

# **An assessment of traffic safety culture: exploring traffic safety citizenship**

Task 1 Report: Literature Review

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# 1 EXECUTIVE SUMMARY

The transformation of traffic safety culture is a primary element of the National Toward Zero Deaths (TZD) Safety initiative among state highway safety agencies and stakeholders. Only through the growth of a positive safety culture can significant and sustainable reductions in crash fatalities and serious injuries be achieved. Road users have an important role in achieving the goal of zero deaths and serious injuries. In Sweden, the origin of the Vision Zero strategy, traffic safety leaders recognize that “road users are responsible for showing consideration for having a sense of judgment and responsibility in traffic, and for complying with traffic regulations,” and that growing these elements is a component of the zero deaths initiative (Belin et al. 2012, pp. 171-179).

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

The project seeks to answer several critical questions:

- What is the culture of those who have a high commitment to safety?
- What values, attitudes, and beliefs predict a high concern for traffic safety?
- What predicts engagement in behaviors that focus on the safety of others (such as getting others to wear a seat belt, having family rules, etc.)?
- What predicts acceptance of safety strategies such as automated enforcement, sobriety checkpoints, etc.?

To inform this project, a literature review of published research on safety citizenship, prosocial traffic safety behaviors, and cultural factors predicting engagement in traffic safety behaviors (including support for policy) was completed. The purpose of the review was to better understand the safety citizenship behavior construct and to establish a definition of safety citizenship behavior in the context of traffic safety. This review identified various prosocial behaviors to inform the question design for constructs in the traffic safety citizenship model used for this project. Research in this area is relatively new, and so we broadly synthesized the published research from a variety of areas.

Results from this literature review revealed that the construct, safety citizenship behavior, has been largely used to describe extra-role behaviors in organizations. A search of safety citizenship behavior in areas outside of the workplace yielded minimal results. To expand the use of this construct into traffic safety and to inform the traffic safety citizenship model for this project, we reviewed and synthesized published research outside of a workplace context to understand constructs similar to safety citizenship behavior in various domains. The goal is to grow prosocial traffic safety related behaviors among road users, and ultimately to eliminate crash deaths and serious injuries.

## 2 INTRODUCTION

Recognizing that accidents, injuries, and unsafe behaviors are costly both for individuals and for organizations, safety has become a priority (Hofmann et al. 2003, pp. 170-178) and considerable efforts have been made to reduce safety risks. The traditional strategy to reduce risky or unhealthy behaviors has been to affect change within the persons engaging in those behaviors. For example, drunk driving is a common topic in the Strategic Highway Safety Plans (SHSP) of many states. The primary strategies applied to this issue are education and enforcement to change the behavior of those people who decide to drink and drive. However, the proportion of the U.S. population that commits such behaviors tends to be small relative to the proportion that abstains. Nonetheless, drinking and driving, speeding, and not wearing a seat belt are major contributing factors to roadway fatalities. To reach zero deaths, we must reach these smaller groups of individuals who continue to engage in unsafe behaviors.

A novel approach is to empower the vast majority of safe road users to engage in prosocial behaviors to impact this smaller group. This strategy known as “safety citizenship” has been proposed to improve workplace safety (Dov 2008; Didla et al. 2009). Instead of trying to reduce risky behaviors among a small group of individuals, the goal is to instill a sense of responsibility in everyone for the safety of others. In essence, safety citizenship with a group of individuals is about creating a shared commitment to the value of safety and the social obligation to behave in ways that supports the safety of each other (“3 Steps to Creating a Culture of Safety Citizenship” 2013).

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

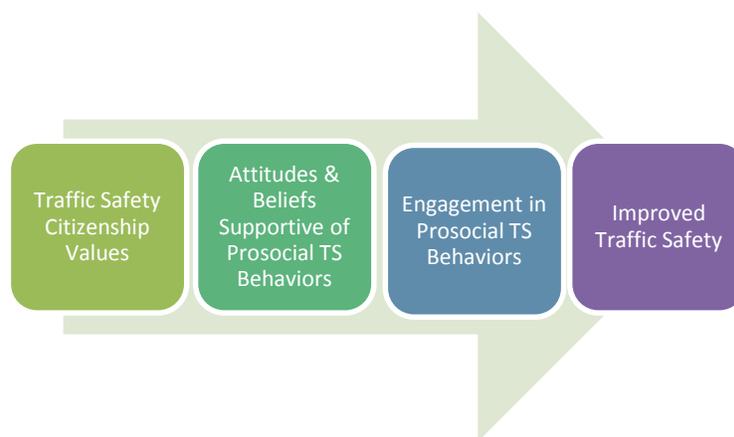


Figure 1. Model of Traffic Safety Citizenship.

