analysis in order provide a deeper understanding of the cases involved. The project's findings will be based on the analysis of self-reported responses to a survey augmented by interviews of law enforcement leaders. The questions on the survey will measure constructs for an augmented, integrated behavioral model based on the theory of reasoned action and the prototype willingness model (Fishbein and Aizen 2010; Gerrard et al. 2008). As shown in Figure 2, the model seeks to predict engaging in traffic safety enforcement behaviors.

The planned analysis will reveal the relative importance of each construct in Figure 2 for predicting engagement in enforcement activities. The survey will be conducted among officers in four states (two predominantly rural and two predominantly urban) from three different types of agencies (county sheriff department, municipal police department, and a statewide agency like highway patrol). Idaho is one of the rural states that will be surveyed. The Idaho Transportation Department (ITD) has requested CHSC survey 18 law enforcement agencies (three agencies in each of the six transportation districts) in their state. ITD has volunteered to participate as one of the states and provided an additional contribution to the pooled fund for this project. ITD will be responsible for recruiting the law enforcement agencies in their state. The three remaining states will be chosen by the pooled fund members based on existing relationships to support recruitment of agencies. The expectation is the panel will help recruit the law enforcement agencies to participate in this study.
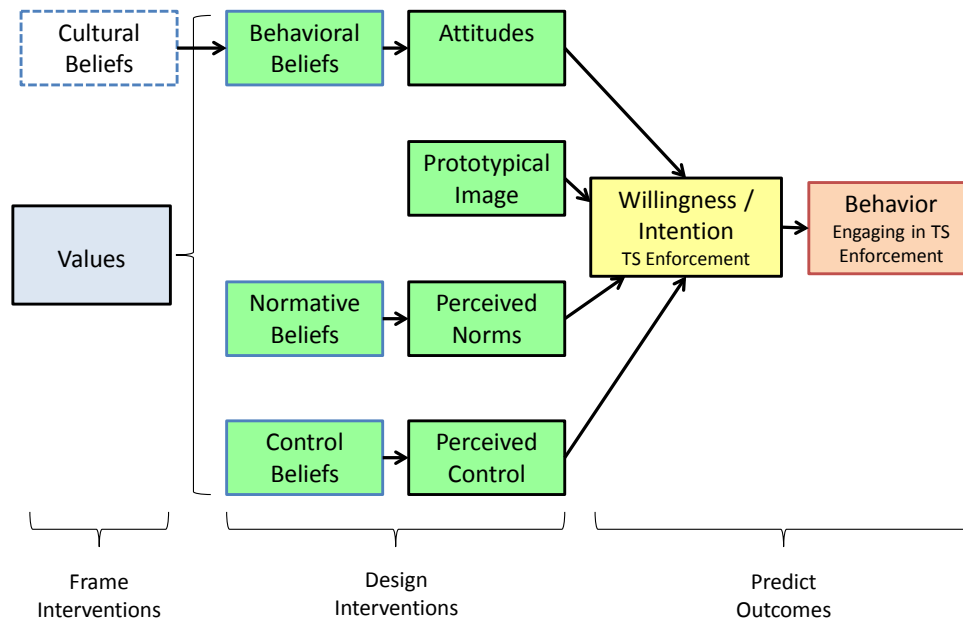
Figure 2. Behavioral Model

Two rounds of interviews will be conducted. The first round of interviews will be with three to five law enforcement leaders to provide formative information for survey development. In addition, these interviews will explore any readiness issues due to recent events involving police shootings.

A second round of interviews will be conducted with 16 law enforcement leaders (four from each of the four selected states). These interviews will be based on the augmented behavioral model and will provide a greater depth of understanding.

1. Method

The method proposed is divided into five tasks:

        Task 0. Project Management
        Task 1. Literature Review and Formative Interviews
        Task 2. Survey and Interview Design
        Task 3. Survey Implementation and Initial 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 (CHSC) and from his experience leading other research projects, 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 fall meeting of the pooled fund. 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 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 pooled fund panel. To ensure quality of deliverables, the pooled fund panel 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 and Formative Interviews

A literature review of published research on law enforcement beliefs and attitudes about engaging in traffic safety will be completed. This review will inform identification and definition of forms of engagement as well as question design for various constructs in the model. Ward, Otto and Finley will review research and draft the literature review.

In addition, interviews will be conducted with three to five leaders of law enforcement to inform survey design. These interviews will provide more details for the initial questions on the survey. The interviews will also explore readiness issues to better understand the acceptability of conducting such a survey in lieu of recent events involving violence against officers. The interviews will also explore suggestions on how to recruit agencies for participation in the study.

