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Media Messages and Tools to Reduce Serious Single Vehicle Run-Off-the-Road Crashes Resulting from Impaired Driving

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16. Abstract The Center for Health and Safety Culture conducted research for the Idaho Transportation Department to develop media messages and tools to reduce fatalities and serious injuries related to Run-Off-the-Road, single-vehicle crashes in Idaho using the Positive Community Norms framework. After a review of Idaho's Crash Database and a sample of police reports, the research team proposed to focus on impaired driving, a major risk factor for these crashes, by increasing bystander engagement. The theory of planned behavior was the theoretical basis for a survey of Idaho adults implemented by the University of Idaho's Social Science Research Unit. The survey results informed key media messages to increase the likelihood adults would engage in preventing others from impaired driving. Recommendations for communications, implementation and evaluation are provided.			
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METRIC (SI*) CONVERSION FACTORS

APPROXIMATE CONVERSIONS TO SI UNITS

Symbol	When You Know	Multiply By	To Find	Symbol
		LENGTH		
in	inches	25.4		mm
ft	feet	0.3048		m
yd	yards	0.914		m
mi	Miles (statute)	1.61		km
		AREA		
in^2	square inches	645.2	millimeters squared	cm^2
ft^2	square feet	0.0929	meters squared	m^2
yd^2	square yards	0.836	meters squared	m^2
mi^2	square miles	2.59	kilometers squared	km^2
ac	acres	0.4046	hectares	ha
		MASS (weight)		
oz	Ounces (avdp)	28.35	grams	g
lb	Pounds (avdp)	0.454	kilograms	kg
T	Short tons (2000 lb)	0.907	megagrams	mg
		VOLUME		
fl oz	fluid ounces (US)	29.57	milliliters	mL
gal	Gallons (liq)	3.785	liters	liters
ft^3	cubic feet	0.0283	meters cubed	m^3
yd^3	cubic yards	0.765	meters cubed	m^3

Note: Volumes greater than 1000 L shall be shown in m^3

		TEMPERATURE (exact)		
^oF	Fahrenheit temperature	5/9 (^oF-32)	Celsius temperature	^oC
		ILLUMINATION		
fc	Foot-candles	10.76	lux	lx
fl	foot-lamberts	3.426	candela/m^2	cd/cm^2
		FORCE and PRESSURE or STRESS		
lbf	pound-force	4.45	newtons	N
psi	pound-force per square inch	6.89	kilopascals	kPa

APPROXIMATE CONVERSIONS FROM SI UNITS

Symbol	When You Know	Multiply By	To Find	Symbol
		LENGTH		
mm	millimeters	0.039	inches	in
m	meters	3.28	feet	ft
m	meters	1.09	yards	yd
km	kilometers	0.621	Miles (statute)	mi
		AREA		
mm^2	millimeters squared	0.0016	square inches	in^2
m^2	meters squared	10.764	square feet	ft^2
km^2	kilometers squared	0.39	square miles	mi^2
ha	hectares (10,000 m^2)	2.471	acres	ac
		MASS (weight)		
g	grams	0.0353	Ounces (avdp)	oz
kg	kilograms	2.205	Pounds (avdp)	lb
mg	megagrams (1000 kg)	1.103	short tons	T
		VOLUME		
mL	milliliters	0.034	fluid ounces (US)	fl oz
liters	liters	0.264	Gallons (liq)	gal
m^3	meters cubed	35.315	cubic feet	ft^3
m^3	meters cubed	1.308	cubic yards	yd^3

		TEMPERATURE (exact)		
^oC	Celsius temperature	9/5 ^oC+32	Fahrenheit temperature	^oF
		ILLUMINATION		
lx	lux	0.0929	foot-candles	fc
cd/cm^2	candela/m^2	0.2919	foot-lamberts	fl
		FORCE and PRESSURE or STRESS		
N	newtons	0.225	pound-force	lbf
kPa	kilopascals	0.145	pound-force per square inch	psi

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List of Abbreviations, Acronyms and Symbols

ITD	Idaho Transportation Department
ROR	Run-Off-the-Road
PCN	Positive Community Norms
EPPM	Extended Parallel Process Model
TPB	Theory of Planned Behavior
non-ROR	Non Run-Off-the-Road
SV-ROR	Single-Vehicle Run-Off-the-Road

Executive Summary

Introduction

Research Objective and Background

The Idaho Transportation Department (ITD) has identified single-vehicle Run-Off-the-Road (SV-ROR) crashes as a significant traffic safety problem in its Strategic Highway Safety Plan.[1] Between 2008 and 2010, SV-ROR crashes accounted for 49 percent of traffic fatalities in Idaho.[6] The Department contracted with the Western Transportation Institute (WTI) at Montana State University (MSU) to provide guidance on the use of media messages and tools to reduce fatalities and serious injuries related to this crash type. As ITD specified the concern of the project to be SV-ROR crashes, the researchers focused on this crash type.

Research Goals and Basic Approach

The overall research goal of the project was to support the development and evaluation of media messages and tools to reduce the incidence of fatal and serious injuries from SV-ROR crashes in Idaho. Specific project objectives included:

- Identifying the driver crash factors commonly associated with fatal SV-ROR crashes.
- Reviewing media-based strategies for reducing SV-ROR crashes used in other states.
- Interpreting the results of a survey of adults in Idaho conducted to better understand the actual and perceived norms associated with the risk factors identified previously.
- Providing media messages and a communication plan.

The basic approach articulated in this report is based on the Positive Community Norms (PCN) Framework.[7] A core tenet of the PCN Framework is improving health and safety by cultivating cultural transformation. PCN is a holistic prevention approach which addresses three critical areas – leadership, communication, and the strategic allocation and integration of prevention resources – through the process of cultural transformation. Even though SV-ROR crashes involve individual drivers – these drivers operate within a cultural context that must be recognized and cultivated as a protective factor. Therefore the work of eliminating SV-ROR crashes not only involves focusing on individual drivers, but also on reaching families, schools and workplaces, local communities and state leaders. By working across the system, driving cultures can be truly transformed.

Findings

Alcohol Impairment is a Key Factor in SV-ROR Crashes

In order to better understand SV-ROR crashes, our research team completed an analysis of Idaho crash data. This analysis indicated that the following risk factors are generally over-represented in fatal SV-

ROR crashes relative to all other non-ROR fatal crashes (that is, fatal crashes that did not involve the vehicle running off the road):

1. Alcohol impairment (alone or in combination with other drugs, 42 percent).
2. Exceeding posted speed limit (8 percent).
3. Driver asleep, drowsy, or fatigued (5 percent).

An analysis of various demographic database variables revealed that these risk factors are not strongly associated with a specific demographic group. To augment the database analysis, we reviewed a small number (22) of randomly selected police reports of fatal SV-ROR crashes provided by ITD. Consistent with the previous analysis, alcohol was the most common impairment source. A summary of this analysis is included in Appendix A.

To further support efforts in developing messages and tools to reduce fatal SV-ROR crashes, we reviewed media-based interventions developed by other states. The review specifically focused on media-based efforts to address ROR crashes. The review did not examine media-based efforts to address risky behaviors such as impaired driving or speeding. We did not find any specific media-based efforts conducted by other states to address ROR crashes. A summary of this analysis is included in Appendix B.

Engaging Bystanders to Reduce Impaired Driving

Based on the analysis conducted by the research team, we believe an effective way to use media messages to reduce fatal SV-ROR crashes in Idaho is to reduce the number of episodes of driving under the influence of alcohol, especially those drivers with a blood alcohol content in excess of the legal limit of 0.08 percent. The challenge of using a mass media-based approach is that the portion of the population which drives over the legal limit of 0.08 percent blood alcohol content is relatively small. Therefore, we propose to focus on bystanders – a much larger segment of the population which does not drive impaired but can be engaged to impact the behaviors of the small portion of the population which does drive impaired. There are several reasons supporting this strategy.

1. There are strong norms against drinking and driving; in other words, there is little debate among Idaho adults about drinking and driving, and the overwhelming majority of adults believe drinking and driving is wrong.

2. The portion of the population that does not drive within 2 hours of drinking alcohol is much larger (over 80 percent) than the portion of the population that does drive after drinking (less than 20 percent). Therefore, this larger segment of the population will be easier to reach with a universal media campaign.

3. Research exists which can be used to support efforts designed to engage bystander to prevent injury and harm. This research basis can be leveraged for this project.

4. By developing a platform for engaging the larger audience that embraces safe driving behaviors (in this case, not driving after drinking), we can lay a foundation for addressing other traffic safety issues in the future such as seat belt usage, distracted and fatigued driving using the strategy of bystander engagement.

Results of Positive Community Norms Community Survey

The research team developed a survey to better understand how adults in Idaho perceive impaired driving and to assess their support for various strategies to reduce this risky behavior. Measures for the survey were based on the theory of planned behavior, social norms theory and input from the research team. The survey explored bystander engagement with four different social relationships: a family member, a friend, an acquaintance or coworker and a stranger. The survey was conducted by the Social Science Research Unit at the University of Idaho using telephone interviews between November 2011 and January 2012.[(5)] Overall, we assessed that the sample was representative of the adult population of Idaho by comparing demographic variables (such as gender, county of residence, and age) as well as behavioral variables (such as type of vehicle driven, drinking and driving behavior, and reported 30-day use of alcohol) to the Behavioral Risk Factor Surveillance Survey and ITD's Public Awareness Surveys for 2009 and 2010.[(2,3,4)] Based on the sample size and the population of Idaho, the confidence interval is 4 percent at a 95 percent confidence level.

Based on the responses to the PCN Survey, most Idaho adults, 82 percent, do not drive within 2 hours of drinking alcohol.[5] However, the overwhelming majority of Idaho adults (95 percent) believe that most Idaho adults do drink and drive. The strong norm of not drinking and driving aligns with a strong sense that impaired driving is wrong: 94 percent of those surveyed strongly agreed that it is wrong to drive after drinking enough alcohol to be impaired. However, 44 percent of those surveyed did not think most Idaho adults felt the same way.

Most Idaho adults support strategies to reduce impaired driving. For example, most Idaho adults surveyed, 91 percent, strongly agreed that local law enforcement should strongly enforce drinking and driving laws. Even though sobriety checkpoints are not allowed by current Idaho law, most Idaho adults surveyed, 64 percent, strongly or somewhat agreed that local law enforcement should set-up roadblocks to check for drivers who have been drinking. However, 60 percent of adults perceived that most other Idaho adults would not feel the same way. In addition, most Idaho adults, 78 percent, strongly agreed that employees at establishments where alcoholic beverages are consumed should try to prevent a customer from driving after drinking enough alcohol to be impaired. However, 59 percent of adults perceived that most other adults in Idaho would not feel the same way.

While most adults surveyed strongly agreed that they should intervene to prevent someone from drinking and driving, they had less agreement for trying to intervene with a stranger than with a family member or friend. Also, many individuals in Idaho did not perceive accurately that most Idaho adults strongly agreed that they should try and prevent someone from driving after drinking. Furthermore, many did not feel they knew what to do nor had the confidence to prevent someone from drinking and

driving. These misperceptions about what other Idaho adults believe and gaps in knowledge about how to intervene reveal opportunities for media messages.

To explore the validity of the model, the research team conducted additional analysis of the survey data (T-tests on the means of intention to intervene and regression analysis on beliefs and intentions). We created four models predicting intervening behaviors – one model for each social relationship examined in the survey. The three models predicting whether someone would intervene with a family, friend or acquaintance/coworker did not have statistical significance (this is, the results could not be distinguished from results caused by the random sample). However, the stranger model showed statistical significance and was used to determine what messages would increase interventions.

Finally, we examined the relationship between intervening behavior with a stranger and intervening behavior with other social groups (e.g., family, friend, and acquaintance/coworker). We believe the data show that when individuals are likely to intervene with strangers, they are also likely to intervene with family members, friends and coworkers/acquaintances; therefore, efforts to increase bystander engagement with strangers should increase interventions with others as well.

Implications for Communication Efforts

The research team believes the primary focus for media should be on increasing bystander engagement with strangers. Supportive beliefs (such as "I should try and prevent a stranger from driving after drinking"), knowledge and confidence are the lowest for intervening with strangers – thus presenting the greatest opportunity. The communication efforts should focus on building the knowledge and skills to intervene, growing the supportive beliefs for intervening, and correcting the misperceptions of what most Idaho adults believe. By growing these core beliefs, the intention to intervene with strangers should increase, and as this intention increases, the intervening behavior should increase.

Messages to Increase Bystander Engagement

Based on information gathered from key stakeholders from across Idaho at a February, 2012 workshop, our research team believes the media needs to align with a sense of courage to step forward as a bystander to stop someone from driving after drinking alcohol. Several key statements about the beliefs of Idaho adults need to be conveyed. These statements are:

1. "Most Idaho adults do not drink and drive."
2. "Most Idaho adults agree they should try and prevent a stranger from driving after drinking."
3. "Most Idaho adults agree they would try and prevent a stranger from driving after drinking."
4. "Most Idaho adults agree with strongly enforcing impaired driving laws."

Coupled with these statements will be information about how to intervene with a stranger. We believe that the intervention needs to be safe, simple and straight-forward with easy to remember language. The core concepts for the intervention are that impaired drivers:

- Need to either stay and not drive.
- Ride with someone else.
- Be reported to law enforcement if they chose to drive.

Communication efforts should use community-based messages referencing the beliefs for the specific community with adults as the primary audience. The overall messages should leverage stories from community members demonstrating the desirable beliefs and behaviors. Messages should be pilot tested with stakeholders and adults.

Conclusions and Recommendations

The purpose of this research project was to provide media messages and tools to reduce SV-ROR crashes in Idaho. The following are the key conclusions of the research:

- Based on the analyses of the ITD Crash Database and police reports, the key risky behaviors associated with fatal SV-ROR crashes were alcohol impairment (often excessive at levels 2 to 3 times the legal limit); excessive speed; and driver asleep, drowsy, or fatigued.

- No media campaigns were identified being used by other states to specifically address SV-ROR crashes.

- Based on our analyses and dialog with ITD staff and key stakeholders, we recommend seeking to reduce SV-ROR crashes by engaging bystanders to act to prevent impaired driving.

- Based on our analyses of the PCN Survey of Idaho adults, we recommend employing a media campaign to correct misperceptions about perceived norms regarding intervening and to teach adults how to intervene.

- We also recommend that messages be communicated to families, workplaces including alcohol establishments, community organizations, forms of government, and state leaders regarding efforts they can take to decrease impaired driving.

- We recommend that the messages should be based on community-level stories from local citizens about stopping someone from driving after drinking and to share these stories using video (such as YouTube and television), print (posters and newspaper ads), and radio messages (depending upon availability for each community).

Recommended Next Steps

We recommend pilot testing these concepts in three Idaho communities for 12 to 18 months before statewide implementation. Pilot testing allows for further refinement of concepts/messages and additional learning before resources are invested across the entire state. We recommend selecting Blackfoot, Lewiston and the City of Twin Falls for the pilot implementation based on their size, impaired driving incidents and strong current relationship with ITD.

A quasi-experimental design should be used for the pilot testing. Pre-intervention and post-intervention surveys would be conducted in both the communities participating in the pilot (intervention communities) and in other similar communities across the state in which the pilot is not being implemented (control communities). The surveys should measure beliefs about intervening, knowledge and confidence to intervene, intervening behaviors and awareness of the media campaign.

Calls to law enforcement reporting impaired driving should be tracked for the intervention communities and for the control communities. As bystander engagement increases in the intervention communities, calls to law enforcement should increase. However, other media campaigns (outside of this proposed pilot project) may also increase calls to law enforcement so it will be important to distinguish calls from intervention communities from calls from the control communities.

Chapter 1
Introduction

Research Objective and Background

One of the Idaho Transportation Department's (ITD) primary goals is to improve traffic safety. ITD has developed a strategic highway safety plan to identify high risk crash types and propose cost-effective safety interventions.[1] As part of this strategy, ITD has identified SV-ROR crashes as a significant traffic safety problem, accounting for 49 percent of traffic fatalities in Idaho between the years of 2008 and 2010.[6] Many of these crashes were related to impaired driving, speeding, and inattention/distraction.

The overall research goal of the project was to support the development and evaluation of media messages and tools to reduce the incidence of fatal and serious injuries from SV-ROR crashes in Idaho.

Research Goals and Basic Approach

There are several research goals to support the development and evaluation of media messages and tools to reduce the incidence of fatalities and serious injuries from ROR crashes in Idaho.

1. We identified the common demographics of drivers involved in fatal SV-ROR crashes. These demographics help specify the focus audience for the media messages and delivery tools. This analysis is based on the ITD's Crash Database supplemented by a sample of police reports specific to this crash type.[6]

2. Using ITD's crash data we identified the driver crash factors commonly associated with fatal SV-ROR crashes, such as impaired driving, speeding and inattention/distraction. These factors identify the behaviors that need to be modified by the media messages and delivery tools to reduce crash risk. The specificity of the factors is limited to the information contained in the crash database supplemented by sample police reports specific to this crash type.

3. We reviewed media-based strategies for reducing SV-ROR crashes used in other states. This review provides a context within which to consider media-based approaches and estimate their likely effectiveness in Idaho.

4. We reviewed and interpreted the results of a survey of Idaho adults conducted to better understand the actual and perceived norms associated with the risk factors identified previously. These results informed the message development process so that messages are more effective in changing attitudes and behaviors.

5. We developed media messages and a communication plan based on the information gleaned from the survey of adults and the research of others. The messages presented have been refined based on feedback from key stakeholders.

The basic approach articulated in this report is based on the Positive Community Norms (PCN) Framework. A core tenet of the PCN Framework is to cultivate cultural transformation around the issue being addressed – in this case, impaired driving – to improve health and safety. While vehicle improvements, improved road design and increased enforcement are critical, they alone are insufficient. A holistic approach which seeks sustained improvements must involve transforming the values, attitudes, beliefs and behaviors about impaired driving in Idaho. PCN is a holistic prevention approach which addresses three critical areas – leadership, communication, and the strategic allocation and integration of prevention resources – to foster cultural transformation.

Based on the PCN Framework, transforming culture requires bold leadership. Traffic safety, law enforcement and community leaders at all levels – state, regional, and community – must engage in the work of challenging core assumptions in the process of telling a new story about driving behaviors and reducing car crashes. The PCN Framework trains leaders to help them develop the necessary skills to support this cultural transformation. Communication campaigns are critical in transforming culture because they can shift public conversations and values related to driving norms. Through campaigns, accurate information can be shared with large numbers of the population to help correct misperceptions and align beliefs and behaviors. Comprehensive efforts to reduce SV-ROR crashes will leverage multiple prevention resources and strategies. These strategies need to be aligned with consistent beliefs and actions to support a clear culture of safety. The PCN Framework provides a process to foster alignment of strategies.

To cultivate cultural transformation, our research team seeks to address all three components of the PCN Framework (leadership, communication and integration) at different social levels such as families, schools, workplaces, elected officials, community leaders, etc. Even though SV-ROR crashes involve individual drivers, these drivers operate within a cultural context that must be recognized and cultivated as a protective factor. Therefore the work of eliminating SV-ROR crashes not only involves focusing on individual drivers, but also reaching families, schools and workplaces, local communities and state leaders. Such a campaign requires planning and coordination efforts at the state level. By using this model, efforts (such as communication messages) can be tailored to address appropriate beliefs and behavior changes across the entire system. By working across the system, driving cultures can be truly transformed.

The PCN Framework uses a 7-step process (see Figure 1) to develop a communications campaign.