### 3 METHODS

To obtain research articles for this review, a keyword search was conducted using the TRID database and Montana State University Library search engines “Academic Search Complete,” “EBSCO,” and “CatSearch.” Word search and phrase combinations included: “safety citizenship behavior,” “safety behavior,” “prosocial behavior,” “prosocial traffic safety behaviors,” “citizenship behavior,” “risk management behaviors,” “safety compliance,” “safety climate,” “road safety behavior,” “safety citizenship outside of workplace,” “safety citizenship,” “safety citizenship public,” “prosocial behavior,” “public,” “safety citizenship non organization,” and “organizational citizenship behavior.” Once articles were reviewed for relevance, additional key words were used in combination to narrow the search on safety citizenship behavior. Additionally, the reference lists of relevant articles were also reviewed for other potentially relevant articles that may have been missed with the key word searches. Similar constructs to safety citizenship behavior in various domains were explored including a key word search of “extra-role behaviors,” “actively caring,” “social capital,” “psychological capital,” “altruism,” “organizational spontaneity,” “contextual performance,” “job involvement,” and “bystander engagement.”

## 4 RESULTS

### 4.1 Safety Citizenship Behaviors

The goal of this project is to understand the cultural factors that predict traffic safety citizenship as evident from (1) intervening in the safety of others and (2) enabling effective traffic safety strategies. The results of this project will provide a better understanding of safety citizenship behavior thus informing how to grow these conditions in communities – thereby creating a culture that achieves greater improvements in traffic safety.

Safety citizenship behavior has been defined as “behaviors that are discretionary, not directly or explicitly recognized by the formal reward system, and that in the aggregate promote the effective functioning of the organization” (Didla et al. 2009, p. 476). Safety citizenship was developed in the context of formal groups of individuals such as organizations and industry involved in hazardous processes (Didla et al. 2009). The focus of safety citizenship behavior is on improving the safety performance of others and the organization (Hofmann et al. 2003, pp.170-178). Conceptually, safety citizenship behavior is described as a “higher order construct” manifested in a variety of behaviors that extend beyond one’s own safety to support the safety of others including voicing opinions, intervening to help others, reporting unsafe situations, staying informed, initiating change, and being a steward for existing safety programs (Hofmann et al. 2003; Didla et al. 2009).

#### 4.1.1 Safety Citizenship and the Role of Climate and Culture

Studies have looked at the concept of safety citizenship behavior in a variety of different ways, and safety climate seems to be a common predictor of engaging in safety citizenship behavior in the research (Hofmann et al. 2003; Didla et al. 2009; Mearns and Reader 2008; Zuesheng and Xintao 2011). Safety climate “relates to shared perceptions with regard to safety policies, procedures, and practices” (Dov 2008, p. 376). Organizational climate has been recognized as an important construct to support safety citizenship behaviors (Hofmann et al. 2003, pp. 170-178). Hofmann et al., (2003) suggested that “subordinates reciprocate high-quality relationships in a manner that is consistent with the type of behaviors that are valued in the work environment,” and “one way to do this is to engage in citizenship behaviors (enlarging their roles beyond what is normally required)” (p.171). Thus, positive climates that emphasize the importance of safety support increased safety citizenship behaviors (Hofmann et al. 2003, pp. 170-178). When the organization has a positive safety climate, employees are more likely to view safety behaviors as part of their formal work responsibilities, and they are more likely to engage in safety citizenship behaviors (Hofmann et al. 2003, pp. 170-178). This relationship was not found when the safety climate in the organization was not as positive (Hofmann et al. 2003, pp. 170-178). Similar results were found in the Zuesheng and Xintao (2011) study of the influence of safety climate on safety citizenship behaviors in the context of three underground coal mines in China. Using structural equation modeling, results suggested that safety climate positively affects safety citizenship behavior (pp. 2173-2180).

Mearns and Reader (2008) proposed that employees engage in safety citizenship behaviors in a reciprocal fashion, that is, when employees perceive that the organization, their supervisors, and

their coworkers are looking out for their health and well-being, they will be more likely to reciprocate by engaging in safety behaviors that benefit the organization. In their study of offshore oil and gas workers, the researchers found that perceived support of the organization, of supervisors, and of their peers for health was associated with reciprocal safety citizenship behaviors of employees (Mearns and Reader 2000). Specifically, “higher levels of perceived support predict[ed] better safety citizenship behavior” (Mearns and Reader 2000, p. 394). Mearns and Reader (2008) proposed that perhaps employees perceive organizational support as an indication of the overall health and safety climate of the organization and in turn may influence the “importance that employees place upon safe conduct in the workplace” (p. 394).

