

Understanding Aggressive Driving and Ways to Reduce It - Phase 2

by

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PROBLEM STATEMENT

Aggressive driving is a topic of interest to most states because it increases crash risk and it has been suggested that aggressive driving has been increasing (Office of Behavioral Safety Research, 2021). Aggressive driving is an umbrella term often used to describe a variety of risky driving behaviors (e.g., tailgating, failing to yield, preventing others from passing, running stop signs and red lights, etc.). Aggressive driving is also commonly used to describe a driver's affective motivation (i.e., annoyance, hostility, anger, impatience, etc.) to engage in risky driving behaviors. Without consensus on what defines aggressive driving, it has been difficult to understand what factors precipitate such behaviors and what strategies effectively prevent and reduce the incidence of aggressive driving behavior.

The proposed research project seeks to address these gaps with the second phase of a two-phase project. In Phase 1, we conducted a literature review to define aggressive driving, formulated a contextual model to explain its occurrence, and developed and implement a survey of road users about aggressive driving behaviors. Phase 1 included recommendations and ideas for bolstering existing traffic safety efforts in order to reduce aggressive driving. Specifically, in Phase 1, we recommended growing prosocial driving, supporting cognitive reappraisal and adaptive responses while driving, challenging misperceptions, and increasing perceived disapproval through bystander engagement. However, these strategies have not been tested.

In Phase 2, we propose expanding on Phase 1 work by developing and testing one or more strategies to engage bystanders to discourage aggressive driving. Additionally, we propose developing and testing media messages to reduce aggressive driving behavior.

BACKGROUND SUMMARY

Traffic crashes are a major public health concern in the United States. In 2022, 42,795 people in the U.S. lost their lives in traffic crashes (National Highway Traffic Safety Administration, 2023). While there are many causes that contribute to traffic crashes, aggressive driving is considered a leading cause, with evidence suggesting aggressive driving is a cause in approximately 56% of fatal crashes (AAA Foundation for Traffic Safety, 2013). Aggressive driving is also considered a common behavior among drivers. In a recent self-reported aggressive driving behavior survey, approximately 80% of drivers reported expressing anger, aggression, or road rage while driving at least once in the past 30 days (AAA, 2022). Furthermore, there is evidence to suggest that people's perceptions that others are driving more aggressively has increased in the past five years, especially during the COVID-19 pandemic (Stephens et al., 2022). However, the evidence that aggressive driving frequency is actually increasing is not conclusive (Sullman & Stephens, 2021).

Despite evidence that aggressive driving contributes to negative traffic safety outcomes and is prevalent, definitions of aggressive driving vary, and the lack of a shared and widely used definition contributes to difficulty understanding this behavior as a distinct form of risky driving and challenges in developing effective strategies.

The proposed research project seeks to address these gaps with the second phase of a two-phase project. Phase 1 of this project included a literature review to define aggressive driving, a contextual model to explain its occurrence, a survey of road users to further refine the definition and operationalization of aggressive driving behaviors and refine potential points of intervention as presented in the contextual model and a resource created for traffic safety practitioners about ways to bolster their current traffic safety efforts to address aggressive driving. Based on the results of the survey, Phase 1 included recommendations and ideas for bolstering existing traffic safety efforts in order to reduce aggressive driving. Specifically, in Phase 1, a number of implications for interventions with drivers emerged. Directly with drivers, we recommended growing prosocial driving, supporting cognitive reappraisal and adaptive responses while driving, and challenging misperceptions; one likely avenue for reaching drivers directly is through media messaging. Phase 1 results also suggested that bystanders, especially partners, family members, and close friends can be influential in encouraging others to not drive aggressively. Therefore, we recommended engaging bystanders to address aggressive driving. While these ideas were based on the survey data collected in Phase 1, the strategies have not been tested.

In Phase 2, we propose expanding on Phase 1 work by developing and testing one or more strategies to engage bystanders to discourage aggressive driving. Additionally, we propose developing and testing media messages to reduce aggressive driving behavior.

BENEFITS

The research completed in Phase 1 will be used to support this Phase 2 project. In Phase 2, we propose expanding on Phase 1 work by developing and testing one or more strategies to engage bystanders to discourage aggressive driving. Additionally, we propose developing and testing media messages to reduce aggressive driving behavior. The research completed in this phase will provide important information regarding the feasibility and perceived effectiveness of bystander engagement strategies that will be used to inform recommendations for Pooled Fund members and other stakeholders regarding ways to address aggressive driving through bystander engagement. Results of media message testing will be used to develop specific recommended media messages and resources for Pooled Fund members and other traffic safety stakeholders. These resources will support stakeholders in promoting evidence-informed media messages to reduce aggressive driving.