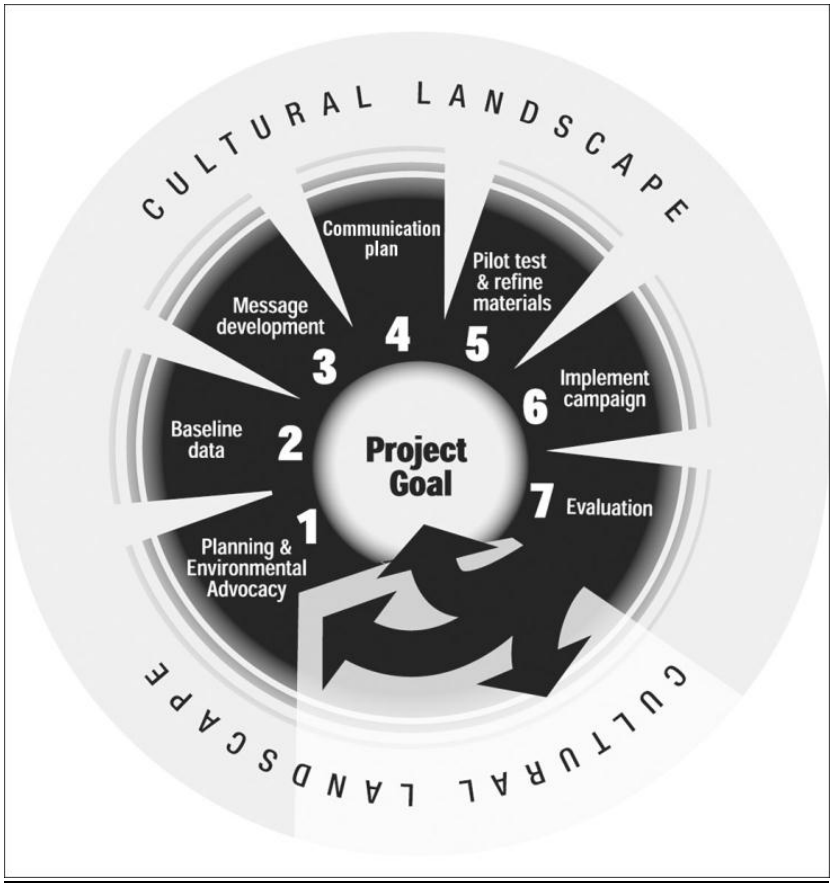

Figure 1. The PCN Framework Seven Step Process[7]

Step 1: Planning and Environmental Advocacy - The research team engaged key leaders at ITD to refine the purpose of the project, to identify and recruit key stakeholders to participate in a 3-day training, and to convene the training (which was held February 21 – 23, 2012 in Boise, Idaho).

Step 2: Baseline Data - The research team analyzed ITD's crash database and conducted research to identify media-based efforts to reduce SV-ROR crashes in other states. Additionally, a survey was developed to measure the existing positive norms and the associated misperceptions regarding these norms among adults in Idaho. This survey was conducted by the Social Science Research Unit at the University of Idaho using telephone interviews between November, 2011 and January, 2012.[5] The responses of the survey were analyzed by our team to reveal key gaps needing to be addressed by the communication messages.

Step 3: Message Development - Information gathered during the training in Idaho with key stakeholders was combined with the results of the survey of Idaho adults to develop messages. These messages were designed to address the gaps in understanding that were revealed by the community survey.

Step 4: Communication Plan - We created a Communication Plan to deliver these messages to the citizens of Idaho.

Step 5: Pilot Testing and Refining - We provided recommendations on how to pilot test messages with key stakeholders and members of the general public.

Step 6: Implement Campaign - We provided recommendations for implementing the campaign first as a pilot project in three Idaho communities.

Step7: Evaluation - We provided recommendations on how to set up the evaluation to measure the impact of the campaign in the three pilot communities.

Limitations

This report includes all the deliverables defined in the project including the baseline data reports regarding the primary focus audience and risk behaviors to reduce SV-ROR crashes, the listing of SV-ROR crash media-based interventions employed by other states and the results of the PCN Survey of Idaho adults. In addition, recommendations for messages, a communication plan, implementation and evaluation are provided.

Some recommendations in this report are based on analyses of information provided in crash reports completed by police officers at the scene of the crash. These reported data may be incomplete or inaccurate. Furthermore, some recommendations in this report are based on analyses of self-reported information collected through a telephone survey of adults in Idaho. While the survey was implemented by an organization with extensive experience in conducting telephone based surveys and used highly trained interviewers, these self-reported data may be inaccurate due to intentional or unintentional errors made by the respondents.

Actual implementation of the specific messages recommended in this report in the community is beyond the scope of this project. Therefore, outcomes based on these messages demonstrating change in attitudes or behaviors in Idaho are not included.

Overview of Report

This report is divided into four major chapters in addition to appendices. The first chapter includes this introduction. The second chapter provides a literature review on fear-based appeals, social norms theory, social ecological theory and bystander engagement based on research conducted outside of this project as well as research conducted by others.

The third chapter contains major findings for this project including the identification of the focus audience and key risk behaviors to be addressed, a summary of SV-ROR media-based interventions developed by other states and recommendations for media messages and grass roots programs for

Idaho. This latter section includes a review of the strategy to reduce ROR crashes and the results of the PCN Survey of Idaho adults.

The fourth chapter provides recommended messages and a communication plan, recommendations on next steps including a pilot implementation plan in three Idaho communities and an evaluation plan to measure the effectiveness of the pilot.

References and five appendices are attached to the end of the report providing more detailed information.

Chapter 2
Literature Review

This chapter provides an overview of five areas of research which are relevant to this project: fear appeals, social norms theory, social ecological theory, the theory of planned behavior, and bystander engagement. The section on fear appeals provides an important understanding of how to effectively use fear in communications strategies without creating unintended consequences which can include making the problem worse. Social norms theory provides an important understanding of how choices by individuals are influenced by their perceptions of the beliefs and behaviors of most people around them. Social norms theory provides a basis for some of the messaging recommendations in this report.

Social ecological theory provides the foundation for understanding why we must engage multiple levels of social systems (such as families, schools, workplaces, community leaders, etc.) to cultivate cultural transformation. By working across multiple levels of community systems, we can increase the likelihood that efforts will become embedded in communities and thus sustained.

The theory of planned behavior provides a model for predicting human behavior. This theory was used to predict bystander engagement in the community survey referenced in Chapter 3. The gaps in knowledge and understanding revealed by the community survey informed the message recommendations for the media campaign.

The research on bystander engagement informs the necessary conditions that increase the likelihood that individuals will intervene to stop someone else from a risky or dangerous action. This research helps inform the messages and the context that needs to be created to increase bystander engagement.

Fear Appeals

Fear appeals have been used extensively in prevention efforts. One theoretical model which seeks to explain how fear impacts behavior is the Extended Parallel Process Model.[8] The Extended Parallel Process Model (EPPM) is sometimes referred to as the fear or threat management theory and focuses on the impact of emotional responses on motivation and behavior.[9]

According to the EPPM, the evaluation of a threat initiates two appraisals which result in either danger control or fear control processes. First, persons appraise the threat of the hazard by determining whether they think the threat is serious (e.g., "is lack of information a serious problem that can cause harm to my patients?") and whether they think they are susceptible to the threat (e.g., "is it possible that I don't have up-to-date information on X technique?"). The greater the threat perceived, the more motivated individuals are to begin the second appraisal, which is an evaluation of the efficacy of the recommended response. When people think about the recommended response, they evaluate its level of response efficacy (e.g., "Will I get accurate and useful information off of this website?") and their level of self-efficacy (e.g., "Am I capable of using this website? Do I have access to it and the skills needed to use it?"). When the threat is regarded as trivial or irrelevant (perceived as low), there is no

motivation to consider the issue further; the efficacy of the recommended response is evaluated superficially--if it is evaluated at all--and no response is made to an outreach message. If people do not feel at-risk for a threat or do not feel the threat to be significant, they simply will ignore information about the threat.

The research into fear appeals has shown such messages to be potent persuasive devices but only in certain conditions. When both perceived threat and perceived efficacy are high, then individuals will be motivated to control the danger and adopt the recommended response. When people realize they cannot prevent a serious threat from occurring, either because they believe the response to be ineffective and/or because they have low self-efficacy and believe they are incapable of performing the recommended response, then the recommended response is often rejected.

Studies have shown that fear appeals with high levels of threat and low levels of efficacy result in message rejection, and occasionally in boomerang effects (people do the opposite of what is advocated). Thus, when people believe themselves to be vulnerable to a significant threat but believe that there's nothing they can do to effectively address the threat, then they deny they are at risk, defensively avoid the issue, or lash out in reactance. In this case, fears about a threat inhibit action and risk messages may backfire.[10]

One example of the use of fear appeals is the Montana Meth Project – an effort to reduce methamphetamine use among Montana youth and young adults which uses very graphic, fear-based television, radio and print advertisements and has been adopted by other states including Idaho. However, researchers have found the impact of the effort to be ineffective. “Claims that the campaign is effective are not supported by data. The campaign has been associated with increases in the acceptability of using methamphetamine and decreases in the perceived danger of using drugs.”[11] “When accounting for a preexisting downward trend in meth use, effects on meth use are statistically indistinguishable from zero.”[12]

Fear appeals have also been used to address various behaviors related to traffic safety. Lewis and others reviewed the effectiveness of fear-appeals in traffic safety and found mixed results: “The results of the review highlight the mixed and inconsistent findings that have been reported in the literature. While fear arousal appears important for attracting attention, its contribution to behaviour change appears less critical than other factors, such as perceptions of vulnerability and effective coping strategies.”[13]

Based on the EPPM and the research of others, it is clear that effective messaging must include a balanced approach. In a meta-analysis of over 354 HIV prevention interventions and 99 control groups, Albarracin and others found that effective interventions combined attitudinal arguments, educational information, behavioral skills arguments and behavioral skills training.[14]

Our research team believes that it is a combined message platform of both concern and hope which is most effective in health and safety communications. The level of concern needs to engage others without creating boomerang effects. The sense of hope can come from information about the positive

norms that already exist in the community. Further information on positive norms is provided in the next section.

Social Norms Theory

There are many theories proposed to explain human behavior and decision-making. One such approach is social norms theory. The social norms approach measures an individual's perceptions of different norms for a specific behavior or attitude as well as the actual behavior or attitude (true norms). This methodology reveals the gap between the two and its influences on behavior.[15]

Table 1. Key Social Norms Terms[15]

Term	Definition	Examples
Social Norm or Actual Norm	Social norms or actual norms are the behaviors or attitudes of the majority of people in any community or group. If most people in a community do not smoke, then not smoking is the "normative" behavior, or the social norm. Not smoking is normal, acceptable, and perhaps even expected in that population.	• Most people do not drink and drive. • Most adults do not smoke. • Most middle school students do not drink alcohol. • Most people belief it is wrong to drink and drive.
Non-Norm	Non-norms are the behaviors or attitudes of the minority of people in any community or group. Often people misperceive behaviors and believe they are norms when in fact they are non-norms.	• About 18% of adults in the United States smoke cigarettes. • Some students are held back a grade each year. • Some people are killed in violent crimes each year. • Some people think it is OK to drink and drive.
Perception of Norm or Perceived Norm	Perceptions of social norms or perceived norms are people's beliefs about the norms of their peers. Perceptions of social norms play an extremely important role in shaping our individual behavior. Our perception of what is acceptable, majority behavior — how fast we think "most people" drive, whether we think "most people" wear seatbelts, how many drinks we think "most people" have before getting behind the wheel — play a large role in our own behavioral decisions. Unfortunately, we often misperceive the social norms of our peers, thinking that risky behavior occurs with far greater frequency and social acceptance than it actually does.	• I believe most people in my state smoke cigarettes. • I believe most students in my school drink alcohol. • I believe most adults in my community drive after drinking alcohol at least once a month. • I believe most adults speed. • I believe most youth think getting drunk is OK.
Descriptive Norm	Descriptive norms describe the behaviors of people as opposed to their attitudes.	• Most people do not smoke cigarettes. • Most people in the United States eat at least one meal a day.
Injunctive Norm	Injunctive norms capture people's attitudes, in particular, a sense of disapproval ("this is wrong") or an injunction ("should" or "should not").	• Most people believe drinking and driving is wrong. • Most people believe you should not give children illegal drugs. • Most people believe they should exercise more often.

Social norms theory says that people tend to behave in the way they believe is most typical of and accepted by their peers. If people believe that risky behaviors are typical, some individuals are more likely to engage in those behaviors for several reasons. First, people may be more likely to take part in a high-risk activity if they misperceive it as the norm. Second, those who regularly engage in high-risk activities often do so with others and therefore believe "everyone" does it. And third, if a bystander believes the risky behavior is the norm, they may fear social disapproval for intervening and therefore be reluctant to intervene to stop the dangerous behavior.

Peer norms are typically construed as the beliefs of significant peers (e.g., best friends or social clique), following Azjen and Fishbein's model of normative influence.[16] Social norms have been divided into two categories in the literature: Descriptive social norms (perceptions of friends' actual behaviors) and injunctive social norms (perceptions of friends' opinions of behaviors).[17]

Misperceptions of peer norms have consistently been shown to be correlated with various behaviors including binge drinking, men's willingness to intervene on behalf of women, unhealthy weight control practices, marijuana smoking, gambling, rape proclivity among men, and use of protective equipment in farming.[18,19,20,21,22,23,24,25,26,27,28,29] Correcting these misperceptions to be in line with peers' actual behaviors has resulted in decreased risk behavior among target audiences.[30,31,32,33,34,35]

Studies demonstrate positive effects of interventions that employ social norms as a strategy.[30,34,35] Many researchers have declared the concept to be an essential strategy for changing human behavior.[16,36,37] Haines, Barker and Rice reported significant reductions in both tobacco and alcohol use at two Mid-western high schools using social norms marketing campaigns.[38] In a quasi-experimental design targeting 21,000 teenagers in a seven county area, Linkenbach and Perkins measured a 41 percent reduction in first time tobacco use in teenagers as the result of correcting misperceptions of tobacco-use norms.[39]

Social norms marketing campaigns have demonstrated effectiveness in reducing high risk drinking, youth initiation of tobacco, driving while intoxicated, as well as promoting parenting practices, and promoting energy conservation behaviors.[33, 40,41,42,43,44] Positive results have been obtained not just with college and university students, but also with high school and middle school populations, in defined sub-populations such as sorority and fraternity members, and with adults.[43]

The Center for Health and Safety Culture led a statewide social norms media marketing campaign to reduce drinking and driving by young adults between the ages of 21 and 34 in Montana. Regions of the state were assigned to one of three groups: an intensive social norms campaign, a buffer, and a control group. The social norms campaign area consisted of 15 counties in western Montana. These counties received a high dosage of media including television and radio messages using positive messages to correct normative misperceptions. Counties in the control area continued to receive fear-based messages seeking to reduce impaired driving. Results showed that the campaign exposed the focus population to its messages and reduced misperceptions. Those in the campaign counties believed the average peer had driven significantly less often within one hour of drinking than those in the control counties. Analysis showed that the percentage of young adults in the intervention counties who

reported driving within an hour of drinking was reduced following the campaign by 2 percent and increased in the control counties by 12 percent, that the percentage of individuals in the intervention counties who reported they always used a designated driver increased, and that support for changing the blood-alcohol content legal limit to 0.08 percent increased.[45]

Studies in the United Kingdom document similar gaps between perceived and actual social norms for college drinking behavior and treatment of the mentally ill, indicating promise for social norms campaigns in Europe and potentially elsewhere around the world.[46,47]

Our research team believes that normative messages based on social norms theory are a critical component of effective messaging. Positive normative messages also provide a sense of hope which is an important part of a balance message combining both concern and hope.

Social Ecological Theory

Social ecology theory, also called the theory of human ecology, originated with psychologists' discontent with individual-level explanations of health and other behaviors. Psychologists such as Urie Bronfenbrenner and Kurt Lewin instead sought to explain behavior in terms of an "ecology" of forces at individual, social, political, cultural, and other levels, not just the level of individual psychology.[48]

Lewin argued that individuals exist within fields of influences.[49,50] These fields form a topology, which is the arrangement of regions of influence. Topological psychology, as Lewin called it, explained behavior in terms of environmental influences in the present, much in contrast to Freud and traditional psychotherapy, which explained behavior in terms of individual-level influences from the past. That is, perceptions of the environment from the topological perspective of the individual shape that individual's motivations and actions.

Extensive research has demonstrated the importance of considering the entire range of social ecological influences (see Figure 2) on risk and health behaviors.[51,52,53] For example, the World Health Organization has used a social ecological model to understand the cultural determinants of violence.[54] More recently, researchers in Europe have made an extensive review of the influences of traffic safety culture across various levels of the social ecology.[55]

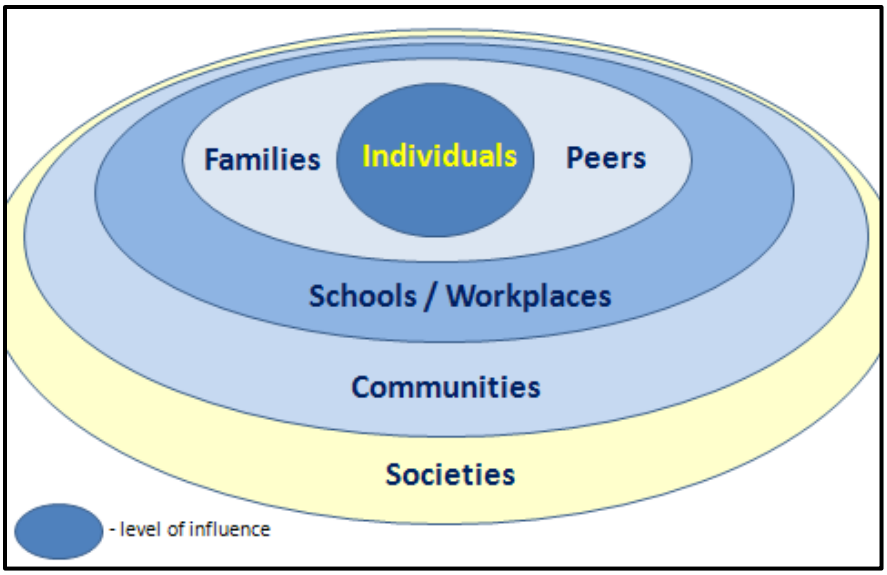

Figure 2. Social Ecological Model[56]

Social ecology can be applied to health promotion interventions by applying its basic principles; understanding how macro theories explain the behavior of individuals, small groups and larger social organizations; learning how social ecology is related to health promotion; and designing health interventions that operate at many levels of analysis.[57] For example, when considering traffic safety, not only must we address the beliefs and behaviors of the individual driver, but also the beliefs and behaviors of families, co-workers, workplace leaders, community leaders and policy makers. Therefore, multiple strategies are needed to address this one issue, and we will be seeking transformation not only of our focus audience, but also of organizations throughout the relevant social ecology.

Theory of Planned Behavior

The Theory of Planned Behavior (TPB) is one of the most commonly discussed and applied health behavior models (see Figure 3). Theory of Planned Behavior is an extension of the Theory of Reasoned Action and says that intention and perceived behavioral control (the presence or absence of facilitators or barriers to the behavior) determine behavior.[9] Icek Ajzen further developed these concepts in his research. Ajzen clarifies that intention is determined by motivation, perceived normative beliefs and behavioral control by ability.[58] Put simply, TPB argues that "behavior reflects expected value"; that is, it assumes a link between rational motivation, desire, intention, and expected outcomes in behavior choices.[9]

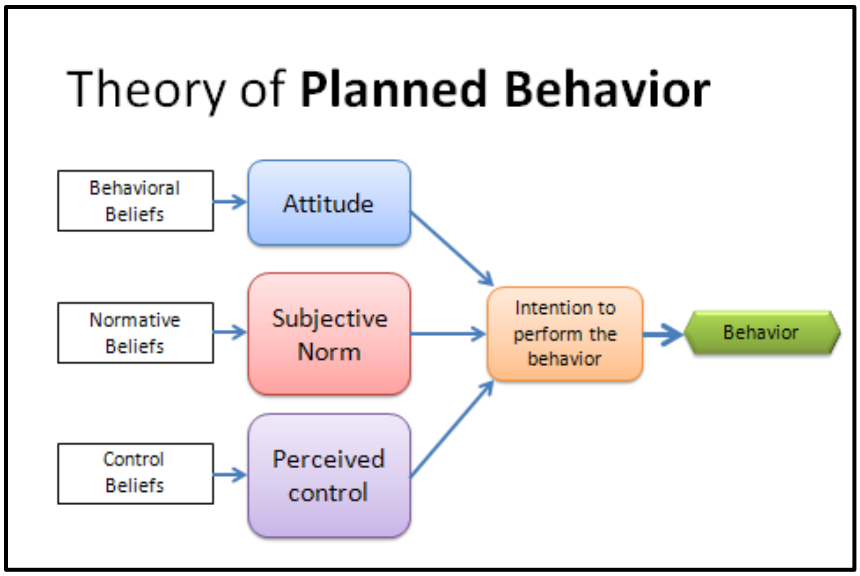

Figure 3. Theory of Planned Behavior[9]

The Theory of Planned Behavior has been utilized in many health promotion initiatives including alcohol consumption, condom use, disease reduction, and more.[9,58] Applications have sought to influence beliefs about cost-benefit assessments of certain behaviors and to change perceptions of subjective norms, aligning motivations to those norms. The underlying foundation of beliefs provides the descriptions needed to gain substantive information about a behavior's determinants. It is at the level of beliefs that we can learn about the unique factors that induce one person to engage in the behavior of interest and to prompt another to follow a different course of action.[58]

Our research team believes the Theory of Planned Behavior is a valuable model to help understand and predict behavior especially in situations where the goal is to increase adoption of a new behavior (such as getting bystanders to intervene) as opposed to not engaging in a certain behavior (such as underage drinking).