Similar to this finding, but specific to the transportation field, Zohar and colleagues (2015) studied long-haul truck drivers and found that perceptions of safety climate predicted safety behavior. Specifically, trucking safety climate scores significantly predicted driving safety behavior (Zohar et al. 2015, p. 90). “Further, driving safety behavior, negatively and significantly predicted road injury data” (Zohar et al. 2015, p. 90). Long-haul truck drivers are considered to be alone for much of their work and generally have limited contact and interactions with their coworkers, so it was an interesting contribution to the literature to find perceptions of safety climate influenced behavior even when involvement with coworkers was limited (Zohar et al. 2015, p. 92).

Didla et al (2009) stated “citizenship behaviors do not occur in a vacuum. These behaviors are either encouraged or discouraged by organizational context (e.g., support and prioritization of safety)” (p. 480). It is clear that the decision to participate in safety citizenship behaviors is influenced by the safety climate or context in which the behaviors occur.

#### 4.1.2 Safety Citizenship and the Role of Laws and Policies

When looking at how safety citizenship can contribute to the field of traffic safety, it is important to distinguish these behaviors of citizenship from the traditional strategies of seeking compliance with laws and safe practices such as policies and safety regulations. Compliance is often achieved by focusing heavily on enforcement. In contrast, growing safety citizenship focuses on commitment as opposed to compliance (Dov 2008). Individuals must choose to commit to engaging in behaviors for the direct benefit of others. This requires developing one’s own sense of ownership (whether actual or perceived) in traffic safety (Van Dyne and Pierce 2004).

Focusing on compliance and improving compliance behavior (i.e. enforcement of laws and policies) alone have been found to be insufficient to reduce the risk of adverse events; proactive strategies to address safety are needed too (Didla et al. 2009). Dov (2008) and Zohar et al. (2015) highlight the value of having both compliance strategies and commitment strategies for the best safety outcomes. Dov (2008) suggested that compliance is helpful in situations that are routine and predictable while citizenship can be helpful in situations that are less predictable but where safety is needed; thus, Dov suggests that both strategies together are important. Zohar et al. (2015) stated, “safety citizenship augments, rather than replaces safety compliance, resulting in incremental effects on safety outcomes” (p. 86).

Fugas et al.’s (2013) study incorporated both safety literature and social influence theories in their study of workers at a transportation company. The researchers were specifically interested in proactive safety behaviors and compliance behaviors and the combinations of both to understand

various safety behaviors. Fugas et al. (2013) argued that although procedures, policies, and formal activities to improve safety behaviors are important, extra role behaviors and proactive safety behaviors are also important to safety outcomes and can “coexist” in various “combinations ...” (p. 839). It is clear that policies and laws continue to be important to reduce risky behaviors (i.e. obeying laws, safety regulations, procedures, etc.), but engaging in prosocial safety citizenship behaviors among road users is also important and worth exploration. Understanding and growing commitment and ownership in traffic safety directly relates to research about traffic safety culture.

#### 4.1.3 An Example of Safety Citizenship Behavior - Bystander Engagement

Bystander engagement is an example of safety citizenship behavior. The essence of bystander engagement is that a person will get involved in a situation or event he or she deems to be an issue in need of urgent intervention. Bystander engagement has been researched in the literature to address a variety of issues including dating violence (Miller et al. in press) and child maltreatment (Fledderjohann and Johnson 2012), as well as specific traffic safety-related issues including drinking and driving (McKnight, et al. 2009) and workplace traffic safety (Otto et al. 2014).

Bystander engagement is a form of helping behavior (Fledderjohann and Johnson 2012) and several researchers have attempted to better understand the factors that predict whether or not someone will intervene as a bystander. Levine and Cassidy (2009) used Social Identity Theory and Social Categorization Theory to understand bystander engagement. Cismaru, et al. (2010) discussed five conditions that determine whether or not bystanders will engage. Those include: 1) noticing the issue or problem, 2) recognizing that the incident requires action and that someone is in need of help, 3) deciding that it is his or her responsibility to intervene, 4) deciding how to intervene, and 5) implementing the planned intervention (Cismaru et al. 2010).

Bystander engagement represents an example of safety citizenship behavior where people attempt to intervene or engage in a situation to prevent harm or reduce risks. However, safety citizenship behaviors also include proactive behaviors that are not directly related to engaging or intervening such as: taking initiative to improve safety through policy, staying informed of safety-related issues, or volunteering to be involved in safety activities.