OBJECTIVES

This project proposes developing and testing two types of strategies to reduce aggressive driving behaviors – bystander engagement and media messages. This project will:

- **Develop one or more strategies for bystanders who could intervene with a driver who is engaged in aggressive driving behaviors.** We will conduct key informant interviews with a sample of bystanders to gather information that will inform the development of strategies.
- **Test bystander engagement strategies.** We will recruit bystanders to test strategies. We will deliver the intervention and solicit their reaction and feedback. We will also follow up to understand feasibility and their perceptions of effectiveness.
- **Develop and test media messages for drivers who engage in aggressive driving behaviors.** Informed by the work in Phase 1 and by examples and input from Pooled Fund members, we will develop a range of media messages addressing aggressive driving. We will test these messages with a sample of drivers who report engaging in aggressive driving for acceptability, recall, and effectiveness.
- **Provide recommendations.** Based on what we learn from testing messages for drivers and bystanders, we will provide resources and recommendations to traffic safety professionals about what was learned and how traffic safety professionals could seek to promote bystander engagement and integrate messages to reduce aggressive driving.
- **Disseminate.** A PowerPoint presentation will be created for traffic safety professionals to use to disseminate information. We will conduct a webinar to disseminate information about this project.

RESEARCH PLAN

The Center for Health and Safety Culture is proposing the following methods for Phase 2 of this project which are divided into four tasks:

Task 0. Project Management

Task 1. Develop Strategies to Support Bystanders in Intervening to Reduce Aggressive Driving Behavior

Task 2. Test Bystander Engagement Strategies

Task 3. Develop and Test Media Messages

Task 4. Provide Recommendations and Resources and Complete Final Report

Task 0. Project Management

Dr. Bridget Hanson will be the principal investigator for this project. She is a Senior Research Scholar at the Center for Health and Safety Culture (CHSC) and experienced in leading research projects. She led the survey work in Phase 1 that provided the foundation for this Phase 2 proposal. She 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. Kelly Green will provide administrative and financial support. As part of project management, communications will leverage existing communication plans from the support contract including the monthly phone call with MDT and the Pooled Fund quarterly meetings. To ensure quality of deliverables, the Pooled Fund panel will review and provide feedback on draft deliverables. Necessary revisions will then be made for the final products submitted to MDT.

Task 1. Develop Strategies to Support Bystanders in Intervening to Reduce Aggressive Driving Behavior

Evidence from Phase 1 suggests bystanders – partners, family members, and close friends – can be influential in encouraging people to not drive aggressively. We will conduct key informant interviews with a sample ($n=8$) of bystanders to understand their experience with someone important in their life driving aggressively and to identify opportunities and potential avenues for intervention. Based on results of the key informant interviews, we will develop one or more strategies to encourage bystanders to intervene to reduce aggressive driving.

Dr. Hanson will lead this task. Green and Neavill will conduct interviews, and Finley will support analysis of interview data. Green, Finley, and Dively will develop interventions with support and contributions from Otto and Neavill. The **Task 1 Report** will include a summary of the key informant interview methodology and results, a description of application of the results to the development of an engagement strategy, and a detailed description and delivery plan for the strategy or strategies to be tested.

Task 2. Test Bystander Engagement Strategies

To understand feasibility for bystanders to intervene with important others in their life who are driving aggressively, we will test the strategy or strategies. We plan to develop brief strategies that can be delivered virtually, though the specifics will be determined in Task 1. Using online surveys administered via Qualtrics, we will solicit feedback from a sample of bystanders ($n=100$).

Participants will be recruited nationally, with a goal of achieving a sample that is diverse in geography, age, and race/ethnicity. We will collect immediate satisfaction feedback and then follow up to test feasibility and determine whether the bystanders were able to use the strategy to engage and/or intervene with someone driving aggressively. We will also gather perceived effectiveness from the bystanders.

Hanson and Green will be responsible for the methodology and data collection for this task; Hanson will lead analysis and reporting of results in the **Task 2 Report**. They will be supported by Dively, Finley, Otto, and Neavill.

Task 3. Develop and Test Media Messages

Evidence from Phase 1 suggests that aggressive driving behaviors may be reduced through a number of strategies directed at drivers, namely increasing prosocial driving, promoting cognitive reappraisal and adaptive responses while driving, and challenging misperceptions. Traffic safety stakeholders could utilize media messaging to encourage use of these strategies. We will develop and test specific media messages to determine acceptability and effectiveness among people who drive aggressively.