Bystander Engagement

Several researchers have sought to understand the factors which influence decisions about engaging bystanders in various situations. McKnight and others developed the Riders Helping Riders Program to foster engagement by motorcycle riders to prevent fellow riders from driving after drinking.[59] The program was delivered in a classroom setting and involved basic education, role-playing, and group discussion of various situations. It was provided to 4,889 Georgia riders during the 1-year pilot implementation in all state motorcycle instruction classes as well as through press releases shared statewide. Evaluation results using a comparison of pre-intervention and post-intervention surveys showed a statistically significant change in riders' beliefs and attitudes about intervening. However, a 14-month time-series analysis of alcohol-related motorcycle crashes did not show any results. The lack of results may be explained by the short evaluation period (14 months), the fact that the program was supported by minimal universal media, and that only a small fraction of motorcycle riders ever received

direct training (4,889 riders received training compared to over 231,000 motorcycle licenses in Georgia at the time).[59]

Several projects have focused on increasing bystander engagement to reduce sexual assaults and dating violence. Miller and others completed a cluster-randomized trial which demonstrated effectiveness of a program to reduce dating violence among adolescents by training athletes and coaches. Changes were noted in both intention to intervene and intervening behaviors.[60] Potter and others studied an exploratory project using media campaigns to prevent violence against women at the community level. The researchers concluded that such campaigns can be effective at increasing bystander intervention.[61] Coker and others studied the Green Dot program used by colleges and universities to reduce dating violence. Their research revealed that the program was associated with significantly higher active bystander behavior scores as self-reported by participants.[62]

Recent research by Cismaru and others noted five steps bystanders take resulting in engagement. First, the bystander must notice the incident. Second, the bystander must interpret the incident as potentially dangerous or of concern. Third, the bystander must choose to be responsible and recognize a potential role to intervene. Fourth, the bystander must choose a form of intervention. Fifth, the bystander must act. Each of these steps help to inform necessary components of interventions designed to increase bystander engagement.[63]

Levine and Cassidy studied the role of groups and individual identity in bystander behavior. Their research revealed that the likelihood of bystander engagement increases when bystanders consider the individual as a member of the "in-group." Furthermore, perceived group norms influence bystander engagement. If bystanders believe group norms favor non-intervention, then the presence of a group will inhibit engagement. However, if group norms favor intervention, then the presence of the group can facilitate intervention.[64]

Research in the area of promoting intervention to reduce child abuse has revealed the importance of addressing the perceived outcomes among bystanders of intervening. Feldderjohann and Johnson found that bystanders needed to have a positive perception regarding what would happen if a potential case of child abuse was reported to child protective services. If bystanders held a negative perception, they were less likely to intervene.[65]

The U.S. Department of Transportation partnered with the Ad Council to develop the "Friends Don't Let Friends Drive Drunk" campaign which has been used for several decades. According to the National Highway Transportation Safety Administration, the campaign has broad recall and is responsible for reducing impaired driving among individuals.[66] Early instances of the campaign have been criticized for not demonstrating how to intervene or explaining how to overcome barriers.[67] Recent national efforts have shifted to promoting high visibility enforcement. The "Drunk Driving: Over the Limit, Under Arrest" campaign focused on increasing the perception of arrest for impaired driving. Evaluation of the effort showed a significant increase in impaired driving arrests during the three year campaign and a decrease in alcohol-related crash fatalities. Interestingly, the rates of reduction of alcohol-related fatal crashes did not differ between states which were provided additional federal funding for the media compared to

states that were not.[68] An additional nationwide analysis of the 2006 National Labor Day Impaired Driving Enforcement Crackdown initiative revealed that the campaign increased awareness of law enforcement efforts to arrest impaired drivers. However, there was no change in those who reported drinking alcohol and driving in the past 30 days. Later, when the evaluation was repeated in December, perceived risk of enforcement did not increase.[69]

While our research team found limited published research on engaging bystanders to reduce impaired driving among adults, we believe much of the above mentioned research has potential application in this project. The results we did find indicate that it is possible to motivate bystanders to help prevent risky behaviors through a well-designed community intervention.

Chapter 3
Findings

This chapter provides details of the research conducted to develop messages and tools to reduce SV-ROR crashes. The decision to focus on SV-ROR crashes was based on ITD's Strategic Highway Safety Plan and the analysis that showed that SV-ROR crashes accounted for 49 percent of traffic fatalities in Idaho from 2008 to 2010.[1,6] To start, our research team reviewed media-based interventions developed by other states. The review did not reveal any ROR-specific media-based efforts conducted by other states. The complete summary is included in Appendix B.

Next, we present the findings from examining ITD's Crash Database to better understand the risk factors and key demographics associated with fatal SV-ROR crashes.[6] From this analysis, we propose a strategy to address this risk factor. The remaining sections document the findings from a survey developed to better understand the application of this strategy in Idaho, the development of a model based on the theory of planned behavior and social norms theory, and share implications for communications efforts.

Alcohol Impairment is a Key Factor in SV-ROR Crashes

In order to better understand SV-ROR crashes, our research team analyzed Idaho crash data. The objective of this analysis was to understand the risk factors and key demographics associated with these fatal crashes. The analysis of the ITD crash database was done in two steps. First, we identified which type of ROR was most common. In this case, the SV-ROR was most common. Between 2000 and 2010, fatal SV-ROR crashes accounted for 34 percent of all fatal crashes and 49 percent of all traffic fatalities.[6] This confirmed the original focus of the study. Next, we examined which crash factors were unique to these SV-ROR crashes. All other crash types were selected for comparison to provide more generalizable conclusions than selecting any one crash type (e.g., head on) as a comparison. In this case, all other crash types excluded ROR crashes (both SV and multiple) to provide a comparison that was independent of any factors related to any type of ROR. We believe it made for a better comparison to not have ROR in the baseline since we were already comparing a type of ROR to that baseline. The results of this analysis were also confirmed by the examination of police reports (see below), thereby validating this approach.

The Chi2 statistic was calculated for each cross-tab comparison to determine if there was a significant association between crash type (SV-ROR, non-ROR) for the prevalence of each risk factor. The expected and observed values in cross-tabs were compared to determine which factors were significantly over or under represented for fatal SV-ROR crashes.

The analysis of driver risk factors focused on the following crash database variables impairment, presence of alcohol/drugs and contributing circumstances including:

- Speeding.
- Asleep / drowsy / fatigued.
- Distraction.
- Drove left of center.
- Failed to obey signal.
- Failed to obey stop sign.
- Failed to signal.
- Failed to yield.
- Following too close.
- Improper backing.
- Improper lane change.
- Improper overtaking.
- Improper turn.
- Improper use of turn lane.
- Inattention.
- Light defect.
- Other vehicle defect.
- Overcorrected.
- Physical impairment.
- Previous accident.
- Speed too fast for conditions.
- Tire defect.
- Too slow for traffic.
- Vision obstruction.

This analysis indicated that the following risk factors are generally over-representative of fatal SV-ROR crashes (relative to all other non-ROR fatal crashes):

1. Alcohol impairment (alone or in combination with other drugs, 42 percent).
2. Exceeding posted speed limit (8 percent).
3. Driver asleep, drowsy, or fatigued (5 percent).

The following crash database variables were also examined in order to identify key context variables for the occurrence of fatal SV-ROR crashes:

- In city limits.
- Road type.
- Road surface.
- Day of week.
- Weather condition.
- Road condition.

This analysis indicated that the following context variables are generally over-represented in fatal SV-ROR crashes:

1. Not in city limits (rural)
2. Non-paved (dirt, gravel, stone)
3. Weekend (12:00 a.m. Saturday, 11:59 p.m. Sunday)

We also looked at the characteristics of drivers and vehicles involved in SV-ROR crashes. In the overall analysis comparing SV-ROR to non-ROR fatal crashes, there was no significant difference in terms of driver gender and no practical difference in the average age of the driver (difference in average age was 3 years). However, fatal SV-ROR crashes were significantly over-represented by pickups (including vans and SUVs).

Next, the analysis considered each demographic variable only for the main risk factors for fatal SV-ROR crashes (specifically alcohol impairment, speeding, and asleep/drowsy/fatigued). There was no significant effect of gender for the risk variables. However, the average age of those drivers identified with some form of “impairment” was younger (34 years) compared to the average for those without any

impairment (42 years). Overall, this suggests that the risk factors are not strongly associated with a specific demographic group.

To supplement the analysis of crash data, our research team reviewed a small number (22) of randomly selected police reports of SV-ROR crashes provided by ITD. This analysis was intended to corroborate the conclusions of the database analysis and revealed additional detail on crash factors and driver demographics. This sample size was selected not to provide statistical significance as an independent measure but to enhance the understanding of the analysis of the crash records.

The database was filtered to selected cases of fatal SV-ROR crashes that occurred outside city limits (rural) and had an indication of driver impairment. This data selection is consistent with the basic context and risk factors previously identified in the crosstab analysis of the database (alcohol impairment was the most prevalent contributing factor and most SV-ROR fatal crashes occurred outside of city limits).

A list was created of SV-ROR fatal crashes for the most recent year of 2010. Every second case was recommended for review. This process resulted in the selection of 22 cases without bias amongst the fatal crashes that are most typical for the main risk and context variables. Police reports for these selected cases were reviewed to make a qualitative assessment of demographic and contextual variables as well as risk factors. The purpose of this review was to verify the conclusions of the database crosstab analysis and determine if the reports provided any additional data.

Consistent with the database crosstab analysis, alcohol was the most common impairment source. Notably, tested levels of alcohol were consistently far in excess of the blood alcohol concentration legal limit (0.08 percent). Indeed, most of the tested levels were 2 or 3 times this limit. Thus, most cases involve excessive alcohol rather than marginal consumption. Alcohol was often combined with speeding (over limit or in relation to conditions) and loss of vehicle control. Additional impairment sources included drugs, drowsiness, and inattention.

An additional risk factor in Idaho was suggested by the review of these police reports of fatal SV-ROR crashes. Notably, 13 of the 17 passenger vehicle crashes (excluding motorcycles) involved the driver being fully or partially ejected (76 percent). This implies that lack of use of seatbelts is a significant contributing risk factor toward the fatal outcome of these SV-ROR crashes.

In summary, our initial analysis indicated that the key risky behaviors associated with fatal ROR crashes were alcohol impairment (often in excess of levels 2 to 3 times the legal limit); driver asleep, drowsy, or fatigued; and excessive speed. Furthermore, crashes tended to take place on rural roads/highways (outside city limits) on non-paved roads (dirt, gravel, stone) and on weekends (Saturday or Sunday). Pickup trucks, vans and SUVs were over-represented; however, no particular age group or gender was more prevalent than another although impairment was more likely for younger populations than older populations. Lack of seat belt use was an additional risk factor. More details regarding this analysis are provided in Appendix A.

Based on the analysis described above, our team believes the most effective way to reduce fatal SV-ROR crashes is to focus on reducing impaired driving. Alcohol was the most common source of impairment and was often combined with speeding and loss of control of the vehicle. Excessive speed may be a consequence of alcohol impairment and therefore may be reduced as impaired driving is reduced. While lack of seat belt use often resulting in partial or complete ejection from the vehicle is a contributing factor to fatalities, increasing seat belt usage would not necessarily decrease crashes. Furthermore, excessive alcohol use may contribute to lack of seat belt usage.

The next section provides a strategy to reduce impaired driving in Idaho.

Engaging Bystanders to Reduce Impaired Driving

The challenge of reducing impaired driving using a mass media-based approach is that the portion of the population which drives over the legal limit of 0.08 percent blood alcohol content is relatively small.[70] Furthermore, our analysis revealed that the blood alcohol levels of those involved in fatal crashes were several times the legal limit indicating that these individuals tend to be long-term, chronic drinkers. Changing the behavior of this group using a media campaign would be very difficult.

As mentioned above, while national campaigns to increase enforcement have been effective at reducing impaired driving, it is unclear whether these outcomes are based on the media or the strong enforcement (or a combination). In addition, according to the National Highway Transportation Safety Administration (NHTSA), such campaigns have not resulted in a sustained culture of strong enforcement: "Awareness about both enforcement activities and media messages increased following each crackdown, but did not carry over from campaign to campaign."[68]

Based on these challenges, we propose to focus on bystanders – a much larger segment of the population which does not drive impaired, but can be engaged to impact the behaviors of the small portion of the population which does drive impaired. By engaging these bystanders to intervene, we can reduce impaired driving.

There are several reasons supporting this strategy.

1. An overwhelming majority of adults (94 percent) believe drinking and driving is wrong.[5]

2. The portion of the population that does not drive after drinking is much larger (over 80 percent) compared with the portion of the population that does drive after drinking (less than 20 percent).[5] Therefore, it is much easier to reach this larger segment of the population with a universal media campaign.

3. There is a research basis for efforts designed to engage bystanders to prevent injury and harm. Campaigns like "Friends Don't Let Friends Drive Drunk" have increased bystander engagement with friends.[69] This research basis can be leveraged for this project.

4. Enforcement will be a component of the proposed bystander engagement process, promoting bystander engagement will help cultivate a culture of enforcement thus sustaining this known effective strategy at the community level.

5. Effective messages clarifying social norms (such as the campaign in Montana mentioned previously) can be an integral component of an overall effort to engage bystanders.[42] Clarifying that most adults do not drive after drinking will help foster bystander engagement by establishing that such behaviors are not the norm and therefore are not acceptable.

6. By developing a platform for engaging the larger audience which embraces safe driving behaviors (in this case, not driving after drinking), we can lay a foundation for addressing other traffic safety issues in the future such as seat belt usage, distracted driving and driving while fatigued or sleepy using the strategy of bystander engagement.

The research team discussed this strategic approach with the project management team of ITD, and the group decided to proceed. We created a community survey based on applying the theory of planned behavior and social norms theory to increase bystander engagement. The results of the survey were used to validate the model. Once validated, the model guided message development to increase bystander engagement.

Results of Positive Community Norms Survey

Survey Background

The research team developed a survey to better understand how adults in Idaho perceive impaired driving and to assess their support for various strategies to reduce this risky behavior. The survey was developed by the research team and conducted by the Social Science Research Unit at the University of Idaho using telephone interviews between November 2011 and January 2012. Both household landlines and wireless telephone numbers were included in the sample. The landline frame included 800 numbers, and the wireless number frame included 2,000, both drawn in proportion to the population densities in the state (using phone number exchanges). Details regarding the survey are available in ITD Report RP214, Positive Community Norm Survey 2011: Methodology and Results.[5]

Survey Measures

Table 2 summarizes the content of the survey which was based on the theory of planned behavior, social norms theory and input from the research team. The theory of planned behavior regarding bystander engagement was applied to four different social relationships: a family member, a friend, an acquaintance or coworker and a stranger. The research team sought to understand the impact of the social relationship on intervening attitudes, beliefs and behaviors. In addition, actual and perceived norms were measured for key beliefs and behaviors according to social norms theory.

Self-reported drinking and driving behavior was selected to establish a baseline as well as for comparison to surveys previously conducted by ITD. To facilitate comparison of results, this survey used the exact same question and answer language as was used on other surveys. Thirty-day alcohol use was selected so that the sample could be compared with the Behavioral Risk Factor Surveillance System survey conducted annually by the Idaho Department Health and Welfare.[2]

Key demographic variables were measured to assess how representative the sample was and to help segment the responses. Overall, the research team assessed that the sample was very representative of the adult population of Idaho. Detailed comparisons of various demographic and behavioral variables are provided in Appendix C. Based on the sample size and the population of Idaho, the confidence interval is 4 percent at a 95 percent confidence level. ITD Research Project 214 - PCN Community Survey is available on the ITD Research Page (http://itd.idaho.gov/highways/research/.

Table 2. Idaho PCN Community Survey Measures

Actual and Perceived Norm of Disapproval for Driving after Drinking
Actual and Perceived Norm of Injunction to Intervene (family member, friend, acquaintance or coworker, stranger)
Knowledge to Intervene (family member, friend, acquaintance or coworker, stranger)
Confidence to Intervene (family member, friend, acquaintance or coworker, stranger)
Perception of Support to Intervene (family member, friend, acquaintance or coworker, stranger)
Actual and Perceived Norm of Intention to Intervene (family member, friend, acquaintance or coworker, stranger)
Actual and Perceived Norm of Intervening Behaviors (family member, friend, acquaintance or coworker, stranger)
Support for Intervention by Employees Where Alcoholic Beverages are Served
Actual and Perceived Support for Strong Enforcement of Drinking and Driving Laws
Actual and Perceived Drinking and Driving Behavior
Alcohol Usage (30-day usage)
Campaign Awareness
Demographics (age, gender, make of vehicle most often driven, marital status, employment status, county of residence)

Key Findings

Based on the responses to the Positive Community Norms Survey, most Idaho adults, 82 percent, do not drive within 2 hours of drinking alcohol. This result is consistent with those measured in previous ITD surveys.[3,4] This positive norm (82 percent) establishes a strong cultural foundation upon which to build efforts to further reduce impaired driving. However, the overwhelming majority of Idaho adults (95 percent) actually believe that most Idaho adults do drink and drive. Therefore, there is a significant misperception about the drinking and driving behavior of most Idaho adults. This gap is worthy of attention and should be addressed in messaging.

The fact that most Idahoans don't drink and drive aligns with a strong sense that impaired driving is wrong: 94 percent of those surveyed strongly agreed that it is wrong to drive after drinking enough alcohol to be impaired. However, 44 percent of those surveyed did not think most Idaho adults felt the same way. Therefore, there are many Idaho adults who do not realize that the overwhelming majority of their peers – other Idaho adults – believe impaired driving is wrong.

Most Idaho adults support evidence-based strategies to reduce impaired driving. For example, most Idaho adults surveyed, 91 percent, strongly agreed that local law enforcement should strongly enforce drinking and driving laws. This high level of support provides an environment supportive of law enforcement efforts. However, 40 percent of adults perceived that most other adults would not feel the same way.

Even though sobriety checkpoints are not allowed by current Idaho law, most Idaho adults surveyed, 64 percent, strongly or somewhat agreed that local law enforcement should set up roadblock to check for drivers who have been drinking. However, 60 percent of adults perceived that most other Idaho adults would not feel the same way.

In addition, most Idaho adults, 78 percent, strongly agreed that employees at establishments where alcoholic beverages are consumed should try to prevent a customer from driving after drinking enough alcohol to be impaired. However, 59 percent of adults perceived that most other adults in Idaho would not feel the same way.

Table 3 contains the actual and perceived norms of Idaho adults for the injunction to intervene ("I should intervene") and the intention to intervene ("I would intervene") with each of the four social relationships. Overall, these results reveal strong support for intervening to prevent others from drinking and driving. The support decreases as the relationship changes. The perceived norms indicate that many Idaho adults do not believe that most other Idaho adults have similar thoughts. These gaps indicate an opportunity to apply social norms theory to influence beliefs and motivate creating messages to correct these misperceptions.

Table 3. Actual and Perceived Norms for Bystander Engagement

	Strongly Agreed			
	Family Member	**Friend**	**Coworker/ Acquaintance**	**Stranger**
Actual Injunctive Norm I should try and prevent … from driving after drinking enough alcohol to be impaired.	97%	94%	88%	60%
Perceived Injunctive Norm How would most Idaho adults respond: "I should try and prevent … from driving after drinking enough alcohol to be impaired."	64%	57%	46%	21%
Actual Norm of Intention I would try and prevent … from driving after drinking enough alcohol to be impaired.	97%	92%	79%	50%
Perceived Norm of Intention How would most Idaho adults respond: "I would try and prevent … from driving after drinking enough alcohol to be impaired.	58%	55%	40%	20%

Table 4 reveals additional gaps and challenges among survey participants. Although many Idaho adults reported they knew what to do to prevent a family member or friend from impaired driving, significantly fewer knew what to do with a stranger. Similarly, many did not feel they had the confidence or perceived a sense of support from those around them to prevent someone from drinking and driving.