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

Task 2. Survey and Interview Design

Based on the literature review and initial interviews as well as previous research completed by the CHSC, 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 and Ajzen 2010; Gerrard et al. 2008). Additional questions will be created to assess perceptions of changes in engaging in traffic safety.

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), behavior (Finley), and prevention (Otto). Careful attention to both question and answer language is critical to improve validity and reliability.

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. A draft version of the survey will be pilot tested with a convenience sample of law enforcement officers. 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. Based on the results of the pilot testing analysis, the survey will be revised by Otto with input from others. The draft survey will be reviewed by Montana State University's Institutional Review Board prior to performing any pilot testing.

In addition to the survey, interview questions will be developed to better understand how leaders in law enforcement agencies feel about engaging in traffic safety efforts. Because the behaviors of officers are strongly influenced by their leaders, it is important to develop a deeper understanding

of how leaders view traffic safety efforts. The interview questions will be developed by Green, Finley, Otto, and Ward.

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

Task 3. Survey Implementation and Analysis

We will conduct the survey electronically using an internet-based survey. Agencies will be recruited by the Center through relationships with pooled fund board members and the state's DOTs. The goal is to choose states in which pooled fund members have a relationship with law enforcement. This will make the recruitment of agencies easier. In each state, we will need to recruit a statewide agency, a sheriff's office and a municipal police agency to participate. In Idaho, ITD will need to recruit three agencies from each transportation district. Within each of those agencies, the Center will identify a key leader who will distribute the survey to all law enforcement officers. For example, if we identify a state's highway patrol as the statewide agency, we would like the Colonel of the highway patrol to initiate the request. We will also utilize the first and second round of interviews as an opportunity to build relationships. Key leaders within the recruited agencies will send a series of emails (drafted by the CHSC and reviewed by the Institutional Review Board) to recruit participation. Participation in the survey will be voluntary, and participants will be informed that their responses are anonymous and only summary results will be reported.

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 and Finley. Next, analysis suitable to address each research objective will be performed.

- Understand how law enforcement leaders and officers prioritize traffic safety relative to other public safety issues:
  - A relative frequency analysis will be performed to reveal the differences in prioritization among officers. In addition, correlation coefficients of prioritization with self-reported enforcement behaviors will provide a deeper understanding of the significance of these beliefs.

- Understand self-reported attitudes, beliefs, and enforcement behaviors:
  - A relative frequency analysis of all responses to the survey will provide a basic understanding of existing beliefs, attitudes and behaviors. Correlations between enforcement behaviors and attitudes and beliefs will reveal association with enforcement.

- Understand how perceptions of traffic safety enforcement behaviors have changed in recent years:

- o A relative frequency analysis will reveal how officers and leaders perceive changes in traffic safety enforcement behaviors. These self-reported data will be compared with citation data collected from each agency.

- Understand how prioritization of traffic safety; attitudes, beliefs, and enforcement; and perceptions of change vary between leaders and officers, agency types, and urban and rural settings.

    - o The means of the responses for each question will be compared (using T-tests) between leaders and officers, agencies of differing types, and geographic nature of the state.

In addition, the interviews will be analyzed for common themes as well as noted insights. These results will be summarized.

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

Task 4. Agency Reports, Recommendations, and Final Report

To facilitate recruiting of agencies and foster strong participation levels, each agency will be provided a brief report of the agency's results of the survey. These reports will follow a similar design and will be an incentive for the agency to participate in the study.

Based on the results of the analysis, recommendations will be made on potential ways to increase engagement in traffic safety based on the law enforcement agencies surveyed. These recommendations will be developed jointly by Ward, Otto, Finley and Green. Each individual's multidisciplinary background will contribute to the interpretation and integration of the analyses and the development of recommendations. The researchers recognize that recommendations will be limited due to the research design used. A case study design limits the ability to generalize results.

The project will be documented in a report following MDT's reporting guidelines. This report will be written by Ward, Otto, and Finley. The pooled fund technical committee will review the draft report and provide feedback.

A final report based on the feedback from the technical committee 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 the webinar.

TSC POOLED FUND INVOLVEMENT

We anticipate the assistance of the TSC Pooled Fund board in contributing to the review and approval of project deliverables including each task report. This will include the review of the draft survey and interview. The board members are also expected to help recruit law enforcement agencies and connect CHSC with leaders of those agencies. Recruiting suitable law enforcement agencies is critical to the success of this project.

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 and the results of the formative interviews will be provided. The review and formative interviews will guide survey development and implementation.

3. Task 2 Report: Survey Instrument and Interview Questions
    - The survey instrument used to measure values, beliefs, attitudes, and behaviors regarding engagement in traffic safety by law enforcement along with the interview questions for law enforcement leaders will be provided.