We will review existent traffic safety media messages and solicit examples from Pooled Fund members. We will develop a range of messages with varying characteristics to test. Using Qualtrics, an online survey platform, we will obtain a national panel of participants (diverse in geography and race/ethnicity) who report driving aggressively and test the messages. We will solicit immediate reaction and acceptability feedback as well as follow up to test recall and effectiveness. Results will be used to refine messages and identify recommended messages.

Finley and McMahill will lead development of the media messages; Otto will lead testing. Hanson, Utterback, and Neavill will support. Messages developed and the results of message testing will be summarized in the **Task 3 Report**.

Task 4. Provide Recommendations and Resources and Complete Final Report

Based on the results of testing bystander engagement strategies and media messages, we will develop recommendations and resource materials for traffic safety stakeholders.

We will conduct and record a webinar to disseminate findings and recommendations from this project. We will also create a PowerPoint presentation that partners and stakeholders can use to further disseminate the information. We will complete a final report that summarizes each task in the project.

Finley will lead creation of the resource materials with support from all involved staff (Hanson, Green, McMahill, Dively, Otto, and Neavill). Utterback will provide graphic design support. Hanson will lead dissemination and be responsible for **the Final Report**. The Pooled Fund board will review and approve the final products.

TSC POOLED FUND INVOLVEMENT

We will welcome the TSC Pooled Fund members in contributing any lessons learned from efforts to engage passengers or other bystanders to change driver behavior. We will also solicit example media messages related to aggressive driving from the Pooled Fund members. We anticipate the assistance of the TSC Pooled Fund board in contributing to the review and approval of the project deliverables.

PRODUCTS

1. **Task 0.** Quarterly Progress Reports
 - a. Progress reports based on MDT template for each quarter of the project
2. **Task 1 Report:** Evidence-Supported Strategies to Support Bystanders in Intervening to Reduce Aggressive Driving Behavior
3. **Task 2 Report:** Results of Testing Bystander Engagement Strategies
4. **Task 3 Report:** Media Messages and Results of Testing
5. **Recommendations and Resources:** Materials to support traffic safety practitioners and stakeholders in engaging bystanders and utilizing media messages to reduce aggressive driving behavior
6. **PowerPoint Slide Deck:** Summarizing the project, including describing results, providing recommendations, and promoting resources
7. **A Recorded Webinar:** Summarizing the project, including describing results, providing recommendations, and promoting resources
8. **Final Report:** A comprehensive research report of the project

PROJECT IMPLEMENTATION

Informed by work in Phase 1, this project will develop and test strategies to engage bystanders to reduce aggressive driving and will develop and test media messages directed at drivers to reduce aggressive driving behavior. Results will be used to develop recommendations and resources that are tested and have greater evidence regarding effectiveness. Pooled Fund members and other traffic safety practitioners and stakeholders can use the findings and materials to address aggressive driving in their states and communities.

SCHEDULE

The timeline for the main tasks and deliverables is summarized below for this 20-month project. Task deliverables will be provided to MDT by the end of the month denoted with **X**. The timeline assumes the contract has been fully executed by April 30, 2024.

	2024								2025											
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
	May	June	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Task 0. Project Management Quarterly Progress Report			X			X			X			X			X			X		
Task 1. Develop Bystander Strategies									X											
Task 2. Test Bystander Strategies															X					
Task 3. Develop and Test Media Messages																X				
Task 4. Recommendations and Resources; Final Report																				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	\$122,555
Benefits	\$46,440
Contracted Services	\$1,500
Supplies	\$940
Communications	\$800
Other: Qualtrics	\$19,200
Other: Proportion of Tuition for Graduate Research Assistant (Neavill)	\$6,623
Total Direct Costs	\$198,058
Indirect Costs (25%)	\$49,515
Total Project Cost	\$247,573

Table 2. Pay Rate and Benefits

Individual	Salary Rate	Benefit Rate
Hanson, Bridget		42.61%
Finley, Kari		43.44%
Green, Kelly		47.58%
McMahill, Annmarie		43.96%
Otto, Jay		41.78%
Dively, Katie		45.54%
Utterback, Stacey		9.90%
Neavill, Morgan		8.34%

Table 3. Project Budget by Task

Item	Total
0 – Project Management	\$12,596
1 – Develop Bystander Strategies	\$48,479
2 – Test Bystander Strategies	\$38,093
3 – Develop and Test Media Messages	\$72,934
4 – Recommendations and Resources; Final Report	\$75,471
Total Project Cost	\$247,573