## 4.2 Theoretical Framework for Safety Citizenship Behavior

Of particular interest among researchers is “under what conditions individuals choose to define particular behaviors as part of their formal role” (Hofmann et al. 2003, p. 170). When thinking about safety citizenship, and more specifically, why people choose to engage in such behavior when there is no tangible reward or punishment for doing so, it is useful to build a theoretical foundation from which an explanation can be made. People may engage in safety citizenship behavior for numerous reasons, but perhaps the most compelling explanation involves Social Exchange Theory, a theory in which author Peter Blau is widely cited as one of the most influential researchers. Social Exchange Theory has been used as a theoretical framework for safety citizenship behavior (Hofmann et al. 2003). The theory has commonly been defined as:

Any interaction between individuals for an exchange of resources. The resources exchanged may be not only tangible, such as goods or money, but also intangible, such as social amenities or friendship. The basic assumption of Social Exchange Theory is that

parties enter into and maintain relationships with the expectation that doing so will be socially rewarding. (Lambe, et al. 2008, p. 2)

Two additional definitions that fit within the foundations built by Social Exchange Theory are Role Theory and Role Definition. As author Biddle (1986) writes, “Role Theory concerns one of the most important characteristics of social behavior – the fact that human beings behave in ways that are different and predictable depending on their respective social identities and the situation” (p. 68). It has been suggested that individuals engage in roles that are expected of them by other individuals in the organization and thus define their role within this context (Hofmann et al. 2003). Additionally, role definitions, or how one defines his or her role in safety can vary by the individual and by the situation (Hofmann et al. 2003). Role theory has been used as a theoretical framework for safety citizenship behavior (Hofmann et al. 2003).

When taking into account the above definitions, it is clearer to see why one would choose to engage in safety citizenship. Although one is not rewarded by the formal reward system, whether it be in the workplace or in other social constructs, one can still expect an informal reward through social interactions. Social Exchange Theory would dictate that humans choose to engage in safety citizenship because they are expecting their unselfish acts to pay off in other ways in society. As author Bulkan (2013) writes, “a basic reward that people seek is social approval, and selfish disregard for others makes it impossible to obtain this important reward” (p. 17).

Although this theoretical foundation is built to explain one’s actions in the workplace, the theory itself can be extended to other social situations such as traffic safety. If the informal reward from practicing safety citizenship behaviors in traffic was made clear, it would be easier to convince those on the road to perform actions that were contributing to the safety of the general population.

### **4.3 Measurement of Safety Citizenship Behavior and Similar Safety Constructs**

Various researchers of safety citizenship have utilized survey items or modifications of them from the initial work of Hofmann and colleagues (2003) regarding this construct (Conchie and Donald 2009; Didla et al. 2009; Fugas et al. 2011; Xuesheng and Xintao 2011). Hofmann et al. developed survey “items reflecting safety-related helping, voice, stewardship, and whistleblowing” (2003, p. 172). They also included items that focused on “maintaining an up-to-date knowledge of safety issues (i.e., safety-oriented civic virtue)” and items that sought to measure “initiating safety-related workplace change” (Hofmann et al. 2003, p. 172). 27 safety citizenship items were used, and the subscales were combined into an overall measure of safety citizenship role definitions (Hofmann et al. 2003, p. 172). Table 1 provides the complete item set used by Hofmann and colleagues. Attempting to understand the degree to which each behavior was considered to be part of the job, the safety citizenship behavior questions were asked using a 5-point Likert Scale, (1 = an expected part of the job, 3 = somewhat above and beyond what is expected for my job, and 5 = definitely above and beyond what is expected for my job) and higher scores reflected more in-role behavior (Hofmann et al 2003, pp. 170-178).