Table 4. Knowledge, Confidence and Perception of Support for Bystander Engagement

	Strongly Agreed			
	Family Member	**Friend**	**Coworker/ Acquaintance**	**Stranger**
Knowledge I know what to do in order to prevent…from driving after drinking enough alcohol to be impaired.	72%	70%	55%	31%
Confidence I am confident that I can prevent…from driving after drinking enough alcohol to be impaired.	68%	58%	36%	16%
Perception of Support Most people around me at the time would support me if I chose to prevent…from driving after drinking enough alcohol to be impaired.	85%	77%	59%	32%

Table 5 reveals the intervening behaviors among Idaho adults in the 12 months prior to the survey. Many survey participants indicated they had not been in a situation to intervene. Among those who were in a situation to intervene, many chose not to intervene. Furthermore, significantly more

intervened with a family member or friend than did with a stranger. Clearly, there are opportunities to improve bystander engagement among all social relationships – especially among strangers.

Table 5. Intervening Behaviors in the Last 12 Months

	Intervened	Did Not Intervene	Have Not Been in a Situation to Intervene
Family Member	16%	10%	74%
Friend	22%	9%	68%
Coworker/Acquaintance	12%	10%	78%
Stranger	8%	14%	78%

The data presented thus far reveal both hope and concern. Overall, there are strong positive norms in Idaho regarding both behaviors and beliefs about impaired driving. However, there are significant misperceptions regarding what most Idaho adults do and believe and there are gaps in knowledge and confidence to take action to prevent others from impaired driving. The next section seeks to better understand the relationship between these beliefs and behaviors to help inform communication efforts.

Bystander Engagement Model

Next, the research team sought to validate the theory of planned behavior model (see Figure 3) using the survey data. We examined the correlation coefficients and their statistical significance among the various beliefs (behavioral, normative and control) and intention to intervene for each social relationship (see Table 6). A correlation coefficient is an indicator of to what degree two variables go together or co-vary. The correlation coefficient has a range from -1 to 1. The larger the absolute value of the correlation coefficient, the more the two variables align. A correlation coefficient close to 0 is an indication that the two variables do not vary in a similar fashion. Statistical significance is an indication of how likely the correlation coefficient is a result of actual variations in the variable as opposed to variations due to the random sample. The value indicated for statistical significance is the probability that the correlation coefficient is a result of random sampling. Thus, the smaller the statistical significance measure, the less likely the measure is a result of random sampling.[71] Each of the correlations was statically significant. Based on the correlation coefficients shown in Table 6 and their statistical significance, we believe the belief measures captured in the survey based on theory of planned behavior predict intention to intervene. For example, the more people indicated they should try and prevent someone from driving after drinking, the more likely they intended to take that action. Similarly, the more they perceived support from others around them and that most others would also try and intervene, the more likely they intended to intervene.

Table 6. Correlations with Intention

	Family Member	Friend	Acquaintance – Coworker	Stranger
Injunction	**0.234** < 0.001	**0.196** < 0.001	**0.318** < 0.001	**0.534** < 0.001
Perceived Support	**0.264** < 0.001	**0.322** < 0.001	**0.410** < 0.001	**0.589** < 0.001
Perceived Norm	**0.200** < 0.001	**0.235** < 0.001	**0.456** < 0.001	**0.574** < 0.001
Knowledge	**0.129** 0.003	**0.158** < 0.001	**0.355** < 0.001	**0.606** < 0.001
Confidence	**0.213** < 0.001	**0.185** < 0.001	**0.423** < 0.001	**0.561** < 0.001

To further explore the validity of the theory of planned behavior model, the research team conducted T-Tests between the means of intention to intervene for those who actually intervened and those who did not; those who indicated they were not in a situation to intervene were excluded from the comparison. The statistical significance of these T-Tests for each social relationship is shown in Table 7. Only the stranger model showed statistical significance.

The T-Tests in Table 7 clearly indicate the correlation between intention to intervene and intervening behavior for strangers. In other words, individuals who indicated they intended to intervene with strangers were more likely to have intervened with strangers in the past 12 months. Because the T-Tests for the other remaining relationships (family member, friend and acquaintance/coworker) were not statistically significant (in other words, the measures may only be due to variation caused by random sampling), the research team did not believe that analyzing the remaining relationships was appropriate. Understanding why the T-Tests for these other relationships were not statistically significant was beyond the scope of this research project. In order to better understand the relationship between intention to intervene with a stranger and intervening behavior, a logistical regression was performed. A logistical regression was selected because the intervening behavior was measured as a dichotomous variable (e.g., yes or no) and thus a simple correlational analysis was inappropriate. The analysis revealed that the odds ratio for the behavior to intervene would increase as intention increased (Beta= 3.096, statistical significance less than 0.001).

Table 1. Summary of T-Tests

	Family Member	Friend	Acquaintance/ Coworker	Stranger
Mean Difference	-0.061	0.079	-.147	-0.853
T-Statistic	-1.971	1.824	-1.556	-4.256
Degrees of Freedom (df)	142	172	119	112
Significance (Two-Tailed)	0.051	0.070	0.122	< 0.001

Note: T-tests calculated on the intention to intervene for those who intervened and those who did not intervene (among those who were in a situation when they could have intervened).

With the relationship between intention to intervene and intervening behavior clearly established by the logistic regression, the research team sought to better understand the relationship between behavioral, normative and control beliefs and intention. A regression analysis was performed for the stranger model (see Figure 4). As noted above, the stranger model was selected because it was the only model that had a statistically significant relationship between intention and behavior. The regression coefficients are all statistically significant except for the construct of confidence. Confidence is strongly correlated with knowledge (0.698) and therefore, most of its contribution to the model is largely accounted for by the knowledge construct.

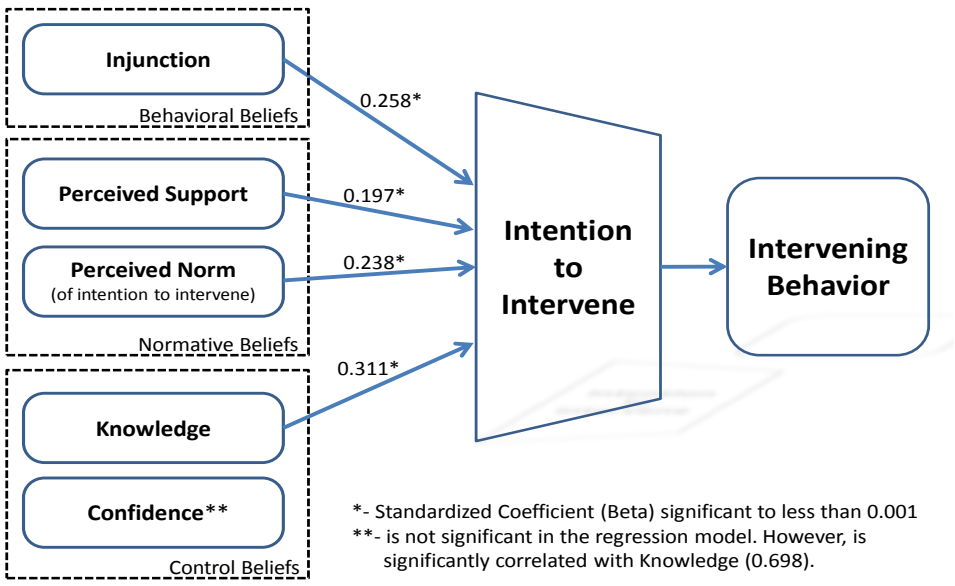

Figure 4. Bystander Engagement with Strangers Model

The regression analysis indicated that all the components of the theory of planned behavior (e.g., behavioral beliefs, normative beliefs and control beliefs) contributed to intention to intervene at about the same level and that none should be considered unimportant in communications efforts. Therefore, communication efforts should address injunctive beliefs, normative beliefs and develop knowledge. In other words, communication efforts should help encourage beliefs that drinking and driving is wrong and that individuals should intervene to prevent impaired driving. Communication efforts should also focus on strengthening the public's knowledge about how to intervene.

Since the regression model was only developed for strangers, the research team wanted to better understand the relationship between intervening behavior with a stranger and intervening behaviors with other social groups (e.g., family, friend and acquaintance/coworker). Table 8 indicates that individuals are less likely to intervene with strangers than with family members or friends. Efforts such as "Friends Don't Let Friends Drive Drunk" have helped to establish intervening behaviors with individuals in closer relationships. However, even amongst these relationships, there are significant opportunities to improve with 30 percent of individuals reporting they did NOT intervene with a friend.

Table 8. Intervening Behavior Versus Relationship

Among those who were in a situation to intervene in the past 12 months.	Family Member	Friend	Acquaintance Coworker	Stranger
Did not intervene	38%	30%	45%	63%
Did intervene	62%	70%	55%	37%

We sought to determine if intervening behavior with strangers predicted intervening with others. If this were true, we could then focus media efforts on growing bystander engagement with strangers knowing that it would also increase bystander engagement with drinkers in more proximal relationships as well. Increasing engagement among strangers has the greatest need for improvement, and, if increasing engagement with strangers increases engagement with more proximal relationships, then it would have the greatest potential impact on behavior change and overall outcomes. Table 9 shows the intervening behaviors of those individuals who had been in situations in the past 12 months where they could have intervened with both a family member and a stranger. Those who intervened with a stranger were four times more likely to intervene with a family member. Similarly, those who did not intervene with a stranger were 2.5 times less likely to intervene with a family member.

Table 9. Intervening Behaviors with a Family Member Based on Intervening with a Stranger

		In the last 12 months, have you tried to prevent a family member from driving after drinking enough alcohol to be impaired?		
		Yes	**No**	**Total**
In the last 12 months, have you ever tried to prevent a stranger from driving after drinking enough alcohol to be impaired?	Yes	80% (16)	20% (4)	100% (20)
	No	28% (15)	72% (39)	100% (54)

Table 10 shows the intervening behaviors of those individuals who had been in situations in the past 12 months where they could have intervened with both a friend and a stranger. Those who intervened with a stranger were eight times more likely to intervene with a friend. Similarly, those who did not intervene with a stranger were 1.4 times less likely to intervene with a friend.

Table 10. Intervening Behaviors with a Friend Based on Intervening with a Stranger

		In the last 12 months, have you tried to prevent a friend from driving after drinking enough alcohol to be impaired?		
		Yes	**No**	**Total**
In the last 12 months, have you ever tried to prevent a stranger from driving after drinking enough alcohol to be impaired?	Yes	89% (24)	11% (3)	100% (27)
	No	41% (24)	59% (34)	100% (58)

Table 11 shows the intervening behaviors of those individuals who had been in situations in the past 12 months where they could have intervened with both an acquaintance/coworker and a stranger. Those who intervened with a stranger were 5.3 times more likely to intervene with an acquaintance/ coworker. Similarly, those who did not intervene with a stranger were 3.5 times less likely to intervene with an acquaintance/coworker.

Table 11. Intervening Behaviors with an Acquaintance Based on Intervening with a Stranger

		In the last 12 months, have you tried to prevent an acquaintance /coworker from driving after drinking enough alcohol to be impaired?		
		Yes	**No**	**Total**
In the last 12 months, have you ever tried to prevent a stranger from driving after drinking enough alcohol to be impaired?	Yes	85% (17)	15% (3)	100% (20)
	No	24% (12)	76% (39)	100% (51)

Overall, the research team believes that intervening with strangers is a viable predictor of intervening behaviors with other social groups. Logically, this makes sense as individuals who are able to intervene with a stranger would likely apply similar skills to individuals in a closer relationship. Therefore, the research team believes it is appropriate to focus efforts on growing bystander engagement with strangers and that such efforts will increase bystander engagement among other social relationships as well.

The analysis in this section validates the theory of planned behavior model as applied to bystander engagement using the survey results from Idaho adults. The model provides insights on which beliefs and gaps need to be addressed in communication efforts. The next section explores the relationships between actual and perceived norms as reported by Idaho adults. Understanding these relationships will further guide message development.

Relationships Between Actual and Perceived Norms

Social norms theory claims that perceived norms will influence actual norms. In order to examine this relationship and help inform communication efforts, the research team examined the actual and perceived norms for those beliefs determined to be significant in predicting bystander engagement with strangers in the previous section.

Figure 5 shows the actual and perceived norm for the injunction to intervene with strangers. The correlation coefficient between the two is 0.463 and statistically significant ($p<0.001$) thus indicating a strong relationship between the two beliefs. The perceived norm also reveals a significant gap among Idaho adults – while most Idaho adults (60 percent) strongly agreed they should try and prevent a stranger from driving after drinking enough alcohol to be impaired, only 23 percent accurately recognized this as the norm among other Idaho adults. Based on social norms theory, correcting this misperception will help grow the portion of Idaho adults who believe they should intervene to prevent drinking and driving.

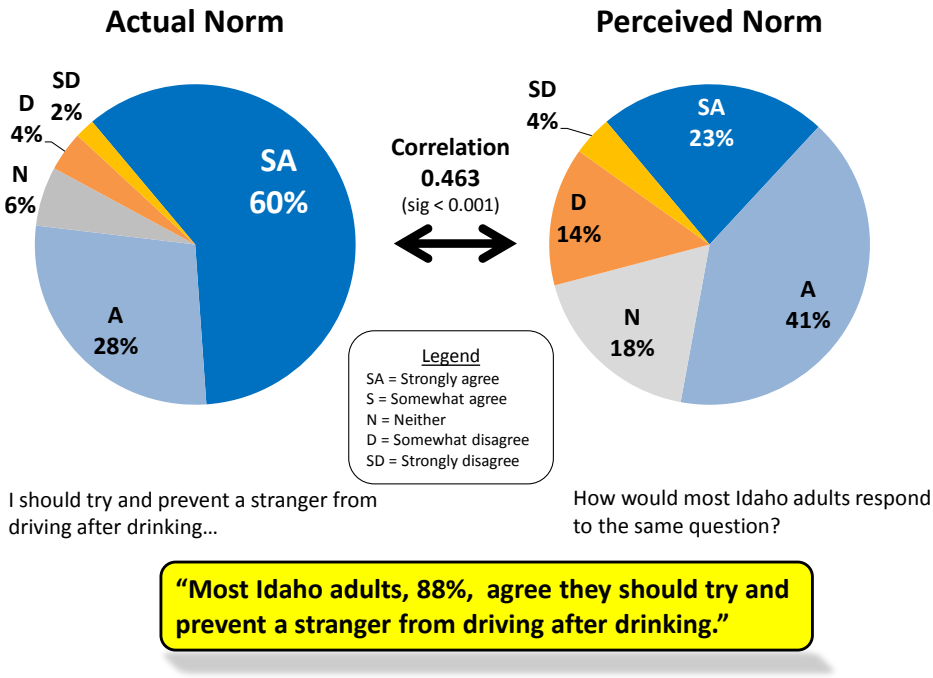

Figure 5. Actual and Perceived Norm for the Injunction to Intervene with Strangers by Idaho Adults

Figure 6 shows the actual and perceived norm for the intention to intervene with strangers. The correlation coefficient between the two is 0.574 and statistically significant ($p<0.001$) thus indicating a strong relationship between the two beliefs. The perceived norm also reveals a significant gap among Idaho adults – while most Idaho adults (79 percent) strongly agreed or somewhat agreed they would try and prevent a stranger from driving after drinking enough alcohol to be impaired, 40 percent did not accurately recognize this as the norm among other Idaho adults. Based on social norms theory, correcting this misperception will help grow the portion of Idaho adults who would intervene to prevent drinking and driving.

These analyses indicate that normative misperceptions exist among Idaho adults which are relevant to growing bystander engagement and that these normative beliefs are correlated to individual beliefs. Therefore, the research team recommends creating messages which seek to correct these misperceptions in an effort to grow bystander engagement. The next section summarizes the implications of these findings for communication efforts.

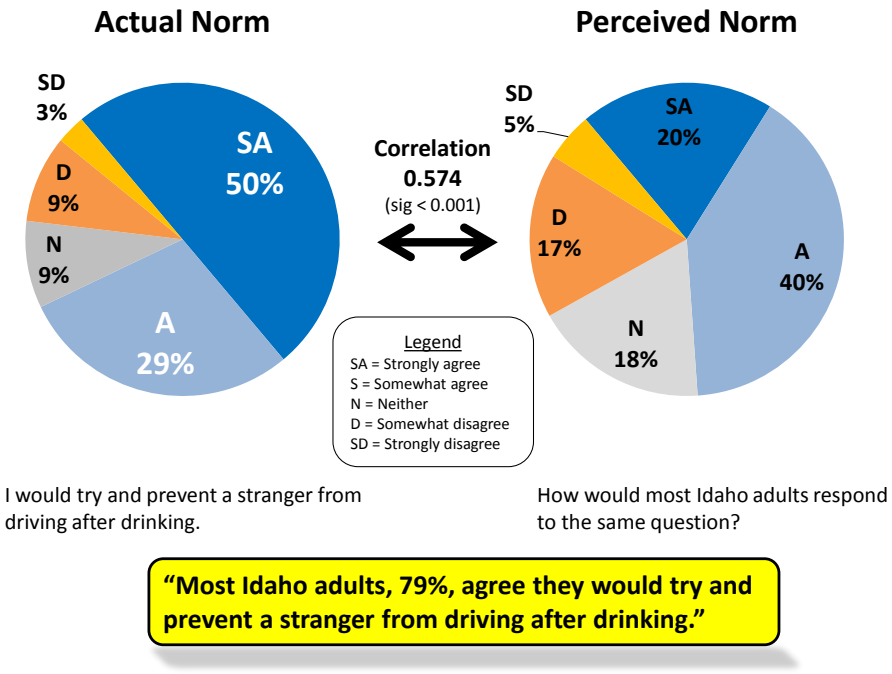

Figure 6. Actual and Perceived Norm for the Intention to Intervene with Strangers by Idaho Adults

Implications for Communication Efforts

Based on the analysis presented above, the research team believes the primary focus for media should be on increasing bystander engagement with strangers. By increasing bystander engagement with strangers, bystander engagement with other social groups should increase as well. Furthermore, the injunctive beliefs, perceived norms, knowledge and confidence are the lowest for intervening with strangers – thus presenting the greatest need and opportunity for improvement.

Based on the bystander model with strangers presented in Figure 4, communication efforts should focus on building the knowledge and skills to intervene, growing the injunctive beliefs for intervening and growing the normative beliefs regarding what others believe. By growing these core beliefs, the intention to intervene with strangers should increase, and as this intention increases, the intervening behavior should increase. As these key beliefs regarding intervening with strangers grow, intervening beliefs and behaviors with other social groups should grow as well.

In the next chapter, we present specific recommendations for messages, ways to communicate these messages with Idaho adults, guidance on pilot testing and refining, and ideas on implementation and evaluation.

Chapter 4
Conclusions and Recommendations

The purpose of this project is to provide media messages and tools to reduce fatal and serious injury SV-ROR crashes in Idaho that result from impaired driving. This chapter provides the conclusions from this research and recommendations for next steps. Topics include the risky behavior we recommend to reduce which is associated with fatal SV-ROR crashes, the strategy proposed to reduce this risky behavior, a summary of the research conducted to better understand the application of this strategy in Idaho, primary and secondary messages to foster the strategy, and recommendations on communication planning, pilot testing, implementation and evaluation.

The research team began the project by investigating media campaigns conducted by other states to reduce ROR crashes, however, no media campaigns were identified.

Next, the research team analyzed ITD's Crash Database and a small sample of police reports to better understand fatal SV-ROR crashes.[6] The key risky behaviors associated with fatal SV-ROR crashes were alcohol impairment (42 percent, often excessive at levels 2 to 3 times the legal limit); excessive speed (8 percent); and driver asleep, drowsy, or fatigued (5 percent). Furthermore, crashes tended to take place outside city limits (rural) on non-paved roads (dirt, gravel, stone) and on weekends (Saturday or Sunday). Pickup trucks, vans and SUVs were over-represented; however, no particular age group or gender was more prevalent than another although impairment was more likely for younger populations than older populations. Lack of seat belt use was an additional risk factor.