Table 4. Project Budget by State and Federal Fiscal Years

Item	State Fiscal Year			Federal Fiscal Year		
	2024	2025	2026	2024	2025	2026
Salaries	\$5,003	\$69,104	\$48,449	\$22,548	\$76,772	\$23,235
Benefits	\$1,994	\$25,921	\$18,525	\$8,973	\$28,886	\$8,581
Contracted Services	\$0	\$1,500	\$0	\$0	\$1,500	\$0
Supplies	\$600	\$340	\$0	\$0	\$940	\$0
Communications	\$800	\$0	\$0	\$0	\$800	\$0
Other: Qualtrics	\$0	\$19,200	\$0	\$0	\$19,200	\$0
Other: Tuition & Fees	\$0	\$6,623	\$0	\$0	\$6,623	\$0
Total Direct Costs	\$8,396	\$122,688	\$66,974	\$31,521	\$134,721	\$31,816
Indirect Costs (25%)	\$2,099	\$30,673	\$16,743	\$7,880	\$33,681	\$7,954
Total Project Cost	\$10,495	\$153,361	\$83,717	\$39,401	\$168,402	\$39,770

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 76.5% 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.

Bridget Hanson, Ph.D., is a Senior Research Scholar at the Center for Health and Safety Culture and will serve as the PI for this project. She has expertise in utilizing mixed-methods research approaches to inform and test approaches to promote health and safety. She will oversee all project activities and deliverables.

Kari Finley, Ph.D., is a Research Scholar at the Center for Health and Safety Culture and is a behavioral specialist with extensive experience in behavior change. She will contribute to all tasks, including development of the bystander engagement strategies and media messages.

Kelly Green, M.P.A., is Research Scientist and Business Manager at the Center for Health and Safety Culture. She will be involved in the financial and contract management of this project. She will bring her qualitative data collection and analysis experience to this project as well as recent experience with testing online interventions for driving behavior change. She will contribute to developing and testing of bystander engagement strategies, including leading the key informant interviews.

Anmarie McMahon, M.S., is a Senior Research Scholar at the Center for Health and Safety Culture. She is experienced in developing and disseminating messaging to promote health and safety and will contribute to developing and testing media messages and to disseminating recommendations and resources.

Jay Otto, M.S., is the principal scientist of the Center for Health and Safety Culture. He oversees all the Center's projects and fosters integration and dissemination of research findings across projects. Otto will contribute to all tasks and will lead the testing of media messages.

Katie Dively, M.S., is a Senior Research Scientist and Senior Trainer at the Center for Health and Safety Culture. She has deep expertise in prevention science and is adept at supporting use of evidence-based prevention practices. She will contribute to development of evidence-based strategies to engage bystanders and to developing recommendations and resources.

Stacey Utterback is a graphic design specialist with the Center for Health and Safety Culture. She has worked with Center successfully on previous Pooled Fund projects and will contribute to designing messages for testing and to the development and formatting of resource materials.

Morgan Neavill, M.S., is a PhD student in the Psychological Sciences program at Montana State University and a Graduate Research Assistant at the Center for Health and Safety Culture. She is skilled in both qualitative and quantitative data analysis and is interested in developing and adapting strategies for diverse populations. She will support all tasks.

Table 5. Schedule of Staffing

Name	Role	FTE*	Hours by Task					Total
			0	1	2	3	4	
Bridget Hanson	Principal Investigator	.09	30	65	80	48	94	317
Kari Finley	Research Staff	.11	-	70	45	118	163	396
Kelly Green	Research Staff	.13	60	195	75	-	110	440
Annmarie McMahon	Research Staff	.07	-	-	-	132	120	252
Jay Otto	Research Staff	.06	-	20	34	90	65	209
Katie Dively	Research Staff	.06	-	60	38	-	110	208
Stacey Utterback	Graphic Designer	.04	-		10	40	100	150
Morgan Neaville	Research Assistant	.20	-	105	225	210	140	680
Total		.765	90	515	507	638	904	2652

*based on 20 months

FACILITIES

Center for Health and Safety Culture

The Center for Health & Safety Culture (CHSC) is an interdisciplinary center serving communities and organizations through research, training, and support services to cultivate healthy and safe cultures. The Center is dedicated to applying research to develop sustainable solutions to complex social problems. Our research focuses on understanding how culture impacts behavior – especially behavior associated with health and safety. We have expanded beyond Positive Community Norms (PCN) to consider a broader set of cultural influences in addition to norms including values, beliefs, and attitudes. This broadly operating model to measure, analyze, and transform culture is called “Positive Culture Framework” (PCF). This framework is grounded in validated psychological models of human social behaviors related to health and safety. We address a variety of issues working with tribal, federal, state, and community agencies as well as private non-profit and for-profit organizations and companies. Current research projects include addressing substance abuse, traffic safety, child maltreatment and violence. 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 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 are 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 video and conference room facilities.

Administrative Services

The researchers at CHSC 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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