**Table 1. Hofmann et al.'s (2003) Safety Citizenship Behavior Items**

<b>SAFETY AND ROLE DEFINITIONS: HELPING</b>					
1. Volunteering for safety committees.....	1	2	3	4	5
2. Helping to teach safety procedures to new crew members .....	1	2	3	4	5
3. Assisting others to make sure they perform their work safely .....	1	2	3	4	5
4. Getting involved in safety activities to help my crew work more safely .....	1	2	3	4	5
5. Helping other crew members learn about safe work practices .....	1	2	3	4	5
6. Helping others with safety related responsibilities .....	1	2	3	4	5
<b>SAFETY AND ROLE DEFINITIONS: VOICE</b>					
1. Making safety-related recommendations concerning work activities.....	1	2	3	4	5
2. Speaking up and encouraging others to get involved in safety issues .....	1	2	3	4	5
3. Expressing opinions on safety matters even if others disagree.....	1	2	3	4	5
4. Raising safety concerns within the group during planning sessions.....	1	2	3	4	5
<b>SAFETY AND ROLE DEFINITIONS: STEWARDSHIP</b>					
1. Protecting fellow crew members from safety hazards .....	1	2	3	4	5
2. Going out of my way to look out for the safety of other crew members .....	1	2	3	4	5
3. Taking action to protect other crew members from risky situations.....	1	2	3	4	5
4. Trying to prevent other crew members from being injured on the job .....	1	2	3	4	5
5. Taking action to stop safety violations in order to protect the well-being of other crew members.....	1	2	3	4	5
<b>SAFETY AND ROLE DEFINITIONS: WHISTLEBLOWING</b>					
1. Explaining to other crew members that I will report safety violations .....	1	2	3	4	5
2. Telling other crew members to follow safe working procedures.....	1	2	3	4	5
3. Monitoring new crew members to ensure they are performing safely.....	1	2	3	4	5
4. Reporting crew members that violate safety procedures .....	1	2	3	4	5
5. Telling new crew members that violations of safety procedures will not be tolerated .....	1	2	3	4	5
<b>SAFETY AND ROLE DEFINITIONS: SAFETY CIVIC VIRTUE (INFORMED)</b>					
1. Attending safety meetings .....	1	2	3	4	5
2. Attending non-mandatory safety oriented meetings .....	1	2	3	4	5
3. Keeping informed of changes in safety policies and procedures.....	1	2	3	4	5
<b>SAFETY AND ROLE DEFINITIONS: IMPROVING SAFETY ( Morrison AMJ)</b>					
1. Trying to improve safety procedures .....	1	2	3	4	5
2. Trying to change the way the job is done to make it safer.....	1	2	3	4	5
3. Trying to change policies and procedures to make them safer .....	1	2	3	4	5
4. Making suggestions to improve the safety of a mission .....	1	2	3	4	5

(Email communication with Hofmann on September 11, 2015)

Willis, and colleagues (2012) used eight items to measure safety citizenship behavior on a 7-point Likert Scale, (strongly-disagree to strongly-agree range) (See Table 2). This scale came directly from the work of Zacharatos et al. (2005) who named the scale “Safety Initiative;” however, Willis and colleagues believed that Zacharatos et al. scale should be relabeled because of the strong similarity to Hofmann et al safety citizenship behavior scale (p. 4).

**Table 2. Safety Citizenship Behavior Items**

- 
1. I am involved in improving safety policy and practices.
  2. I initiate steps to improve work procedures if I think it will make work safer.
  3. If I see something unsafe, I go out of my way to take care of it.
  4. I voluntarily carry out tasks or activities that help to improve workplace safety.
  5. I often make suggestions to improve how safety is handled around here.
  6. I often try new approaches to improving workplace safety.
  7. I often try to solve problems in ways that reduce safety risks.
  8. I keep abreast of changes related to safety.
- 

Willis et al. 2012, p. 4

Mearns and Reader (2008) used a 5-point Likert Scale, (strongly disagree to strongly agree) and nine items to measure safety citizenship behaviors including “monitoring the safety behaviors of workmates, correcting potential safety problems, informing management about safety problems and reporting near misses, minor accidents and hazardous working conditions” (Mearns and Reader 2008, p. 93). The items selected to measure safety citizenship behavior in this study were taken from Geller, et al. (1996) and Simard and Marchand (1995).

Although not specific to safety citizenship, Geller, et al. (1996) questions included nine actively caring items to measure willingness or intention to actively care. The construct, actively care, refers to “individuals caring enough about the health and safety of others to act accordingly” (Roberts and Geller 1995, p. 53). Those nine items were included in a 154 item Safety Culture Survey with included “factors hypothesized to predict one’s propensity to actively care for the safety of others interspersed with questions regarding workers’ perceptions of plant safety and measures of psychological reactance and cognitive failures” (Geller et al. 1996, p. 3). Questions used to measure willingness or intention to actively care and to specifically assess an “individual’s willingness or intention to look out for the safety of others” are identified in Table 3.