Based on this analysis, the research team, in collaboration with the ITD project management team, elected to focus on alcohol impaired driving as the leading risk behavior associated with fatal SV-ROR crashes. The challenge of reducing impaired driving using a mass media-based approach is that the portion of the population which drives over the legal limit of 0.08 percent blood alcohol content is relatively small.[70] Therefore, we proposed to focus on bystanders – a much larger segment of the population which does not drive impaired but can be engaged to impact the behaviors of the small portion of the population which does drive impaired. By engaging these bystanders to intervene, we can reduce impaired driving. The selection of this strategy is supported by the strong disapproval for impaired driving among Idaho adults.[5]

The research team developed a survey based on the theory of planned behavior and social norms theory to better understand bystander engagement. The survey examined attitudes, beliefs and behaviors about engaging bystanders to intervene to prevent someone from driving after drinking enough alcohol to be impaired. The survey examined four different social relationships: family member, friend, coworker or acquaintance, and stranger. Analysis of the survey data validated the theory of planned behavior model and social norms theory as applied to intervening with strangers. The injunction to intervene ("I should intervene"), the perceptions that most people would intervene and that most people would support intervening, and the knowledge on how to intervene were important factors in predicting whether someone would intervene. Further analysis revealed that increasing intervening

behaviors among strangers would likely increase bystander engagement with family members, friends, and coworkers and acquaintances. These analyses informed the following recommendations for media.

Messages to Increase Bystander Engagement

The following section describes messages to help increase bystander engagement to stop impaired driving. Based on our analyses of the PCN Community Survey of Idaho adults, we recommend employing a media campaign to correct perceived norms regarding injunctive beliefs, correct perceived norms regarding intention to intervene and teach adults how to intervene. We propose primary messages to directly increase bystander engagement, secondary messages to foster engagement regarding impaired driving before drinking occurs, and messages across the social ecology to foster cultural transformation regarding impaired driving.

Primary Messages

Based on input received from key stakeholders from across Idaho during the PCN Institute convened in February, 2012 (see Appendix D), our research team believes the underlying spirit of the media campaign needs to embrace the courage to act and encourage stepping forward by individuals. This spirit may manifest in messages using language such as: “We courageously act to stay safe” or “We step forward to make our roads safe for everyone” or “We engage to protect our children” (the focus on protecting our children can leverage universal values towards protecting children from harm such as impaired drivers).

Within this spirit of engagement and courage to act will be several key statements about actual norms among Idaho adults that need to be clarified. These statements are:

1. “Most Idaho adults do not drink and drive.”
2. “Most Idaho adults agree they should try and prevent a stranger from driving after drinking.”
3. “Most Idaho adults agree they would try and prevent a stranger from driving after drinking.”
4. “Most Idaho adults agree with strongly enforcing impaired driving laws.”

These four statements address critical normative misperceptions among adults revealed in the analysis of the PCN Survey discussed above. These statements also align with the research presented in Chapter 2 regarding bystander engagement indicating that a context needs to be created that supports bystander engagement. By clearly establishing that most adults agree they should try (and would try) to prevent a stranger from driving after drinking, adults will recognize that intervention is appropriate and foster a sense of responsibility for becoming engaged.

The first statement is designed to correct a common misperception that most Idahoans drink and drive. The PCN Survey showed that most Idahoans (82 percent) do not drink and drive. Research has shown that correcting this misperception can help reduce impaired driving.[42] While such a message is not intended to increase bystander engagement, clarifying this norm should lead to more responsible driving behavior (i.e., less impaired driving).

The second statement seeks to correct a misperception held by many adults and grow the belief that people should intervene. As shown in Figure 5, many people misperceive this norm, and correcting this misperception will increase the number of people who believe they should intervene.

The third statement seeks to correct a misperception held by many adults and thereby increase people's intention to intervene. As shown in Figure 6, many people misperceive this norm, and correcting this misperception will increase the number of people who intend to intervene.

The fourth statement seeks to correct a misperception held by many adults and to establish a context for the intervention. As discussed above, many of the individuals involved in fatal SV-ROR crashes had blood alcohol contents well in excess of the legal limit of 0.08 percent. These high levels indicate that these individuals may be chronic drinkers and may have patterns of abuse and addiction. In many cases, law enforcement may be the only option to keep these individuals off of the road. As the proposed intervention will involve an enforcement component, establishing the norm of support for enforcement will help create a context for the intervention. Furthermore, as stated above, sustaining strong enforcement (and the perception of strong enforcement) at the community level has been shown to be effective at reducing impaired driving. This message will seek to demonstrate the high level of support the public has for strong enforcement of impaired driving laws.

Coupled with these statements will be information about how to intervene with a stranger. This information will seek to build the knowledge and skills of individuals to intervene with others who have been drinking and may be in a situation to drive. Our research team believes that the intervention needs to be safe, simple and straight-forward with easy to remember language. The core concepts for the intervention are that impaired drivers:

- Need to either stay and not drive.
- Ride with someone else.
- Be reported to law enforcement if they chose to drive.

Individuals who have consumed alcohol and are unfit to drive, should be encouraged to stay where they are. This may mean spending the night (perhaps at a home, in the case of a house party, or even at a hotel for other events) or waiting until it is safe to drive. Alternatively, individuals should be encouraged to seek to ride with someone else such as a designated driver, or to take a taxi or another form of public transportation. In rural areas, options for getting a ride may be limited (e.g., no taxi service, no public transportation), however, this is a safe option that needs to be discussed. Finally, if the individual seeks to drive (that is, he or she refuses to stay or ride with someone else), then it is appropriate to call law enforcement using Idaho's State Police number, *ISP, on a cellular phone.

By only providing three alternatives, the intervention is very simple, straight-forward and easy to comprehend and remember. Furthermore, the proposed actions are designed to minimize risks to those who intervene. The public is not asked to take away car keys, disable vehicles or physically stop an impaired person because these actions could put them at risk. The proposed intervention seeks to establish a cultural context where drinking and driving is unacceptable and any attempts to drink and

drive result in arrest as strong enforcement reduces impaired driving and is strongly supported by the general population.

Secondary Messages

Within this same context, it is important also to discuss ways in which individuals can help prevent impaired driving situations before such situations even arise. We recognize that these strategies may not be effective with chronic alcohol abusers and those who are experiencing addiction. However, in an effort to create a comprehensive program that fosters cultural transformation about driving and alcohol, we believe it is important to foster dialog about safe driving behaviors among all drivers. Towards this end, we believe secondary messages should be used encouraging individuals to: Plan, Ride or Don't Drink. This message would help broaden opportunities for bystander engagement beyond situations involving an impaired driver and would encourage people to discuss their drinking and driving behaviors before drinking. Alcohol skills training programs have demonstrated that if individuals develop a plan about their drinking behaviors before they engage in drinking, they are more likely to stay within limits and less likely to engage in risky behaviors.[72] This message aligns well with the primary messages previously outlined and will establish a more comprehensive intervention.

Messages Across the Social Ecology

According to the Positive Community Norms Framework, communication efforts to cultivate cultural transformation should address multiple audiences across the social ecology. While the messages described above are appropriate for all the citizens of Idaho, there are additional messages appropriate for each level of the social ecology to foster transformation regarding impaired driving and engaging bystanders (see Table 12).

Table 12. Messages Across the Social Ecology

Focus Audience	Message
Individuals	• Before: Plan, Ride or Don't Drink. • During: Stay, Ride, Call *ISP.
Families	• Develop guidelines for the safe and healthy use and non-use of alcohol.
Workplaces Schools Organizations	• Discuss impaired driving when planning events. • Develop stay/ride options for events involving alcohol. • Train alcohol servers. • Conduct alcohol prevention activities in schools. • Teach students how to prevent impaired driving and how to avoid riding with an impaired driver.
Community Leaders	• Develop community-wide systems. • Foster concern regarding impaired driving. • Make public commitment. • Address barriers to strong enforcement. • Foster intervention to avoid repeat offenses. • Establish guidelines for public policies regarding special use permits for events involving alcohol.
State Leaders	• Develop statewide systems. • Foster concern regarding impaired driving. • Make public commitment. • Address barriers to strong enforcement. • Foster intervention to avoid repeat offenses.

Families can have an influence on the behaviors of family members, especially youth. Establishing guidelines around the safe and healthy use and non-use of alcohol is an important step that parents can take to reduce substance abuse, underage drinking and impaired driving.[73,74]

Workplaces and organizations proactively can include plans for preventing impaired driving at work-sponsored events involving alcohol. This can include planning around setting limits (use of bartenders, avoiding open bars, providing non-alcoholic beverages, etc.) and for providing stay or ride options for participants (contracting with a taxi or bus company, hosting events at hotels, etc.). Establishments that sell alcohol for immediate consumption can train servers on how to detect and manage patrons who have consumed too much.[75] Schools can implement evidence-based curricula to reduce underage drinking, teach students how to prevent impaired driving, and provide skills on how to avoid riding with an impaired driver (including adult drivers).

Community leaders have powerful voices. These leaders can help foster concern about impaired driving and encourage bystander engagement. Leaders can promote community-based solutions such as arrangements between bar owners and taxi companies, promoting strong enforcement and addressing barriers to enforcement, and promoting evidence-based strategies for addressing those convicted of impaired driving to reduce repeat offenses.[76] Furthermore, community leaders can establish guidelines

for public policy regarding public events involving alcohol as well as events requiring waivers or special use permits for alcohol.

Like community leaders, state leaders can help foster concern about impaired driving and encourage bystander engagement, promote strong enforcement and address barriers to enforcement, and promote evidence-based strategies for addressing those convicted of impaired driving to reduce repeat offenses.

The importance of these messages cannot be overlooked. Messages across the social ecology are critical to cultivate cultural transformation and sustain efforts beyond the impacts of the more traditional media effort. Bystander engagement means more than just intervening to stop an impaired driver. Together, actions across the social ecology can have a profound impact on increasing bystander engagement, decreasing impaired driving and transforming the culture in Idaho about driving after drinking. The overall aim is a synergy of clear, consistent, pervasive messages supporting interventions by bystanders to improve health and safety across Idaho.

Communication Plan

Based on the research on bystander engagement presented in Chapter 2, the research team believes communication efforts should be prioritized to focus at the community level with adults as the primary audience. Research has shown that in order for bystanders to engage, they must believe the group norms support intervention and that the individual they are approaching is a member of their own group.[64] Both of these conditions are more likely when the communications are focused at the community level.

We believe that the focus population for the messages should be all adults in the community. Unlike campaigns seeking to reduce a risky behavior exhibited by a specific demographic (like young adult males), this effort is seeking to impact the behaviors of all adults in the community as it is these adults who surround the minority of individuals who are driving after drinking. Clearly, adults who drink themselves are more likely to be in proximity to other adults who drink, so the messages must successfully reach them. Based on the Behavioral Risk Factor Surveillance System of Idaho conducted in 2010, about half of males report drinking in the past 30-days and about 40 percent of females report drinking in the past 30-days.[2] Table 13 shows the percentage of the Idaho adults who reported drinking in the past 30-days by age. Based on these demographics of Idaho drinkers, the focus audience should include both males and females of a variety of ages.

Table 13. 30-Day Alcohol Use by Age in Idaho[5]

	Age					
	18-24	**25-34**	**35-44**	**45-54**	**55-64**	**65+**
Idaho adults who have had at least 1 drink of alcohol in the past 30-days.	30%	45%	52%	52%	44%	36%

Furthermore, because the PCN model seeks to cultivate cultural transformation (not just impact the behaviors of individuals, but impact the beliefs and behaviors of families, workplaces, schools and community organizations), key messages must reach specific focus audiences across the social ecology. As the messages for each level of the social ecology are different (see Table 12), these messages should utilize more direct channels such as direct mail (to reach small numbers of key leaders) and small group presentations. These communications will align with the broader, universal media being deployed but will contain specific information appropriate for the particular audience.

The research team believes that the universal messages should leverage stories from community members demonstrating the desirable beliefs and behaviors. Culture is captured in part by the telling of stories which share common perspectives, values, attitudes and behaviors. By sharing stories in this way, the desirable beliefs and behaviors will be connected with a local identity which fosters better bystander engagement. Therefore, the communication plan seeks to share these stories broadly and to use these stories to foster conversations among adults regarding bystander engagement.

A website can act as a repository of stories and a convening place for conversations. Each community can have their own section (e.g., pages). The site can provide a platform to share video stories, share vital statistics (fostering concern), and provide education on how to engage. The site would scale well to reach multiple communities as the project was implemented.

The core media content would be short videos of local individuals telling their stories about impaired driving and promoting successful engagement. These stories would include addressing the key primary messages identified above. From these videos, static image ("print") pieces and radio spots would be developed. The video pieces would be placed on the main site (using YouTube) and be promoted through local sites, other print campaign materials (such as posters, billboards and newspaper advertisements), and by key stakeholders. These videos could also be placed as television advertisements (depending on resources). The static images would be placed in local newspapers (print and web) as well as other local websites. Depending on the size of the community, other internet-based channels may be used as well (Facebook, Google, etc.). Together these smaller stories work to form a new Idaho story to counteract the misperceptions.

In addition to these media pieces, key stakeholders such as law enforcement leaders, leaders from the medical community, and elected officials from the community would be trained in using an interactive presentation to reach specific key leaders across the social ecology. These stakeholders would deliver the presentation to a wide variety of local organizations such as local government (city councils, school boards, hospital boards, etc.), community service clubs (Rotary, Kiwanis, Lions, Optimists, etc.), workplaces, faith communities, chambers of commerce, school groups, parent groups, and others.

A basic article would be provided which could be placed in a wide variety of local newsletters. The article would provide the primary messages and seek to drive individuals to the website. Additional, simple promotional items would help remind people of engaging in critical locations. Window clings and posters would be appropriate for bars and restaurants. Bumper stickers on vehicles would foster a broad sense of support and help overcome misperceptions of support.

A brief single page or small brochure overview would support presentations and provide valuable follow-up information for participants in presentations. The materials would address the primary messages identified above and connect to the local stories for each community.

Pilot Testing and Refining

We recommend pilot testing messages with key stakeholders (such as those that participated in the Positive Community Norms Institute and key leaders at ITD) and with Idaho adults prior to placement. Pilot testing with stakeholders can take place using phone conference calls, emails or with online virtual meetings. Stakeholders will help identify potential conflicts or competing messages with other efforts, help clarify language, and identify opportunities to leverage existing communication channels and efforts. The intention of pilot testing stakeholders is not to seek acceptance of the message by every stakeholder, but rather to avoid confusion and conflicts with existing (or historical) efforts. We recommend conducting stakeholder pilot testing prior to testing with the general population.

Pilot testing with adults of the general population is critical. There are three important aspects of each media piece that need to be tested:

1. To determine if the pieces connect with the focus audience. In other words, does the mechanics of the piece (graphics, fonts, images, voices) work?

2. To determine if the message is understood – does the focus audience understand what we are trying to say?

3. To determine if the intent of the message is understood. Even though our focus audience may connect with the piece and understand it, they may actually draw a different conclusion and the piece may lead to different actions than we intended.

We recommend using internet-based surveys with follow-up telephone interviews of randomly selected individuals recruited during the community survey process. The community survey can include an option for an individual to sign up on a website to participate in the pilot testing. The online signup process can include collecting contact information (email address and phone number) as well as basic demographic information (age, gender, etc.) to foster selection of diverse participants. After an individual completes an online survey regarding a media piece, we recommend calling them to have a more detailed conversation to truly understand their responses. This dialog provides an excellent opportunity to discern how they understood (or did not understand) the piece.

Using a variety of questions helps to understand how each message is perceived. A question such as “In your own words, what did this message say?” helps to determine how well the underlying message was conveyed. A question such as “What do you think is the intention or purpose of this message?” helps to determine what actions people might take as a result of the message. A question such as “How did this message make you feel?” will help determine if people are likely to react positively or negatively.

It is also important to ask about the source or agency behind the message. Some sources are well respected and perceived as credible; others are not. Although it may be beyond the scope of this communications effort to change the perception of the source (most likely, ITD), it is important to understand whether the source should be downplayed or highlighted.

After gathering pilot testing information, this information should be used in making revisions to the media before it is placed. Pilot testing can also continue as media is placed and more individuals are able to respond. In this way, the communications can constantly adapt and reflect the ongoing public reactions and conversations about the campaign.

Recommended Next Steps

The following are recommendations for next steps based on the research completed thus far and our experience with implementing Positive Community Norms projects. These recommendations address implementation and evaluation.

Implementation Plan

Pilot Project in Three Communities

We recommend implementing the project at the community level as opposed to the state level. This recommendation represents a fundamental shift in addressing traffic safety. Often, traffic safety efforts are implemented at the state level. By moving to the community level, local stakeholders can be empowered to have a significant role in improving traffic safety within their communities. We believe this transformation will lay a foundation for improving traffic safety beyond the behaviors addressed in this report and act as a critical catalyst towards achieving zero traffic-related deaths in the future.

More specifically, we recommend initially implementing the project with three Idaho communities. Implementation at the community level allows for further refinements and additional learning before resources are invested across the entire state. While the recommendations regarding messaging included in this report are based on strong science, there are always opportunities for improvements and unexpected lessons to be learned during the actual implementation phase.

By selecting three different sized communities, different challenges and implementation issues associated with different community size will be identified which will allow for adjustments and refinements before broader implementation. Evaluation efforts can identify the best materials and communication channels which can then refined for future implementation.

Most importantly, evaluation costs will be reduced with a smaller implementation size thus allowing better evaluation quality given overall limited project resources. A strong evaluation design is important to assess the efficacy of the approach and to inform improvements for future implementation.

Community Selection

The WTI Research Team recommends selecting three communities based on size, impaired driving incidents and community readiness to address this issue. Regarding size, its recommend that a very small community (less than 15,000 people), a small community (between 15,000 and 35,000 people), and a medium-size community (between 35,000 and 50,000 people) be selected. It is not recommended that a community larger than this be selected because such a community will require a much greater investment of resources in the media campaign to achieve results. We believe that we can learn many lessons about implementation in working with communities of these sizes.

Regarding impaired driving within the community, we recommend that potential communities be in the top one-third of all communities based on the actual number of fatal and serious injury car crashes involving alcohol (over a three to five year time period). In addition, potential communities should have relatively high rates (based on overall population) of impaired driving incidents relative to other communities.

Finally, we recommend that potential communities must be ready to engage in working on this issue at the local level. Specifically, this means that ITD has a working relationship with a few key stakeholders within a potential community and that the potential community does not have any outstanding issues or current controversies with ITD.

Table 14 shows the counties in Idaho with the 10 highest number of fatal and severe injury crashes. The table is sorted by the rate of crashes based on the population size of each county. Based on guidelines proposed in this section, discussions with ITD representatives and Table 14, we recommend pilot testing in Blackfoot, Lewiston and the City of Twin Falls.

Table 14. Top Ten Counties in Idaho for Fatal and Severe Injury Alcohol-Related Crashes (2008-10)[77]

Rate of Crashes (per 100,000)	County	Fatal & Severe Injury Crashes 2008-10	2010 U.S. Census Population	City	City Population
298.8	Boise	21	7,028		
85.6	Bonner	35	40,877		
68.6	Kootenai	95	138,494		
66.0	Twin Falls	51	77,230	Twin Falls City	44,125
63.6	Bingham	29	45,607	Blackfoot	11,899
57.9	Bannock	48	82,839		
56.0	Nez Perce	22	39,265	Lewiston	31,894
42.3	Canyon	80	188,923		
40.3	Bonneville	42	104,234		
33.6	Ada	132	392,365		

Timeline for Implementation

Table 15 summarizes the timeline for implementation of the pilot phase.

Table 15. Implementation Timeline

Time	Task
June – Aug. 2012	Identify 3 communities in Idaho for the intervention.
Aug. – Sept. 2012	Recruit planning team members from the 3 communities.
Sept. – Nov. 2012	Conduct baseline survey (pre-intervention) in the 3 communities. Identify and recruit key stakeholders.
Jan. 2013	Conduct PCN Institute with 3 communities.
March 2013	Launch communications intervention in 3 communities.
April – Nov. 2013	Support intervention within the communities.
Nov. 2013	Re-convene PCN Institute (feedback, revisions, next steps)
Dec. – April 2014	Continue intervention
April – May 2014	Conduct follow-up survey (post-intervention) for comparison with baseline survey. Complete other evaluation tasks
June – Sept. 2014	Complete evaluation and make recommendations for revisions

Evaluation Plan

Our research team recommends a quasi-experimental design with pre-intervention and post-intervention surveys in both the communities in which the project is piloted (intervention communities) and in other communities across the state in which the pilot is not being implemented (control communities). In this way, changes which occur in the intervention communities can be compared to changes that occur in the control communities.

Based on this design, evaluation efforts can account for impacts across Idaho regarding this issue that may not have been anticipated or that may be out of the control of this project. For example, a situation may occur during the project involving a national celebrity who brings heightened awareness to impaired driving resulting in increased local dialog, enforcement and efforts. Such an event is beyond the control of the project team, and without appropriate control communities, cannot be accounted for in the evaluation.