4. Task 3 Report: Survey Implementation and Analysis
    - A summary of the survey process and initial results will be provided. Initial analyses will include basic frequency analysis and regression models representing the behavioral model. A summary of the interviews of law enforcement leaders will also be included.

5. Task 4 Agency Reports
    - An abbreviated summary report of the survey findings will be provided to each participating law enforcement agency. This report will contain results for their agency.

6. Task 4 Final Report
    - The final report will provide comprehensive documentation of the project and include recommendations.

7. 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/phasei ii/project_summary.pdf)

8. 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.

PROJECT IMPLEMENTATION

This research will help safety leaders better understand the beliefs and attitudes of law enforcement agencies about traffic safety. This knowledge can be used by safety leaders to proactively develop and promote strategies to increase engagement in traffic safety by law enforcement agencies.

SCHEDULE

The timeline for the main tasks and deliverables are summarized below for this 21-month project:

	Month																				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Task 0. Project Management Quarterly Reports	X	X	X	X X	X	X	X X	X	X	X X	X	X	X X	X	X	X X	X	X	X X	X	X
Task 1. Literature Review and Formative Interviews Report	X	X	X	X X	X																
Task 2. Survey Design and Interview Questions Survey, Question				X	X	X	X	X X	X												
Task 3. Survey Implementation / Analysis Report							X	X	X	X	X	X	X	X	X	X X	X X	X			
Task 4. Final Report / Webinar Agency Reports Final Report Project Summary Webinar																X X	X X	X X X	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

Item	Total
Salaries	$99,124
Benefits	$35,195
Supplies	$200
Communications	$0
Total Direct Costs	$134,589
Indirect Costs (25%)	$33,647
Total Project Cost	**$168,237**

Notes

Supplies include partial license fee for SPSS.

Table 2. Pay Rate and Benefits

Individual	Hourly Rate	Benefit Rate
Nic Ward	$86.09	27.8%
Jay Otto	$53.86	34.8%
Kelly Green	$27.49	42.8%
Kari Finley	$44.77	34.3%
Deb Strachan	$31.45	44.9%
Jamie Arpin	$24.52	45.5%

Table 3. Project Budget by Task

Item	Total
0 – Project Management	$7,094
1 – Literature Review and Formative Interviews	$21,241
2 – Survey Design and Interview Questions	$31,406
3 – Survey Implementation and Analysis	$57,143
4 – Final Report and Webinar	$51,352
Total Project Cost	**$168,237**

Table 4. Project Budget by State and Federal Fiscal Years

Item	State Fiscal Year			Federal Fiscal Year		
	2017	2018	2019	2017	2018	2019
Salaries	$14,617	$54,438	$30,139	$30,465	$59,012	$9,718
Benefits	$5,117	$19,367	$10,710	$10,586	$21,261	$3,347
Supplies	$0	$200	$0	$200	$0	$0
Total Direct Costs	**$19,734**	**$74,005**	**$40,850**	**$41,251**	**$80,273**	**$13,065**
Indirect Costs (25%)	$4,934	$18,501	$10,212	$10,313	$20,068	$3,266
Total Project Cost	**$24,668**	**$92,507**	**$51,062**	**$51,564**	**$100,341**	**$16,332**

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 21-month duration of this project. Overall, this effort can be interpreted as the equivalent of one person working on this 63% of the time for 21 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.

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 pooled fund 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, M.S., 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.

Kari Finley, Ph.D. will contribute to the literature review and formative interviews 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 implementation of the interviews. Green is a Research Associate with training in public administration.

Jamie Arpin will contribute to the interview development, interview implementation, survey development and survey implementation. Arpin is a research associate with extensive experience with the Center implementing all phases of survey.

Table 5. Schedule of Staffing

Name	Role	FTE*	Hours by Task					
			0	1	2	3	4	Total
Nic Ward	Principal Investigator	0.08	23	40	75	75	75	**288**
Jay Otto	Survey design, data analysis, recommendations, final report, webinar	0.12	0	55	115	115	150	**435**
Kari Finley	Literature review, formative research, final report	0.14	0	62	75	150	210	**497**
Kelly Green	Survey design/formatting, survey implementation, IRB process	0.12	0	115	75	425	110	**725**
Deb Strachan	Financial support, contracts for survey implementation,	0.02	69	0	0	0	0	**69**
Jamie Arpin	Survey design/formatting, survey implementation	0.07	0	10	30	90	140	**270**
	Total	**0.63**	**92**	**282**	**370**	**855**	**685**	**2,284**

*based on 21 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). 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 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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