**Table 3. Willingness or Intention to Actively Care Items**

- 
1. If I know a coworker is going to do a hazardous job, I am willing to remind him/her of the hazards (even if the employee is familiar with the job).
  2. I feel comfortable praising my coworkers for working safely.
  3. I am willing to warn other coworkers about working unsafely.
- 
-

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4. I am willing to do whatever I can to improve safety, even conforming other coworkers about their unsafe acts.
  5. I am willing to observe the work practices of a coworker and record his/her safe and unsafe behaviors.
  6. I am willing to pick up after another employee to maintain good housekeeping.
  7. When I see a potential safety hazard (e/g/, oil spill), I am willing to correct it myself if possible.
  8. I am willing to pick up workplace litter I did not cause myself.
  9. If I notice an unsafe feature in the equipment outside my work area, I am willing to take corrective action (e.g., notify my supervisor or complete appropriate paperwork).
- 

(Geller et al. 1996, p. 3)

#### **4.4 Constructs Related to Safety Citizenship Behavior**

The concept of safety citizenship has largely been used to describe extra-role behaviors that are fostered in the workplace and contribute to the overall effectiveness of the organization. A review within Montana State University's "CatSearch" engine using the keywords and phrase "safety citizenship outside of workplace," "Safety citizenship," "safety citizenship public," "prosocial behavior," "public," and "safety citizenship non organization," yielded no results whereby suggesting that safety citizenship behavior has not been researched in social environments outside of the workplace. To expand the use of this construct into traffic safety and to inform the traffic safety citizenship model for this project, we anticipated the need to review and synthesize published research outside of a workplace context to understand constructs similar to safety citizenship behavior in various domains.

Because the safety citizenship behavior construct was originally developed by modifying several measures of organization citizenship behavior (Hofmann et al. 2003, pp. 170-178), we felt it was important first, to provide a brief overview of organizational citizenship behavior. Then, we introduce constructs that are similar to safety citizenship behavior. Those constructs include: actively caring, extra-role behavior, organizational spontaneity, contextual performance, job involvement, organizational commitment, altruism, social capital, and psychological capital. We also look specifically at values, attitudes, and beliefs found to be important to safety outcomes in previous research. It is believed that values impact attitudes and beliefs, and attitudes and beliefs predict engaging in prosocial, traffic safety behaviors. Thus, understanding how these cultural factors interact and predict prosocial, traffic safety behaviors is critical to grow traffic safety citizenship.

Understanding the origin of safety citizenship, the related constructs, and previous research about values, attitudes, and beliefs important to safety will provide insight to inform the traffic safety citizenship model proposed for this project. We seek to translate the concept of safety citizenship to the conditions that define the social environment of informal groups of road users. In these conditions, the specific behavior we would seek to affect by growing safety citizenship would depend on the social relationship that exists amongst the target group of road users.

#### 4.4.1 Organizational Citizenship Behavior

To fully understand the construct of safety citizenship, it is important to first understand organizational citizenship behavior because safety citizenship was developed from the organizational citizenship behavior construct (Didla et al. 2009). Organizational citizenship behavior has been defined as “individual behavior that is discretionary, not directly or explicitly recognized by the formal reward system and that in the aggregate promotes the effective functioning of the organization” (Organ 1988, p. 4 as found in Podsakoff et al. 2000, p. 513). In essence, organizational citizenship behavior is going above and beyond what is expected or required in one’s role in the organization.

In reviewing the extensive literature base on citizen-like behaviors, Podsakoff and colleagues (2000, pp. 513-563) identified over 30 different forms of citizenship behavior. Recognizing the large overlap and similarity among citizenship behaviors, the researchers categorized the behaviors into seven themes including “helping behaviors, sportsmanship, organizational loyalty, organizational compliance, individual initiative, civic virtue, and self-development” (Podsakoff et al. 2000, pp. 513-563). Podsakoff et al. (2000, pp. 513-563) identified that when studying citizenship-like behaviors, much of the literature is tied to the seminal work of Katz (1964). Table 4 provides an overview of the seven citizenship behavior themes proposed by Podsakoff and colleagues (2000, pp. 513-563).

**Table 4. Citizenship Behavior Themes**

Theme	Definition
Helping Behavior	Voluntarily helping others with, or preventing the occurrence of, work related problems (Podsakoff et al. 2000, p. 516).
Sportsmanship	In some of the initial work on citizenship behavior, Organ (1990) defined sportsmanship as “a willingness to tolerate the inevitable inconveniences and impositions of work without complaining.” (as found in Podsakoff, et al. 2000, p. 517). However, Podsakoff and colleagues expanded this definition to include “people who not only do not complain when they are inconvenienced by others, but also maintain a positive attitude even when things do not go their way, are not offended when others do not follow their suggestions, are willing to sacrifice their personal interests for the good of the workgroup, and do not take the rejection of their ideas personally” (2000, p. 517).
Organizational Loyalty	Entails promoting the organization to outsiders, protecting and defending it against external threats, and remaining committed to it, even under adverse conditions (Podsakoff et al. 2000, pp. 517).
Organizational Compliance	A form of citizenship behavior that “capture a person’s internalization and acceptance of the organizations rules, regulations, and procedures, which

result in a scrupulous adherence to them, even when no one observes or monitors compliance.” (Podsakoff et al. 2000, p. 517).