We propose to implement the pre-intervention and post-intervention surveys as mail-based, paper surveys of a randomly selected sample of households. A mail-based, paper survey can be completed in a timely fashion and is more cost effective than a telephone based survey.

We propose to augment this paper survey with an internet-based survey of key stakeholders and their constituents based on a “snowball” sample. In this case, we would send a link to the online survey to the key stakeholders from each community who participated in the PCN training. We would ask each of them to send the link to as many of their contacts as possible asking them to complete the survey (and

to forward it to others well). Although the results are not generalizable to the whole population, such an approach allows for gathering extensive information from a wide network of stakeholders in the community. A component of the survey will ask participants to complete a follow-up post-intervention to assess change in their beliefs and behaviors.

Key Intermediate Measures

The key constructs to be measured on the surveys include actual and perceived injunctive norms for intervening, actual and perceived norms regarding intention to intervene, knowledge and confidence to intervene, intervening behaviors and campaign awareness. By measuring campaign awareness, the evaluation can assess the impact of various channels and the impact of dosage.

We also recommend measuring calls to *ISP for the selected communities and for all other communities (as a comparison). As bystander engagement increases in the selected communities, calls to *ISP should increase. However, other media campaigns may also increase calls to *ISP so it will be important to distinguish calls from selected communities from calls from all other communities.

Contrary to what we may naturally first think, impaired driving arrests should increase as bystander engagement increases. Because, in general, most impaired driving incidents do not result in an arrest, impaired driving arrests are a poor indicator of impaired driving.[78] Therefore, as the intervention promotes law enforcement intervention (by calling *ISP), we anticipate that impaired driving arrests will increase even though overall impaired driving may be decreasing. It will be important to make sure that key stakeholders understand this issue and do not misinterpret a rise in impaired driving arrests as an indicator of increased impaired driving.

Based upon this research, these recommendations are intended to measure the effectiveness of the proposed pilot implementation phase in developing and applying media messages and tools to reduce fatal SV-ROR crashes in Idaho.

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Appendix A
Analysis of Crash Database

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Memo

To: Steve Rich, Idaho Transportation Department (ITD)

From: Jeff Linkenbach

Cc: Ned Parrish (ITD), Jay Otto (WTI), Nic Ward (WTI)

Date: July 19, 2011

Re: Summary of Initial Baseline Data Analysis of Single ROR Fatal Crashes

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In our effort to help the Idaho Transportation Department reduce single vehicle run-off-the-road fatal crashes, we have completed our initial baseline data analysis. This analysis, along with other data resources, will help us better understand how best to craft media messages by helping us to understand the risk factors and key demographics associated with these fatal crashes.

Professor Nic Ward of the Western Transportation Institute completed the analysis. He created a database using data from ITD's Crash Analysis Reporting System (CARS) containing all fatal car crashes between 2000 and 2010. Analysis was performed to compare run-off-the-road (ROR) fatal crashes with all other fatal crashes. Further analysis focused on single vehicle ROR fatal crashes as these were significantly over-represented in fatal ROR crashes. Details of this analysis are found in the attached memo entitled "Summary of Crash Data Analysis."

This analysis revealed that the top three risk factors for single vehicle ROR fatal crashes are:

1. Alcohol impairment (alone or in combination with other drugs),
2. Driver asleep, drowsy or fatigued and
3. Exceeding posted speed limit.

Furthermore, crashes tended to take place outside city limits (rural) on non-paved roads (dirt, gravel, stone) and on weekends (Saturday or Sunday). Pickup trucks, vans and SUVs were over-represented; however, no particular age group or gender was more prevalent than another although impairment was more likely for younger populations than older populations.

In order to further our understanding of these crashes, we examined 20 police reports randomly selected from single vehicle ROR fatal crashes in 2010 typical of the characteristics described above. Details of this analysis are found in the attached memo entitled "Police Crash Reports."

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This analysis revealed two important considerations: alcohol impairment was excessive (often two to three times the legal limit) and three-quarters of the fatalities involved the driver being fully or partially ejected implying non-use of seatbelts.

These analyses, combined with other data resources, will help us design a media intervention best suited to reducing fatal single vehicle run-off-the-road crashes. Media messages will need to address impairment (including engaging bystanders), driver fatigue and speeding. The messages should be focused on successfully reaching rural drivers of all ages and genders. Efforts to promote seatbelt use (especially among pickup drivers) also will be important.

We look forward to continuing our work on this critical issue.

Sincerely,

Jeff Linkenbach,
Director
Center for Health and Safety Culture

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Memo

To: Jay Otto
From: Nic Ward
CC: JL, SS
Date: June 23, 2011
Re: Summary of Crash Data Analysis

Western Transportation Institute

Task

The Crash Data Analysis Task is described as:

> *Single-vehicle ROR crashes will be analyzed from the ITD crash database between 2000 and 2008. The analysis will focus on the contributing factors that are related to driver risk behaviors such as impaired driving, speeding, and inattention/distraction. The three most common contributing factors will be identified that implicate the decision of the driver to engage in behaviors that increase crash risk. These factors will then represent the candidate set of driver behaviors that will become the focus of the media campaign. Specifically, the media campaign will provide social norm information that promotes driver decisions to avoid these behaviors and adopt protective behaviors. Research demonstrates that perceptions of norms of other drivers can influence driver behavior related to risk and protections. Therefore research on perceptions of social norms is suggested. For example, in the case of impaired driving, the campaign should not only seek to decrease the risky behavior itself, but also seek to promote the use of designated drivers and bystander intervention to stop impaired drivers.*

> *Each of these factors will then be stratified by demographic variables (age, gender etc) to identify the characteristics of the driver population typically associated with each factor. The most typical demographics characteristics for each factor will then define the target audience for the media campaign that focuses on that particular contributing factor.*

Consistent with this task, I examined the ITD crash data base for all fatal crashes between 2000 and 2010.

Background

The first exploratory analysis compared the number of vehicles involved in Run Off Road (ROR) fatal crashes to all other (non-ROR) fatal crashes. Single vehicle cases were significantly over represented in fatal ROR crashes ($p < .0001$). Thus, the remainder of the analyses focused on identifying risk factors only for single-vehicle ROR fatal crashes. Single-vehicle ROR (sv-ROR) fatal crashes accounted for 34% of all fatal crashes recorded by ITD from 2000 to 2010.

Note that by focusing on single vehicle crashes, only the driver of that single vehicle may be presumed to be culpable. This give more valid conclusions about driver-related factors associated with these fatal crashes.

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Risk Factors

In order to identify to identify those risk factors that are "unique" to sv-ROR fatal crashes, cross-tabs were generated to compare the attributes of sv-ROR fatal crashes to all other fatal crashes not involving ROR (non-ROR). The Chi2 statistic was calculated for each cross-tab to determine if there was a significant association between crash type (sv-ROR, non-ROR) for the prevalence of each risk factor. The expected and observed values in cross-tabs were compared to determine which factors were significantly over or under represented for sv-ROR fatal crashes.

The analysis of risk factors focused on these crash database variables:

- Impairment
- Presence of alcohol/drugs
- Contributing circumstance (1)

This analysis indicated that the following risk factors are generally over-representative of sv-ROR fatal crashes (relative to all other non-ROR fatal crashes):

1. Alcohol impairment (alone or in combination with other drugs)
2. Driver asleep, drowsy, or fatigued.
3. Exceeding posted speed limit

Context Variables

The following crash database variables were also examined in order to identify key context variables for the occurrence of sv-ROR fatal crashes:

- In city limits
- Road type
- Road surface
- Day of week
- Weather condition
- Road condition

This analysis indicated that the following context variables are generally over-representative of sv-ROR fatal crashes (relative to all other non-ROR fatal crashes):

1. Not in city limits (rural)
2. Non-paved (dirt, gravel, stone)
3. Weekend (Saturday, Sunday)

Demographic Variables

The following demographic database variables were also examined in order to identify key demographic variables for drivers involved in sv-ROR fatal crashes:

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- Gender
- Age
- Vehicle type

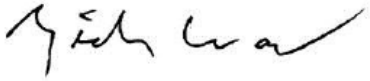
In the overall analysis comparing sv-ROR to non-ROR fatal crashes, there was no significant difference in terms of driver gender and no practical difference in driver age (3 years).

However, sv-ROR fatal crashes were significantly over-represented by pickups (including vans and SUVs).

Next, the analysis considered each demographic variable only for the main risk factors for sv-ROR fatal crashes only. There was no significant effect of gender for the risk variables. However, the age of those drivers identified with some form of "impairment" was younger (34 years) compared to those without any impairment (42 years).

Overall, this suggests that the risk factors are not strongly associated with a specific demographic group.

Sincerely,



Nicholas J. Ward, Ph.D.

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Memo

To: Jay Otto
From: Nic Ward
CC: JL, SS
Date: June 23, 2011
Re: Police Crash Reports

Western Transportation Institute

Task

"To supplement the database analysis, the Center Team will review 20 randomly selected police reports of single-vehicle ROR crashes provided by ITD. This analysis is intended to corroborate the conclusions of the database analysis, but also provide an opportunity for additional detail on crash factors and driver demographics."

Data Selection

The database was filtered to selected cases of fatal single vehicle ROR crashes (sv-ROR) that occurred outside city limits (rural) and had an indication of driver impairment. This data selection is consistent with the basic context and risk factors previously identified in the crosstab analysis of the database.

The following table lists the FARS fatality number for these cases only for the most recent year of 2010. To identify the 20 cases for review by the research team, ever second case is recommended for review (9, 21, 28, 44, 50, 56, 59, 62, 70, 80, 83, 89, 93, 98, 121, 124, 136, 148, 156, 162, 167, 185). This reflects 22 cases for the most recent year selected without bias amongst the fatal crashes that are most typical for the main risk and context variables.

These police reports were reviewed to make a qualitative assessment of demographic and contextual variables as well as risk factors. The purpose of this review was to verify the conclusions of the database crosstab analysis and determine if the reports provided any additional data.

Risk Factors

Consistent with the database crosstab analysis, alcohol was the most common impairment source. Notably, tested levels of alcohol were consistently far in excess of the BAC limit (0.08). Indeed, most of the tested levels were two or three times this limit. Thus, most cases involve excessive alcohol rather than marginal consumption. Alcohol was often combined with speeding (over limit, or in relation to conditions) and loss of vehicle control. Additional impairment sources included drugs, drowsiness, and inattention.

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An additional risk factor was suggested by the review of these police reports of fatal sv-ROR crashes. Notably, 13 of the 17 passenger vehicle crashes (excluding motorcycles) involved the driver being fully or partially ejected (76%). This implies that lack of use of seatbelts is a significant contributing risk factor toward the fatal outcome of these sv-ROR crashes.

Context Variables

The review of the police crash reports suggested that the road geometry may define two primary scenarios for sv-ROR crashes.

- Notably, 7 of the police reports involved crashes on straight sections of roadway (33%). All of these crashes involved loss of vehicle control as an event involved in the crash. For 5 of these crashes, loss of control was the first event that precipitated the crash.
- The other 15 police reports involved crashes on roadway curves (77%). For all but 2 of these crashes (87%), departing the roadway (run off road) was the first or second event associated with the crash.

Examples of crash descriptions provide by police for the more common roadway curve crash suggest a typical scenario:

- *The driver lost control of the vehicle while trying to negotiate a corner at high speeds. The vehicle slid off the roadway and impacted with a side of a small rocky hill. The vehicle then began to roll and came to rest on its top on the other side of the hill. The driver was thrown from the vehicle. The passenger remained in the vehicle. Both died due to traumatic injuries attained in the crash.*
- *The driver was traveling westbound on Prichard Creek Road driving off onto the right shoulder. She over steered causing her vehicle to enter a ditch. The sudden drop of the ditch caused the vehicle to overturn. She was not wearing a seatbelt causing her to shift inside the vehicle striking the right front passenger windshield as the roof was crushing down onto the windshield. She was pronounce dead at the scene.*

Demographic Variables

The review of the police crash reports suggested two demographic patterns in terms of gender and vehicle type:

- All of the motorcycle riders (5) and pickup truck drivers (5) were male. (Other passenger vehicles were driving by both male and female drivers.)
- All sv-ROR crashes involving motorcycles (5) were on roadway curves. Similarly, most of the sv-ROR crashes involving pickup trucks (4/5) were also on roadway curves.

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Sincerely,

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Appendix B
Summary of Media-Based ROR Interventions

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Memo

To: Steve Rich, Idaho Transportation Department (ITD)

From: Jeff Linkenbach

Cc: Ned Parrish (ITD), Jay Otto (WTI), Nic Ward (WTI)

Date: July 22, 2011

Re: Summary of Literature Review of Single ROR Fatal Crashes

In our effort to help the Idaho Transportation Department reduce single vehicle run-off-the-road fatal crashes, we have completed our literature review of single vehicle ROR fatal crashes and interventions with a focus on media-based interventions.

Professor Nic Ward of the Western Transportation Institute oversaw the review which was conducted by Jessica Mueller. The review did not reveal any media-based interventions designed to reduce single vehicle ROR fatal crashes.

However, the review did provide additional insights about risk factors and demographics which support our previous findings from the analysis of the CARS database. This consistency is important information as we move forward to design a media-based intervention.

We look forward to continuing our work on this critical issue.

Sincerely,

Jeff Linkenbach,
Director
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Literature Review: Run-off-Road Crash Factors and Countermeasures

Jessica Mueller and Nic Ward
Montana State University–Western Transportation Institute
Bozeman, Montana

Contributing Factors toward ROR Crashes

Single-vehicle run-off-roadway (ROR) crashes account for between 33% and 40% of all highway fatalities (5, 6, 8, 10, 12), and 64% to 70% of fatal single-vehicle crashes (7, 14). ROR crash studies to identify contributing factors to the crash are typically performed using existing national and state traffic crash databases, supplemented by data collection by researchers. Published papers include data coming from DOT crash databases (2), police crash reports (8), state accident database (6), state geometric/traffic database (6, 13), the Fatality Analysis Reporting System (7,17), and the National Motor Vehicle Crash Causation Survey (14). These state and national data are supplemented by data from traffic video logs (12), research site visits (12, 1), and road segment GPS data (1, 5).

These data were analyzed using regression on the large sets of potential contributing crash factors to identify only those predictor variables which significantly contribute to ROR crashes. Research teams used logistic or general linear regression to model crash probability (14, 13, 12, 7, 6, 1), chi-squared tests to examine differences in crash factor proportions between ROR and non-ROR crashes (8, 7, 14), and Wilcoxon rank sum tests were used to determine the accuracy of regression models (1).

Risk Factors: Findings showed that ROR crashes are associated with high-occupancy vehicles (7, 15), alcohol-impaired drivers (7, 14, 15, 16, 17), driver inattention (7, 14), driver fatigue or sleep (7, 14, 16), driver overcompensating or engaging in overcorrection steering (7, 14, 15, 16), and drivers avoiding vehicles (7, 14, 16), speeding vehicles (7, 14, 15, 16), poor directional control (14, 15), and internal or external distractions (14).

Context Variables: Environmental factors that are associated with ROR crashes include narrower lane widths (1, 13), tighter horizontal road curvature (1, 7, 13), vertical road curvature (13), narrow or no shoulder on the road segments (1, 13), passing allowed on road segments (1), presence of cut side slopes (6), wide distance from outside shoulder edge to guardrail (6), large numbers of isolated trees along the roadway (6), short distances from shoulder edge to light poles or fixtures (6), high-speed roadways (7), roadways with fewer lanes (7), adverse weather such as rain, sleet, snow, fog, smog, smoke, blowing sand, or dust (7, 16), road segments without safety barriers (8), blunt-end safety barrier terminals (8), road segments using concrete barriers in lieu of median steel safety barriers (8), road hazard rating (13), traffic volume (13); an effect from rumble strips is present although that effect is not completely clear (12), and a night-time period between midnight and 6AM (7, 13, 17).

Demographic Variables: Key demographic variables for drivers involved in ROR crashes include gender (four studies found males more likely to result in ROR crashes (7, 14, 15, 17);

another found females more likely to overcorrect into ROR crashes (12)), inexperienced drivers (16), and young drivers (7, 15, 17).

Factor	Studies	Effect
Driver impairment	[7,14,15,16,17]	Drivers using alcohol are more likely to be in ROR crashes than sober drivers
Gender	[7,12,14,17]	Male drivers are more likely to be involved in ROR crashes, although female drivers are more likely to be involved in ROR crashes caused by overcorrection
Horizontal road curvature	[1, 7, 13, 15]	Tighter road curvatures and curved roadway segments are associated with ROR crashes
Vehicle speeding status	[7,6,15,16]	Speeding vehicles are more likely to be involved in ROR crashes, and speeding vehicle occupants are more likely to receive more severe injuries in the event of a crash
Driver performance	[7,14,15,16]	Drivers with performance-related factors (sleepy, inattentive, overcorrecting, avoiding, in a hurry, driver familiar with roadway, driver experiencing work-related stress, etc.) are more likely to be involved in ROR crashes
Time period	[7,13,17]	Crash times at night are associated with ROR crashes
Road shoulder	[1,13,15]	Narrow or no road shoulders are associated with ROR crashes
Driver age	[7,15,17]	Young drivers (aged 15-24) are more likely to be involved in ROR crashes
Lane width	[1,13]	Narrow or no lane widths are associated with ROR crashes
Weather condition	[7,16]	Adverse weather conditions (rain, sleet, snow, fog, smog, smoke, blowing sand, or dust) is associated with ROR crashes; a crash occurring during clear or cloudy weather conditions is more likely to result in more severe injury than a crash occurring in ice, snow, fog, or rain
Vehicle occupancy	[7,15]	Vehicles with two or more occupants are more likely to be involved in ROR crashes
Rumble strips	[12,15]	ROR crashes are not strongly associated with rumble strips being present, but when they are present, vehicles are more likely have a ROR crash caused by overcorrection than when they are not present
Vertical road curvature	[13,15]	The presence of vertical road curvature is associated with ROR crashes
Passing allowed	[1]	Segments of road where passing is allowed are associated with ROR crashes
Cut side slopes	[6]	Cut side slopes along roadway segments are associated with ROR crashes
Distance from shoulder edge to guiderail	[6]	Short distances from the outer shoulder edge to the guiderail are associated with ROR crashes
Trees along roadway	[6]	Large numbers of isolated trees along the roadway are associated with ROR crashes

Factor	Studies	Effect
Distance from shoulder edge to light poles or fixtures	[6]	Smaller distances between the shoulder edge and light poles or fixtures are associated with ROR crashes
High-speed roadways	[7]	Roadways with higher speed limits are associated with ROR crashes
Number of lanes	[7]	Roadways with fewer lanes are associated with ROR crashes
Safety barriers in roadway	[8]	ROR crashes are more severe when safety barriers are not present to protect from ditches, walls, fore slopes, and back slopes
Safety barrier terminal	[8]	ROR crashes are more severe when safety barrier terminals are blunt-end, compared to longitudinal safety barriers
Road hazard rating	[13]	Road hazard ratings (RHR) of 6 or 7 are more likely to be associated with single-vehicle fatal crashes than lower RHRs
Traffic volume	[13]	Lower average daily traffic volume is associated with single-vehicle fatal crashes
Vehicle type	[8]	Motorcycle occupants involved in ROR crashes are more likely to result in a fatality or injury than car or truck occupants;
Time of year	[6]	ROR crashes occurring in summer months are more likely to result in possible injury

More significant injuries as a result of ROR crashes are affected by the time of year, clear or cloudy weather conditions (relative to ice, snow, fog, and rain), horizontal road curvature, areas with culverts and utility poles, and speeding (6), and motorcycle vehicle type (8).

ROR Crash Countermeasures

Several countermeasures were evaluated as a means to address some of the identified factors contributing to ROR crashes. One method of countering ROR crash rates was by modifying the vehicle to maneuver crash situations using electronic stability control (ESC) as a vehicle feature (2), another involved modifying vehicles to add warning functionality to drivers regarding excessive curve speed and lane departure (5). An alternative approach was to modify the physical roadway, through various methods. Modifications include installing wider paved shoulder on highway segments (10), adding rumble strips or "audio-tactile lane markings" to segments of roadway (3, 9, 5), and the application of a high-friction road surfacing compound to an interstate onramp (11).

The efficacy of these countermeasures was measured by dividing specific highway corridors into segments, and examining crash rates for pre- and post-intervention. Pre-intervention data was collected from state databases (2, 10, 11, 12) the national FARS database (2), and the National Motor Vehicle Crash Causation Survey (14). Additional data collection was performed using naturalistic vehicle data collection (5), skid-tests (11), and speed studies (11). The data was analyzed examining using Chi-squared tests (2, 14), proportion of crash involvement (2, 14), and regression (4, 10, 14).