Individual Initiative	A citizen like behavior that involves engaging in activities above and beyond what is expected or required of the person (Podsakoff et al. 2000, pp. 513-563).
Civic Virtue	Behaviors where the individual is willing to participate and be an active part of the day-to-day operations of the workplace, actively engaged in what’s going on in the industry, and looking for opportunities that might benefit the organization (Podsakoff et al. 2000, pp. 513-563). Civic virtue behaviors also include behaviors where a person recognizes that his or her individual behaviors impact the entire system (Podsakoff et al. 2000, pp. 513-563).
Self-Development	A citizenship like behavior and includes “voluntary behaviors employees engage in to improve their knowledge, skills, and abilities” (Podsakoff et al. 2000, p. 525).

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(Podsakoff et al. 2000, pp. 513-563)

Understanding the origin of safety citizenship behavior provides a helpful foundation for exploring this concept in various other domains. Citizenship behavior has received considerable attention for its contribution to human resources, marketing, healthcare, community psychology, and management (Podsakoff et al. 2000). Thus we expanded our literature review to other domains that have researched constructs similar to safety citizenship behavior.

#### 4.4.2 Actively Caring

Actively caring is a construct that refers to “individuals caring enough about the health and safety of others to act accordingly” (Roberts and Geller 1995, p. 53). Actively caring behaviors are those that “go beyond the call of duty to identify environmental hazards and unsafe work practices and then implement appropriate corrective actions when unsafe conditions or behaviors are observed” (Roberts and Geller 1995, p. 54). Roberts and Geller’s (1995) study of a large fiber-manufacturing plant looked at three predictors of actively caring: self-esteem, group cohesion, and optimism. As a follow up to this study, Geller et al. (1996) added another predictor, empowerment, as a predictor of actively caring behaviors. Actively caring behaviors relevant to safety are those behaviors that “help people avoid an accident that is only possible or even unlikely in any given situation” rather than behaviors that occur as a reaction to an accident or something that has already happened (Roberts and Geller 1995, p. 55).

#### 4.4.3 Extra-Role Behavior

A similar construct to actively caring, that has as its essence, going above and beyond what is expected is that of extra-role behavior. Extra-role behavior is defined as an activity that is discretionary in nature (such as helping others), which is not directly or explicitly required by a formal reward system, but does promote overall organizational efficiency (Van Dyne et al. 1995, p. 218). Extra-role behavior is a term first described in 1995 as part of the organizational citizenship behavior theory. It is mostly used to describe an employee’s behavior within his/her

organization in which the employee must be acting in a way that is considered to be beyond the role expectations and job description given and for which there is no penalty or reward given. Extra-role behavior is a construct that parallels the definition of safety citizenship behavior.

#### 4.4.4 Organizational Spontaneity

Extra role behaviors are also seen in the organizational spontaneity construct. Organizational spontaneity is described as the culmination of five different extra-role behaviors that can contribute to the success of an organization (George et al. 1997). The five attributes are: helping co-workers, protecting the organization, making constructive suggestions, developing oneself, and spreading goodwill. Like safety citizenship, organizational spontaneity falls under the umbrella of study known as organizational citizenship behavior (George et al. 1997, p. 157). Organizational spontaneity is similar to organizational citizenship behavior in the sense that it is an extra-role behavior, and it contributes to the overall cohesion of a social organization.

#### 4.4.5 Contextual Performance

Contextual performance is defined as “activities that contribute to the social and psychological core of the organization” (Borman and Motowidlo 2009, p.100). Examples of contextual performance include volunteering to carry out task activities that are not formally part of the job and helping and cooperating with others in the organization to get tasks accomplished. The construct, contextual performance, was developed within the context of organizational citizenship behavior and prosocial behavior.

#### 4.4.6 Job Involvement

Similar to the construct of contextual performance where a person engages in activities and cooperatively works with others to get tasks completed is the construct of job-involvement. Job-involvement is defined as the degree to which an employee is engaged in and enthusiastic about performing their work (Business Dictionary 2015). It is considered an important aspect of organizational citizenship behavior because many companies are aware that employees who feel more tied to their job tend to be more productive. This is evidenced by the fact that job involvement is found to be positively correlated with all five major themes of organizational citizenship behaviors (Zhang 2013, p. 165). Ueda’s (nd) study of the effects of job involvement, affective organizational commitment, and collectivism on organization citizenship behavior among professors and clerical workers in a private Japanese university found that job involvement was significantly and positively related to civic virtue and helping behaviors. Due to the nature of the definition of job involvement, there is no major application outside of the workplace; however, it is important to note that both civic virtue and helping behaviors when applied in a safety context are considered safety citizenship behaviors.

#### 4.4.7 Organizational Commitment

Organizational commitment has been defined as “the relative strength of an individual’s identification with and involvement in a particular organization” (Mowday et al. 1982, p. 226 as found in Lawrence et al. 2012, p. 328). Lawrence et al. (2012) suggested that organizational commitment is “most often understood to be an attitudinal orientation or mindset that reflects a

person's sense of connection to and involvement in a particular organization" (329). Similarly, Van Knippenberg and Sleebos (2006) suggest that commitment is based on "social exchange processes and employees' attitude toward the job and the organization" (p. 572).

#### 4.4.8 Altruism

Another construct that is widely applied outside of safety citizenship, yet has definite application to traffic safety is the construct of altruism. Altruism can be described as the unselfish regard for or devotion to the welfare of others. It is also a behavior by an animal that is not beneficial to or may be harmful to itself but that benefits others of its species (Dictionary.com 2015). Altruism is a construct that is one of the five core themes of organizational citizenship behaviors, and when applied to traffic safety, it can be assumed that those who view traffic safety as an altruistic effort will be more likely to engage in prosocial behaviors that keep others out of harm's way.

#### 4.4.9 Social and Psychological Capital

Not directly related to organizational citizenship behavior are the constructs of social capital and psychological capital. Social capital, as the World Bank defines it, is "institutions, relationships, and norms that shape the quality and quantity of a society's social interactions." The World Bank continues to say that, "Increasing evidence shows that social cohesion is critical for societies to prosper economically and for development to be sustainable. Social capital is not just the sum of the institutions which underpin a society – it is the glue that holds them together." A simple analysis of the definition of social capital suggests parallels to citizenship behavior and thus to traffic safety. Social cohesion is an important aspect in any organization. It ensures that those that function within the organization feel close enough to participate in prosocial behavior. In a paper entitled "Citizenship Behavior and the Creation of Social Capital in Organization", authors Bolino et al. (2002) write "citizenship behaviors enhance firm functioning by contributing to the development of social capital in organizations; specifically, citizenship behaviors contribute to the creation of structural, relational, and cognitive forms of social capital" (p. 505).

Specific to traffic safety, Nagler (2011) studied social capital and its impact on highway safety. Using data spanning 10 years, from 1997-2006, including 48 U.S. states, Nagler "uses an aggregate measure of generalized interpersonal trust to explain variations in the level of traffic fatalities and three other measures of highway safety" (2011, p. 1). Through this research, Nagler concluded that social capital reduces incidence of traffic crashes, injuries, and deaths on the roads (2011).

Another construct, psychological capital is a specific form of social capital that measures an individual's strength, perceptions, attitudes toward work, and general outlook on life (Avey et al. 2010). Many studies have attempted to conclude how psychological capital affects employees' organizational citizenship behaviors. One such study found that psychological capital was positively related to extra-role, organizational citizenship behaviors and negatively to organization cynicism, intentions to quit, and counterproductive workplace behaviors (Avey et al. 2010). Eid et al. (2012) discussed psychological capital in relationship to safety critical organizations and suggested that characteristics of psychological capital such as self-efficacy, optimism, hope and resilience "can promote greater safety awareness and instill safety focused behavior" (p. 57).

Synthesizing the published research from a variety of areas is important to better understand the constructs related to safety citizenship behavior and to establish a definition specific to the context of traffic safety. Based on this review, we propose traffic safety citizenship behaviors are discretionary, extra-role behaviors that contribute to the individual and collective safety of all road users.

## 5 CONCLUSIONS

The purpose of this report is to establish a better understanding of safety citizenship behavior and to establish a definition of safety citizenship behavior in the context of traffic safety. A literature review was conducted to look at previous research about safety citizenship and ways to measure safety citizenship behaviors. This review revealed that most studies of safety citizenship were conducted within organizations. Much of the literature on safety citizenship behavior used measures adapted from the original work of Hofmann et al (2003). Little research was found that specifically looked at safety citizenship behavior in contexts other than organizations and so it was important to synthesize constructs related to safety citizenship in various fields. With better understanding of safety citizenship behavior and similar constructs, we were able to establish a definition of safety citizenship within the context of traffic safety. Traffic safety citizenship behaviors are discretionary, extra-role behaviors that contribute to the individual and collective safety of all road users. Growing traffic safety citizenship is a strategic shift which focuses on the engagement of the larger majority of safe road users to influence the behaviors of the smaller group engaging in risky behaviors. Engagement in traffic safety by road users is an important component of a comprehensive TZD strategy.

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