Electronic stability control was found to reduce fatal single vehicle crashes in both passenger cars and SUVs (2, 14). Antilock braking systems were found to reduce ROR crash involvement, when used in conjunction with ESC systems in passenger vehicles (14). Rumble strips were effective in reducing ROR crashes (3, 4, 9). In-vehicle warning systems resulted in decreased lane deviation by the driver over time (5). Adding highway shoulder segments reduced crashes after installation (10). The applied high-friction road surface was effective in decreasing onramp approach speed in wet and dry conditions, and reduced the proportion of drivers encroaching the shoulder; the road surfacing additionally resulted in a reduced crash frequency although this reduction was not significant (11).

Treatment	Studies	Effect
Rumble strips	[3,4,9]	The addition of rumble strips was effective in reducing sleep-related ROR crashes, fatal crashes, dry road ROR crashes, and same-side ROR crashes; with a reduction in overall ROR crashes or crash frequency
Electronic stability control	[2,14]	ESC reduced fatal single vehicle crashes in passenger cars (30%) and SUVs (63%)
Driver warning systems	[5]	The warning systems reduced the driver lane deviation over time
Antilock Brake System	[14]	ABS reduced ROR crash involvement, while used in conjunction with ESC
Addition to highway shoulder	[10]	Roadway sections with added paved shoulders had reduced crashes after installation than the control segments and pre-installation treatment segments; monthly crash reduction was 4.6%
High-friction road surface treatment	[11]	The high-friction treatment reduced mean approach speed during dry and wet pavement conditions; and reduced the proportion of drivers encroaching the shoulder of the onramp

Summary of References

Reference No.	1
Reference	Abel, R. E. & Garber, N. J. (2008). Evaluation of crash rates and causal factors for high risk locations on rural and urban two-lane highways in Virginia. In Transportation Research Record, 1310, TRB, National Research Council, Washington, D.C., 2008, 18p.
Definition	Not explicitly stated
Factors to ROR crashes	ROR crashes are associated with narrower lane widths, tighter road curvatures, narrow or no shoulders, and allowed passing in the roadway segments.
Analytic Method (how were ROR factors identified)	Crash data from 143 separate 5- to 10-mile highway segments in Virginia was collected via VDOT crash databases and GPS data collected by the research team. That crash data was analyzed using fault-tree analysis and then modeled with a GLM (separate by highway classification and crash type; 28 GLMs created in all). Model predictions validated using additional data sets with Wilcoxon rank sum tests. Significant factors are identified separately for: 1) crashes resulting in injury; and 2) crashes resulting in property damage only
Treatment (how were ROR factors reduced)	-
Evaluation Method	-
Conclusion (comments)	Factors influencing ROR crashes are: lane width, road curvature, shoulder width, whether or not passing was allowed. Proposed countermeasures include widening roadways, adding advisory signs or additional chevrons to road curves, road realignment in the case of curves, adding or improving road shoulders, and adding advisory signs or adjusting passing segments of roadway.
Summary	Virginia highways were analyzed to identify significant causal factors to several different types of crashes, including ROR crashes. 10,000 crashes were analyzed, examining over 30 variables. Factors influencing ROR crashes are: lane width, road curvature, shoulder width, whether or not passing was allowed. Several countermeasures were proposed for the risk factors.

Reference No.	2
Reference	Dang, J. (2004). Preliminary results analyzing the effectiveness of electronic stability control (ESC) systems. DOT HS 809 790, September 2004.
Definition	ROR definition not explicitly stated, but the examples given in text are "such as rollovers and collisions with fixed objects). The Electronic Stability Control (ESC) system evaluated has sensors that monitor vehicle characteristics to detect and assist driver lateral stability in dangerous conditions (under/oversteer, rain/snow/sleet/ice).
Factors to ROR crashes	Not explicitly stated
Analytic Method (how were ROR factors identified)	Not explicitly stated
Treatment (how were ROR factors reduced)	Through the use of Electronic Stability Control (ESC) as a feature in vehicles.
Evaluation Method	Crash data from available state databases (1997-2002, FL, IL, MD, MO, UT; selected due to those states having high VIN information in their data files) and FARS database (1997-2003). Contingency tables were created, (Single vehicle crashes | Multiple vehicle crashes; ESC | No ESC) and Chi-squared analysis was performed. Additionally logistic regression analyses was run on the effect of ESC in passenger cars on the proportion of single-vehicle crash involvement, controlling for vehicle age/make/model, driver age, and gender (same effective estimates for ESC were reached as with the chi-squared analysis).
Conclusion (comments)	ESC is highly effective in reducing single vehicle run-off-road crashes.
Summary	NHTSA evaluated the effectiveness of Electronic Stability Control systems (in-vehicle) on single- and multiple-vehicle crash rates in 5 states using state crash data and FARS crash data. A 30% reduction in fatal single vehicle crashes in passenger cars was found, and a 63% reduction in fatal single vehicle crashes in SUVs was found. More complete data is desired, including a more representative cross section of the fleet (Mercedes-Benz and BMW constituted 61% of the passenger cars in this sample) and a wider variety of manufacturers (Toyota and Lexus manufactured 78% of SUVs in this sample).

Reference No.	3
Reference	Garder, P., & Davies, M. (2006). Safety Effect of Continuous Shoulder Rumble Strips on Rural Interstates in Maine. Transportation Research Record: Journal of the Transportation Research Board, No. 1953, Transportation Research Board of the Natinoal Academies, Washington, D.C., 156-162.
Definition	Not explicitly stated
Factors to ROR crashes	Sleepy or fatigued drivers; asphalt state (wet or dry)
Analytic Method (how were ROR factors identified)	Literature review
Treatment (how were ROR factors reduced)	Continuous Shoulder Rumble Strips (CSRS) were installed on the majority of rural sections of the interstate and turnpike system in Maine.
Evaluation Method	-
Conclusion (comments)	CSRS reduce sleep-related ROR crashes by 58%. Fatal crashes were reduced to a higher degree than other crashes. Dry road ROR crashes were reduced by about 43%. CSRS were less effective in eliminating crashes during inclement weather conditions. Overall effectiveness of CSRS installations was estimated to be a 27% reduction with respect to all ROR crashes.
Summary	The efficacy of continuous shoulder rumble strips (CSRS) was evaluated on roads in Maine. CSRS were effective in reducing sleep-related ROR crashes, fatal crashes, and dry road ROR crashes. Overall effectiveness was estimated to be a 27% reduction with respect to all ROR crashes.

Reference No.	4
Reference	Hatfield, J., Murphy, S., Job, R. F. S., Du, W. (2009). The effectiveness of audio-tactile lane marking in reducing various types of crash: a review of evidence, template for evaluation, and preliminary findings from Australia. Accident Analysis and Prevention, 41. 365-379.
Definition	Not explicitly stated
Factors to ROR crashes	Fatigue-related crashes, poor handling of curves, inattention
Analytic Method (how were ROR factors identified)	Literature review
Treatment (how were ROR factors reduced)	Audio-tactile lane-markings (ATLM) typically employed in Australia, and the similar raised bumps in thermoplastic paint (PLM) applied to edge and center-line markings
Evaluation Method	Matched segments of road that were treated and not treated with PLM were compared with crash data for before and after the installation of the PLM (on the treated sections only) for both treatment and control segments. Evaluated using Empirical Bayes analysis and negative binomial regression (crash frequency was the outcome variable).
Conclusion (comments)	A non-significant decrease in total car crashes was observed. An overall benefit of PLM was observed and suggest that reductions in targeted crashes are not undermined by increases in opposite-side crashes.
Summary	Equivalent paired road segments were compared to evaluate the efficacy of audio-tactile lane marking, specifically raised profile lane-marking (PLM) employed in Australia. Both edge line and centerline PLM reduce same-side crashes, and there is no evidence that opposite-side crashes are increased by the installation of PLM.

Reference No.	5
Reference	LeBlanc, D. J., Sayer, J., Winkler, C., Bogard, S., Devonshire, J. (2007). Field test results of a road departure crash warning system: driver utilization and safety implications. Proceedings of the Fourth International Driving Symposium on Human Factors in Driver Assessment, Training, and Vehicle Design
Definition	ROR definition not explicitly stated.
Factors to ROR crashes	Two types of road crashes account for half of police-reported crashes: drivers inadvertently allowing their vehicle to drift to the road edge, and drivers entering curves too fast.
Analytic Method (how were ROR factors identified)	Literature review
Treatment (how were ROR factors reduced)	Participants used instrumented vehicles with crash warning functionality to warn drivers of excessive speeds in curves, and lane departure warnings.
Evaluation Method	11 vehicles were equipped with technologies that provided lane departure warning (LDW) and curve-speed warning (CSW) functions. The vehicles were also equipped with data acquisition systems. Vehicles were driven for 4 weeks.
Conclusion (comments)	Adding the systems increased the use of turn signals among drivers (LDW was suppressed while a turn signal was used). Driver performance in maintaining lane-keeping improved significantly over the study. There was no clear indication of unintended consequences or risk compensation by drivers.
Summary	Naturalistic data collection studied 78 drivers in 11 instrumented vehicles. Vehicles had safety warning technology functionality. Data evaluation showed that Participants changed lane-keeping (better lane keeping over the course of the study) and turn-signal behaviors (higher rates of turn signal usage over the course of the study). For the LDW alerts, the following outcomes were observed: False alert (17%), alerted while drifting and did not correct after alert (14%), alerted while drifting and did correct after alert (11%), alerted during a lane change because driver did not use turn signal (33%), alert while drifting out of lane and did not correct following alert (12%), alert while drifting out of lane and did correct following alert (13%). There was a significant reduction in the reduction of rate of events in which the vehicle edge comes within 0.1m of the lane edge.

Reference No.	6
Reference	Lee, J. & Mannering, F. (2002). Impact of roadside features on the frequency and severity of run-off-roadway accidents: an empirical analysis. Accident Analysis and Prevention, 34. 149-161.
Definition	Not explicitly stated
Factors to ROR crashes	Presence of cut side slopes, wide distances from outside shoulder edge to guardrail, large number of isolated trees along roadway, small distances from outside shoulder edge to light poles all contribute to ROR accident frequency. Crashes in the summer are more likely to result in possible injury; clear/cloudy weather conditions morel likely to result in injury (relative to ice and snow, and fog/rain/snow conditions). Younger drivers are more likely to be involved in accidents. Crashes on a curve are more likely to result in injury, as are crashes in areas with culverts and utility poles. Primary contributing cause is "having exceeded reasonably safe speed"
Analytic Method (how were ROR factors identified)	Road data was collected from a 96.6-km section of State Route 3 (west of Seattle) for northbound direction of the road using GPS. This data was combined with 2 additional databases: the WA state accident database and the WA State roadway geometric/traffic database. Zero-inflated count models and nested logit models estimate statistical models of crash frequency and severity, isolating a range of factors influencing frequency and severity of ROR crashes.
Treatment (how were ROR factors reduced)	-
Evaluation Method	-
Conclusion (comments)	By examining relationships among roadway geometry, road characters, and ROR crash frequency and severity, the study provides initial direction needed to identify cost-effective countermeasure to improve highway designs by reducing probability and severity of ROR crashes.
Summary	Researchers evaluated 102 segments of State Route 3, each segment being 805m long. The segments were evaluated for accident frequency and severity analysis, using 489 ROR accidents between 1994-1996. Crash frequency factors include cut side slopes, distance between shoulder to guardrail, number of isolated trees, and distance from shoulder edge to light poles. Crash severity factors are a complex interaction of roadside features - guardrails and fixed objects; some contribute to severity while others appear to mitigate severity perhaps by altering driver behavior.

Reference No.	7
Reference	Liu, C. & Subramanian, R. (2009). Factors related to Fatal Single-Vehicle Run-Off-Road Crashes. NHTSA Report No. DOT HS 811 232. November 2009.
Definition	A ROR crash is when a vehicle in transport leaves the travel lane and encroaches onto the shoulder, median, roadside, parking lane, gore, or a separator and this one or more natural or artificial objects.
Factors to ROR crashes	Curved road segments, rural roads, high speed limit roadways, roadways with fewer lanes, adverse weather, night time period, high occupancy vehicles, male drivers, young drivers, impaired drivers, and performance-related driving factors (sleepy, inattentive, over-correcting, avoiding), and speeding vehicles.
Analytic Method (how were ROR factors identified)	Data from the Fatality Analysis Reporting System between 1991-2007 was analyzed using Chi-squared analyses to compare ROR crashes and factors, and logistic regression was used to predict the probability of ROR crashes as a result of predictive factors.
Treatment (how were ROR factors reduced)	-
Evaluation Method	-
Conclusion (comments)	ROR crashes are associated with curved road segments, rural roads, high speed limit roadways, and roadways with fewer lanes; as well as adverse weather and night time periods. Fatal single vehicle ROR crashes are associated with vehicles with high occupancy, male drivers, young drivers, drivers using alcohol, as well as drivers with performance-related factors (sleepy, inattentive, over-correction, avoiding).
Summary	FARS data (1991-2007) was analyzed to determine significant contributing factors toward single-vehicle Run-off-road (ROR) crashes. The factors identified include roadway factors, driver factors, environmental factors, and vehicle-related factors.

Reference No.	8
Reference	Montella, A. & Pernetti, M. (2010). In-depth investigation of run-off-road crashes on the motorway Naples-Candela. 4th International Symposium on Highway Geometric Design. Valencia, Spain, 2010.
Definition	ROR crashes involve vehicles that leave the travel lane and encroach onto the shoulder and beyond and hit one or more of any number of natural or artificial objects such as ditches, poles, embankments, safety barriers, or trees.
Factors to ROR crashes	More severe ROR crashes were associated with motorcyclists; ditches, walls, fore slopes and back slopes (as opposed to safety barriers); blunt end terminals (as opposed to longitudinal safety barriers); median New Jersey concrete barriers (as opposed to median steel safety barriers); and median New Jersey concrete barriers contributed additionally to a larger proportion of rollover crashes.
Analytic Method (how were ROR factors identified)	ROR crash data was collected from 1092 ROR crashes in the A16 motorway in Italy, from police crash reports between 2001-2005. Chi-squared tests were used with Yates correction factor to identify factors leading to more severe crashes.
Treatment (how were ROR factors reduced)	-
Evaluation Method	-
Conclusion (comments)	Severe ROR crashes are associated with motorcyclists, lack of safety barriers, blunt end barriers on safety barriers, and median New Jersey concrete barriers. Proposed countermeasures include installation of safety barriers, installation of energy-absorbing safety barrier terminals, and installation of thrie-beam roadside barriers equipped with rubber rail, and installation of steel median safety barriers.
Summary	1092 ROR crashes were analyzed based on crash severity to identify roadside characteristics that contributed to more severe crashes on segments of Italy's A16 motorway. More severe ROR crashes are associated with motorcyclists, lack of safety barriers, blunt end barriers on safety barriers, and median New Jersey concrete barriers. Several countermeasures are proposed to address the identified risk factors.

Reference No.	9
Reference	Nambisan, S. S., Dangeti, M. R., Vanapalli, V. K., & Singh, A. K. (2007). Effectiveness of continuous shoulder rumble strips in reducing single-vehicle ran-off-roadway crashes in Nevada
Definition	Not explicitly stated
Factors to ROR crashes	Not explicitly stated
Analytic Method (how were ROR factors identified)	Not explicitly stated
Treatment (how were ROR factors reduced)	Rumble strips were added to segments of Nevada roadway.
Evaluation Method	Road network, rumble strip, and crash data was collected for highways in Nevada. Several roadway segments had rumble strips added, and these segments were evaluated for crash frequency and crash density for both before- and after-installation of rumble strips.
Conclusion (comments)	Rumble strips resulted in a reduced number of ROR crashes for 80% of the miles studied, and 66% of the segments studied saw reduced number of crashes per mile.
Summary	The installation of rumble strips into Nevada highway segments was evaluated for its efficacy in reducing ROR crashes. Looking at crash frequency, 80% of the highway miles saw a reduction in ROR crashes. Looking at crash density, 66% of the segments studied showed a reduction in crashes/mile. Rumble strips like those added to Nevada highways in this study are effective in reducing the frequency of single vehicle ROR crashes, and their crash rates.

Reference No.	10
Reference	Principal Investigator: Hallmark, S. L. (2009). Safety Benefits of Paved Shoulders. Tech Transfer Summary. Iowa Department of Transportation (In Trans Project 05-239). Center for Transportation Research and Education. November 2009
Definition	Not explicitly stated
Factors to ROR crashes	Not explicitly stated
Analytic Method (how were ROR factors identified)	Not explicitly stated
Treatment (how were ROR factors reduced)	Paved shoulders were installed on various non-Interstate Iowa roadways.
Evaluation Method	220 roadway segments (including 77 control segments) of non-interstate Iowa roadways were evaluated for before-and-after crash analysis. A generalized linear model was used, response variable was monthly crash frequency; predictor variables include traffic volume, segment length, season, presence of rumble strips, shoulder width, and presence of a divided median.
Conclusion (comments)	Roadway sections with paved shoulders had reduced crashes after installation than the control or pre-installation test sections. When the expected total crash numbers are compared, the expected number of monthly crashes decreases by around 4.6%.
Summary	Adding a paved shoulder to existing roadway are shown to have a quantifiable safety benefit in reducing crashes. Paved shoulders can help accommodate non-motorized vehicles, allow errant vehicles to recover, and effectively reduce crash numbers.

Reference No.	11
Reference	Reddy, V., Datta, T., Savolainen, P., & Pinapaka, S. (2008). Effectiveness of innovative safety treatments. Volume 3: a study of the effectiveness of Tyregrip high friction surface treatment. HNTB Corporation. Prepared for Florida Department of Transportation State Safety Office, Contract Number B-D500. January 2008.
Definition	Not explicitly stated
Factors to ROR crashes	Radius of curvature, anticipated speed, super elevation, and side friction factor are all elements of road design that affect the ability of a vehicle to stay in a traveled way.
Analytic Method (how were ROR factors identified)	Not explicitly stated
Treatment (how were ROR factors reduced)	The application of a high-friction surfacing system to an interstate onramp, in a 300-ft section upstream of the gore area between I-75 and the ramp.
Evaluation Method	Crash data was obtained from the Florida DOT Crash Analysis Reporting System, and compared to the period before and after the installation of the high-friction surface. Skid tests and speed studies were performed within the treated section before and after the installation of Tyregrip. The proportion of vehicles encroaching the inner and outer shoulders was also examined.
Conclusion (comments)	The high-friction surface was effective in decreasing mean speeds during dry pavement conditions (by 3.72mph), and wet conditions (by 2.62 mph). The proportion of drivers encroaching the shoulders decreased significantly following the application of the high friction surfacing. The high friction surfacing may be a practical countermeasure for improving safety at locations that are prone to run-off-road crashes.
Summary	Crash data was evaluated for an interstate on-ramp section that had been applied with a high-friction road surface treatment. The high-friction Tyregrip surface treatment was effective at reducing approach speed and proportion of drivers encroaching the shoulder. A reduction in crash frequency was found, but was not significant.

Reference No.	12
Reference	"Spainhour, L. K. & Mishra, A. (2008). Analysis of Fatal Run-Off-the-Road Crashes Involving Overcorrection. Transportation Research Record: Journal of the Transportation Research Board,
Definition	No. 2069, Transportation Research Board of the National Academies, Washington, D.C., 1–8. "
Factors to ROR crashes	ROR crashes are those involving vehicle that leave the travel lane and encroach onto the shoulder and beyond, and overcorrect, overturn, or hit one or more of any number of fixed or non-fixed objects, or that otherwise result in a harmful event to the vehicle occupants or other persons.
Analytic Method (how were ROR factors identified)	RORs due to overcorrection has 2 significant variables: gender (females more likely to overcorrect in a fatal ROR), and rumble strips (drivers more likely to overcorrect when rumble strips are present). Note, few crashes occurred on roads with rumble strips (16% of crashes), indicating that rumble strips may be an effective overcorrection ROR prevention method.
Treatment (how were ROR factors reduced)	Traffic homicide investigation reports, video log images, roadway characteristics inventory data, and site visits. Data was analyzed using reverse stepwise binary logistic regression to predict factors that specifically contribute to ROR crashes due to overcorrection.
Evaluation Method	-
Conclusion (comments)	-
Summary	Most significant factors to overcorrection RORs include gender (females more likely to overcorrect) and presence of rumble strips (overcorrection more likely when rumble strips are present). However, only 16% of crashes occurred on roads with rumble strips, indicating that rumble strips may be an effective prevention tool and deserve further study relative to panic over steering.

Reference No.	13
Reference	"Zhu, H., Dixon, K. K., Washington, S. & Jared, D. M. (2010). Predicting Single-Vehicle Fatal Crashes for Two-Lane Rural Highways in Southeastern United States. Transportation Research Record: Journal of the Transportation Research Board,
Definition	No. 2147, Transportation Research Board of the National Academies, Washington, D.C., 88-96."
Factors to ROR crashes	Single-Vehicle ROR crash: a crash where the first harmful event is a non-collision (driving off a cliff; rollover), a collision with an unfixed object (animal or pedestrian), or collision with a fixed object
Analytic Method (how were ROR factors identified)	Location, lane width, shoulder width and type, horizontal curvature direction, crest vertical curves present, horizontal and vertical geometric interactions, road hazard rating, traffic volume, driveway type, lighting conditions, and crash time
Treatment (how were ROR factors reduced)	Data involving crash details, site characteristics, environmental factors, limited driver information, and vehicle characteristics was obtained from 4 Southeastern states (GA, AL, MS, NC). Data was analyzed using a binary logit model to determine probability that a crash is a fatal single-vehicle ROR crash; expert domain knowledge.
Evaluation Method	-
Conclusion (comments)	-
Summary	The most significant factors across individual states are lane width, horizontal curve direction, and lighting conditions. Proposed countermeasures include: 1) geometric alignment improvements, 2) widening of lanes or pavement widths, 3) adding or widening graded or stabilized shoulder, and 4) widening or improving clear zones.

Reference No.	14
Reference	Liu, C. & Ye, T. J. (2011). Run-Off-Road Crashes: An On-Scene Perspective. U.S. Department of Transportation, National Highway Traffic Safety Administration. Report No. DOT HS 811 500. July 2011.
Definition	A ROR crash occurs when a vehicle in transit leaves the road and collides with a tree, a pole, other natural or artificial objects, or overturns on non-traversable terrain.
Factors to ROR crashes	Driver inattention, driver fatigue, driver in a hurry, roadway surface was dry, driver alcohol present, driver was familiar with roadway, driver had preexisting physical/mental health conditions, male driver, driver was feeling work-related stress or pressure.
Analytic Method (how were ROR factors identified)	Data from the National Motor Vehicle Crash Causation Survey (NMVCCS) for fatal and nonfatal crashes involving passenger vehicles (5470 crashes) were examined. Critical pre-ROR crash events were identified. Univariate analyses studied crash-associated factors, and the Wald chi-square test was used to assess whether the proportions were different in crash involvement among factors. Binary logistic regression was also used to identify factors contributing to the binary outcome of crash (ROR crash versus "other" crash).
Treatment (how were ROR factors reduced)	Antilock brake system and electronic stability control.
Evaluation Method	NMVCCS data detailing information on the availability and use of equipment on-board the vehicles. Odds ratios are calculated comparing ROR crash involvement for vehicles equipped with those technologies compared to vehicles not equipped with those technologies.
Conclusion (comments)	Driver factors were identified as contributing to ROR crashes: driver inattention, driver fatigue, driver in a hurry, roadway surface was dry, driver alcohol present, driver was familiar with roadway, driver had preexisting physical/mental health conditions, male driver, driver was feeling work-related stress or pressure. ABS and ESC systems are effective when combined at reducing ROR crashes.
Summary	Data from the NMVCCS was analyzed to identify event characteristics prior to ROR crashes. Driver factors accounted for 95% of those characteristics; significant factors include driver inattention, driver fatigue, driver in a hurry, roadway surface was dry, driver alcohol present, driver was familiar with roadway, driver had preexisting physical/mental health conditions, male driver, driver was feeling work-related stress or pressure. Additionally, on-board vehicle technologies (ESC and ABS) were identified as reducing ROR crash involvement; vehicles without those technologies were 2.1 times more likely to be involved in a ROR crash than the vehicles equipped with ABS and ESC.

Reference No.	15
Reference	Spainhour, L. K., Brill, D., Sobanjo, J. O., Wekezer, J. & Mtenga, P. V. (2005). Evaluation of Traffic Crash Fatality Causes and Effects: A study of fatal traffic crashes in Florida from 1998-2000 focusing on heavy truck crashes. Final Report, Contract No. BD-050. Florida A&M University – Florida State University. Tallahassee, Florida, April 2005.
Definition	Crashes that involve vehicles that leave the travel lane and encroach onto the shoulder and beyond, and either overcorrects, overturn, hit one or more of any number of fixed or non-fixed objects, or otherwise results in a harmful event to the vehicle occupants or other persons.
Factors to ROR crashes	Younger drivers, drivers under the influence of alcohol, excessive speed, and abrupt steering input (including overcorrection and evasive maneuvers) are the most common driver contributing factors in all ROR crashes. Inattention and fatigue are also cited.
Analytic Method (how were ROR factors identified)	Data was obtained from the Florida DOT Crash Analysis Reporting System (CAR), and supplemented by Florida Highway Patrol and local law enforcement agencies in the form of Traffic Homicide Investigation reports. Site visits were conducted in specific instances; 2080 cases were reviewed in total. Odds ratios were calculated comparing factors associated with ROR and non-ROR crashes.
Treatment (how were ROR factors reduced)	-
Evaluation Method	-
Conclusion (comments)	ROR crashes tended to occur on rural limited access facilities, with younger drivers, and drivers under the influence of alcohol. Of all ROR crashes analyzed, alcohol, speed, and abrupt steering input (including overcorrection and evasive maneuvers) are the most common driver contributing factors. Inattention, fatigue, and sleep were also cited as important factors.
Summary	Florida Traffic Homicide Investigation reports, video logs, photographs, and site visits provided data about fatal crashes on state roads in Florida in 2000. Causal factors towards crashes were identified. Human factors were the primary causative factor in 94%of fatal crashes; the most common factors of those were alcohol, drug use, and driver errors (inattention and decision errors).

Reference No.	16
Reference	Davis, G. A., Pei, J. & Morris, P. (2005). Identification of causal factors and potential countermeasures for fatal rural crashes. Minnesota DOT Report No. MN/RC-2005-42, October 2005.
Definition	Roadway departures ending with collision with a fixed object, an overturning, or a collision with a vehicle on another roadway.
Factors to ROR crashes	Alcohol involvement, improper evasive action, fatigue, overcompensation, driver inexperience, excessive speed, weather conditions.
Analytic Method (how were ROR factors identified)	Expert panel identified causal factors toward fatalities in a crash.
Treatment (how were ROR factors reduced)	-
Evaluation Method	-
Conclusion (comments)	Causal factors for fatal single vehicle run-off-road crashes (other types of crashes were also reported) were identified as Alcohol involvement, improper evasive action, fatigue, overcompensation, driver inexperience, excessive speed, and weather conditions.
Summary	Driver inexperience was identified as a causal factor in 40% of randomly selected fatal crashes; rumble strips were identified as a potential countermeasure; although this was not evaluated.

Reference No.	17
Reference	McGinnis, R. G., Davis, M. J. & Hathaway, E. A. (2001). Longitudinal Analysis of Fatal Run-Off-Road Crashes, 1975 to 1997. Transportation Research Record: Journal of the Transportation Research Board, No. 1745, Transportation Research Board of the National Academies, Washington, D.C., 47-58.
Definition	Single vehicle crashes that occur off the roadway, or multivehicle crashes in which the first harmful event involved hitting an object on the roadside. These crashes involve vehicles that leave the roadway, hit objects on the roadside, or subsequently collide with other vehicles. Only crashes resulting in fatalities were examined
Factors to ROR crashes	Age, gender, alcohol involvement, vehicle type, time of day, type of roadway
Analytic Method (how were ROR factors identified)	Data from NHTSA's FARS database was used for 1975, 1980, 1985, 1990, 1995, 1996, and 1997 were used. Proportions of crash involvement were examined for ROR crashes, multivehicle ROR crashes, and non-ROR crashes.
Treatment (how were ROR factors reduced)	-
Evaluation Method	-
Conclusion (comments)	An analysis over time of ROR crashes identified types of drivers, vehicles, and highways where interventions are needed, more work should be done to improve roadside safety.
Summary	FARS data was analyzed to identify at-risk groups associated with ROR crashes. ROR crashes are associated with young drivers, males, the night time of day, and non-interstate rural highways (due to sharper horizontal curves, shorter sight distances, and roadside crash hazards).

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Appendix C
Positive Community Norms Survey Comparison

About half of the survey respondents were male (48 percent).

Individuals from every county in Idaho participated in the survey (see Table 16).

The distribution of ages in the survey sample was similar to the distribution in the general population based on US Census estimates (see Table 17).

Participants in the PCN Community Survey drove a variety of vehicles in similar proportion as participants in both the 2009 and 2010 ITD Public Opinion Poll (see Table 17).

Participants in the PCN Community Survey reported drinking and driving behaviors very similar to those who participated in the ITD 2010 and 2011 Public Opinion Polls (see Table 18). Because the PCN Community Survey did not include the answer option of "I don't drink," those who responded "I don't drink" on the ITD Public Opinion Polls must be added to those who reported "never" for comparison purposes.

Participants in the PCN Community Survey reported drinking at least 1 drink of alcohol in the past 30 days at rates slightly higher than those who participated in the 2010 Behavioral Risk Factor Surveillance System survey of Idaho adults (see Tables 19 and 20).

Table 16. Idaho PCN Community Survey Participation Rates by County

County	Percent		County	Percent		County	Percent
Ada	26.4%		Cassia	1.7%		Lewis	0.2%
Adams	0.6%		Clearwater	0.5%		Lincoln	0.8%
Bannock	5.8%		Custer	0.6%		Madison	2.1%
Bear Lake	0.4%		Elmore	0.7%		Minidoka	0.4%
Benewah	0.4%		Franklin	0.9%		Nez Perce	0.4%
Bingham	2.5%		Fremont	0.2%		Oneida	0.4%
Blaine	0.8%		Gem	1.2%		Owyhee	0.8%
Boise	0.5%		Gooding	1.3%		Payette	1.0%
Bonner	3.6%		Idaho	1.5%		Power	1.1%
Bonneville	6.2%		Jefferson	1.9%		Shoshone	0.7%
Boundary	0.7%		Jerome	0.9%		Teton	0.8%
Butte	0.2%		Kootenai	7.9%		Twin Falls	5.9%
Canyon	11.9%		Latah	1.9%		Valley	0.4%
Caribou	0.7%		Lemhi	0.2%		Washington	0.4%

Table 17. Distribution of Ages in Idaho

Age Category	U.S. Census (2007-09 American Community Survey Estimate)	PCN Community Survey Sample
18 – 19 years old	4.3%	3.2%
20 – 24 years old	10.4%	7.5%
25 – 34 years old	18.3%	12.4%
35 – 44 years old	17.6%	13.1%
45 – 54 years old	18.6%	18.3%
55 – 59 years old	8.1%	8.9%
60 – 64 years old	6.5%	10.5%
65 – 74 years old	8.6%	15.6%
75 – 84 years old	5.4%	7.8%
Over 85 years old	2.2%	2.6%

Table 18. Vehicle Most Often Driven by Idahoans

Vehicle Most Often Driven	ITD 2009 Public Opinion Poll	ITD 2010 Public Opinion Poll	PCN Community Survey Sample
Car	45%	47%	47%
Pick-up Truck	21%	23%	23%
SUV	19%	19%	22%
Van	10%	7%	5%
Motorcycle	1%	0%	1%
Other	4%	3%	2%
Total	100%	100%	100%

Table 19. Self-Reported Drinking and Driving Behavior in Idaho

In the past 60 days, how many times have you driven a motor vehicle within 2 hours after drinking alcoholic beverages?			
Number of Times	**ITD 2009 Public Opinion Poll**	**ITD 2010 Public Opinion Poll**	**PCN Community Survey Sample**
Once	6.5%	4.5%	6.4%
Twice	4.1%	6.3%	4.0%
Three times	1.8%	1.8%	1.5%
Many times	3.1%	2.2%	5.5%
Never	53.1%	50.3%	82.7%
I don't drink	31.4%	34.7%	(response not available)
Total	100.0%	100.0%	100.0%

Table 20. Self-Reported 30-day Alcohol Use Rates in Idaho

During the past 30 days, have you had at least 1 drink of any alcoholic beverage such as beer, wine, a malt beverage, or liquor?		
Response	**2010 Behavioral Risk Factor Surveillance System**	**PCN Community Survey Sample**
Yes	44%	53%
No	56%	47%
Total	100%	100%

Appendix D
Positive Community Norms Institute Participants

Miren	Aburusa	Mothers Against Drunk Driving (MADD) Idaho Chapter
Stacey (Ax)	Axmaker	*Idaho**STAR** Motorcycle Safety Program*
Kevin	Bechen	Idaho Transportation Department, Highway Safety
Elaine	Bergeson	Idaho Dept. of Corrections, Central Office, Boise
Kathryn	Clifford	Boise High School
Greg	Cowles	Ada County Misdemeanor Probation
Pauline	Davis	Idaho Transportation Department, Environmental
Eva	Escalante	Idaho Transportation Department, Highway Safety
Ginger	Floerschinger-Franks	Idaho Hospital Association
Jermaine	Galloway	Boise Police Department
Steve	Grant	Idaho Transportation Department, Communications
Mark	Hall	Idaho Transportation Department, Communications
Peter	Hartman	FHWA – Idaho Division Office
George	Hicks	Elmore County Courthouse
Lance	Holstrom	Local Highway Technical Assistance Council (LHTAC)
Mary	Hunter	Dog's A Flying
Brent	Jennings	Idaho Transportation Department, Highway Safety
Brian	Johns	Idaho State Department of Education
Marianne	King	Drug Free Idaho
Greg	Lanting	City of Twin Falls
Greg	Laragan	Idaho Transportation Department, Operations Administrator
Susan	Lowman Thomas	Idaho Division of Veterans Services
Stephen	Manning	Idaho Division of Public Health
Mollie	McCarty	Idaho Transportation Department
Vanessa Taylor	McEntee	Boise High School
Brian	Ness	Idaho Transportation Department, Director
Brent	Norsepsh	Boise Inc.
Jared	Olson	Traffic Safety Resource Prosecutor
John	Perry	FHWA – Idaho Division Office
Ralph	Powerll	Idaho State Police
Mary Ann	Reuter	Idaho Public Health Association
Steve	Rich	Idaho Transportation Department, Highway Safety
James	Roberts	Idaho Division of Veterans Services
Dee	Sarton	KTVB Channel 7
Matt	Saxe	Boise Inc.
Kathy	Skippen	Idaho Department of Health and Welfare
Tabitha	Smith	Idaho Transportation Department, Executive Office
Scott	Stokes	Idaho Transportation Department, Chief Deputy
Jeff	Stratten	Idaho Transportation Department, Communications
Dave	Tuttle	Idaho Transportation Department, Communications
Jeff	Wilson	Orofino Police Department

Appendix E
Summary of Information Gathered at the PCN Institute

Engaging Bystanders in Reducing Impaired Driving

Notes on Spirit of the Campaign

- Courage to act
- Responsibility – culture of
- Caring for others
- Tenacity
- I, me, - component/independence/pioneer spirit
- Personalize it
- Social conscience
- People caring about each/nobody is immune
- The risk of not getting involved
- Spirit of engagement
- Leadership that will get others to buy into a common goal
- Be the hero/show courage/you are better than this
- People have profound effect w/o realizing it
- Empower everyone to know that they are supported for stepping forward
- Strong sense of empowerment
- Do the right thing no matter what/even when no one is looking

NOTE: The spirit should transcend Impaired Driving so that it could address other traffic safety issues as well – seat belts, speeding, distracted driving, etc.

Notes on Specifics of the Messages (Notes from Institute)

- Do we know how to report an impaired driving? What is the number?
- People needed knowledge, skills and the confidence to take action
    - Framework: that allows for other interventions as well
        - Evaluate the situation
        - Question the person and express concern
        - Provide support/take action
- It sounds a lot like CPR
    - Know the skills and develop the confidence
- If it becomes formalized training, that can provide excuse for not doing it
- Think of How to talk to your kids about drugs
- Talking about an acquaintance – use law enforcement and not intervene
- Risk of intervening with strangers
- Use of law enforcement
- Learn to take the initiative
- Take a broader view of intervention
- Express what our norms are in our community
- Sharing results and fostering the dialog
- Establish expectations – about not-driving impaired/under the influence
- Taxi cab rides home with sponsorship with bar owners (Twin Falls)
- Other drive home programs (McCall)
- Takes a village to raise a child– public safety is everyone's responsibility and it begins with me
- Liability issues – good Samaritan laws
- Purpose of intervention- safety or I don't want you to get in trouble

Conclusions

- Different messages for different audiences
- Need a range of actions which avoid personal injury and conclude with involving law enforcement
- Must establish a common understanding
    - impairment begins with first sip of alcohol
    - most don't drive under the influence
    - most believe it is wrong
    - most believe they should intervene

Notes on Step 1. Planning and Environmental Advocacy – Additional Potential Stakeholders

- Legislators – Transportation Committee
- Idaho Association of Counties
- Superintendents (State)
- Media Representatives
- Idaho Division of Financial Management
- Joint Finance and Appropriation Committee (JFAC)
- Idaho Association of Cities
- Idaho Dept. of Juvenile Corrections
- Idaho Transportation Department, District Engineers
- American Automobile Association (AAA)
- Trauma Prevention Advocates
- Insurance (Health, Automobile)
- Alcohol Distributors/Associations/Retailers
- Truckers Association
- Employers/Chambers of Commerce
- Taxi Association/Groups
- Student Government / Student Body Associations (high schools / post-secondary)
- Youth Council with Cities
- Safe and Drug Free School Coordinators
- Idaho FIND
- Community Coalitions
- Benchmark – private contractors
- Hospitals/ EMTs/Coroners
- Chiefs/Sheriff Association
- Hispanic Association
- Tribes
- Faith Based Groups
- Idaho Public Health Association
- Strategic Highway Safety Plan – Oversight Committee/Team Leaders
- Tourism – Commission
- Catastrophic Health Care Fund (Commissioners)
- Local Highway districts
- Idaho Governor's Office of Drug Policy
- Public Health Districts
- School Counselors
- Enforcing Underage Drinking Laws (EUDL)
- Prosecuting Attorneys/Idaho Association of Prosecuting Attorneys
- Idaho Supreme Court
- Driver's Ed Instructors
- City Councils/County Commissioners

Notes on Step 4. Communication Planning

One-on-One Conversations
Mayor, Chief of Police, Sheriff, Superintendent
Annual Meetings
Cities, Counties, Sheriffs, Judges, Chiefs of Police, Prosecutors, Schools, Bar Owners, Magistrate Institutes
Legislative Committees
Transportation, Health, Judicial, Legislative Health Task Force

Newsletters
"Quick Notes", LHTAC, Chamber of Commerce, Transporter, Highway Safety, AAA

Community Groups
Rotary Clubs, City Council Meetings, Chambers of Commerce, faith, Boy Scouts / Girl Scouts / 4H, hospitals, others

Schools / Universities
Colleges / Universities, School newspapers, Parent newsletters, PTO / Boosters, Safe and Drug Free Schools

Sporting Event Messages / Corporate Messages
Small radio and press community messaging/Facebook/Email Distribution Lists
Highway Safety Summit/Prevention Conferences (IPHA)
Driver's Education/Defensive Driving Course/Motorcycle Safety Classes
ITD's Division of Motor Vehicles
Alive@25
Trauma Nurses
Idaho Traffic Safety Commission
Traffic Safety Resource Prosecutor (Jared Olson)
Alcohol Monitoring System – Secure Continuous Remote Alcohol Monitor (Tobin Fisher)
Behavioral Health Interagency Cooperative
Idaho Trauma Prevention Associates
Idaho Mothers Against Drunk Driving (MADD)
Liquor Dispensers
Public Health Districts
Insurance Companies/Trucking Companies
Bartender's Association

Notes on Step 7. Evaluation

- Don't try to do this alone; seek advice; evaluation is complex
- Political challenges of narrowing focus audience – may require statewide focus
- Pilot/Research study can overcome some of that pressure
- Smaller project could cost less and save resources with intent of showing success to muster more resources
- 3 communities – 1 in each region of the state
- Test in 3 different regions (not excluding anyone)
- Go where you have support and political will
- Took what we are doing and narrowed it
- Leaders – evaluate their change / transformation
- Narrowed
- Lot of doubts; need more evidence