Driving Forces: Factors Affecting Police Officer Injuries in Motor Vehicle Incidents in the United States

Carol Servino

University of Nevada, Las Vegas, carol.servino@capella.edu

Follow this and additional works at: https://digitalscholarship.unlv.edu/thesesdissertations

Part of the Law Enforcement and Corrections Commons, Public Administration Commons, Public Policy Commons, and the Work, Economy and Organizations Commons

Repository Citation

https://digitalscholarship.unlv.edu/thesesdissertations/1886

This Dissertation is brought to you for free and open access by Digital Scholarship@UNLV. It has been accepted for inclusion in UNLV Theses, Dissertations, Professional Papers, and Capstones by an authorized administrator of Digital Scholarship@UNLV. For more information, please contact digitalscholarship@unlv.edu.
DRIVING FORCES: FACTORS AFFECTING POLICE OFFICER INJURIES
IN MOTOR VEHICLE INCIDENTS IN THE UNITED STATES

By
Carol Servino

Bachelor of Arts Degree in Communication Studies
Rowan University
1975

Master of Science Degree in Professional and Technical Communication
New Jersey Institute of Technology
2007

A dissertation submitted in partial fulfillment
of the requirements for the
Doctor of Philosophy in Public Affairs

School of Environmental and Public Affairs
Greenspun College of Urban Affairs
The Graduate College

University of Nevada, Las Vegas
May 2013
THE GRADUATE COLLEGE

We recommend the dissertation prepared under our supervision by

Carol Servino

entitled

Driving Forces: Factors Affecting Police Officer Injuries in Motor Vehicle Incidents in the United States

be accepted in partial fulfillment of the requirements for the degree of

Doctor of Philosophy in Public Affairs
School of Environmental and Public Affairs

William Sousa, Ph.D., Committee Chair
Helen Neill, Ph.D., Committee Member
David Damore, Ph.D., Committee Member
Pushkin Kachroo, Ph.D., Graduate College Representative

Tom Piechota, Ph.D., Interim Vice President for Research & Dean of the Graduate College

May 2013
Abstract

Traffic-related incidents were the leading cause of fatal injuries to officers in 14 of 15 years between 1997 and 2012. Vehicle crashes occur at the individual officer level, but chiefs are responsible for agency performance, creating and implementing police policy, and developing organizational culture. This quantitative survey research study draws from organizational culture theory and asks chiefs in state, county, and city police organizations what they believe are salient factors in crashes causing injuries and death to police officers in the United States. Independent variables include safety belt laws, written driving policies (including communication technology commonly used in police vehicles), training to support policy implementation, organizational behavior related to driving policies, and agency demographics and the dependent variable, injury crashes. Police agencies included in the sample frame were randomly selected from the population of agencies that participated in the F.B.I.’s Uniform Crime Reporting system in 2010. Chiefs answered questions in a self-administered web-based survey after invitations to participate were sent via e-mail to agency addresses collected on public websites. Questions revolved around the impact of new technologies on existing police driving policies, factors surrounding policy implementation, and hypothetical situations to indicate what may be defined as the culture in individual police organizations. Results of binary logistic regression analysis indicate that two independent variables, agency size and policies permitting cell phone use, are statistically significant predictors to injury crashes involving police officers. Findings show that the odds of experiencing injury crashes are 14.42 times greater in agencies with policies permitting cell phones compared with those that don’t when agency size is held constant. Also, the odds of experiencing
injury crashes are .02 less in small agencies and .15 less in medium size agencies than in large or very large agencies when cell phone policy is held constant.
Acknowledgments

It is a great honor to acknowledge so many people for their contributions to my educational journey at this exciting point in the dissertation process. I begin with members of my committee, Bill Sousa, who served as chair, and Helen Neill, David Damore, and Pushkin Kachroo, all Ph.D.s and UNLV faculty members who met for the first time at my prospectus defense. Thanks also to Anna Lukemeyer, Jessica Word, and M. Ernita Joaquin, faculty members in the School of Environmental and Public Affairs, who were interested and willing to listen to my ideas. I also appreciate E. Lee Bernick, Greenspun College’s Interim Dean, for helping me fine-tune my topic by asking me early the tough question, “So what?”

Jean Norman and her journalism students at UNLV need to be thanked for their assistance in the early days of collecting email addresses for chiefs of police in randomly selected agencies by scouring public websites. The process was time-intensive, and the extra-credit exercise in finding “hard-to-find” information showed that I needed to do the work myself. Though a good starting point, public web sites are not to be trusted sources of accurate and up-to-date information, which is probably a starting point for future research.

I also wish to thank retired Chiefs of Police Ronald J. Louie and Robert E. Deu Pree, both of whom hired me for different positions during their tenure at the Astoria (OR) Police Department, for their leadership, integrity, and professional public service. It was there I learned to appreciate the complexity of the police culture, public administration, and intergovernmental relationships. Those associations opened doors to Astoria’s Chief of Police Pete Curzon, and to other current and former police
practitioners, including Gordon Graham, a former police officer, lawyer and respected public safety consultant, who took the time to answer my questions on this and other related topics. I am grateful to those at the Police Executive Research Forum, The International Association of Chiefs of Police, and the National Law Enforcement Memorial Fund for the work they do on behalf of police officers and their families. I also thank Geoff Alpert of the University of South Carolina not only for his research on pursuit driving but also for confirming that my study required original data collection.

More thanks go to Jack Gillespie, my trusted mentor and favorite journalism professor at Rowan University, and his wife, Mary, for their friendship and hospitality; to a true life-long learner, Stanley Mills, who graduated with his masters degree at 84 years old from Saint Louis University and proved that life-long learning is an active verb and that finishing what you started is better than regrets; to Nancy Coppola and Norbert Elliot, faculty members at New Jersey Institute of Technology, for their student-focus and encouragement, their excellence in teaching and research, letters of recommendation, and friendship.

Major thanks are extended to my husband, Jim, and to our sons, David and Kevin and to their families, who changed my life in many wonderful ways. The love we share is a source of pride as well as humility. Finally, to my first teachers and role models, my mom and dad, Frances and John Salva, I am thankful each and every day for their gifts of time on task, love, and support shown to my sister, Joyce (Salva) Allan, and brothers, Larry Salva and Ken Salva. I thank them not only for being part of my first family and “community” experience but also for being happy to see me when we are able to share time together.
I came into this world as the child of a public servant, a police officer. He was a proud yet humble man who retired as a detective with the Port Authority of New York & New Jersey. Although we never discussed working toward a Ph.D., my father told me at an early age that I could be anything I wanted to be, and I believed him. Arriving at this point in my educational journey is either accidental or providential, depending on one’s perspective. At this time and in this place, my first and final thought is, “Thank you, God, and thank you, dad!”
Preface

The National Law Enforcement Memorial Fund (NLEOMF) tracks fatalities, and it reported that 73 officers died in motor-vehicle crashes in 2010. Since there is no central data repository with statistics on the number of officers injured each year in motor vehicle crashes, obtaining such data would involve contacting individual police agencies (Alpert, personal communication, Jan. 8, 2010). Academic research in the field of criminal justice with a focus on police driving is scant and focuses mainly on pursuit driving and policy (Alpert, 1987, 1997; Alpert & Dunham, 1990). While the relatively small number of police officer traffic-related fatalities may have gone unnoticed in the past, the problem of police crashes was brought to the local public’s attention in 2009 when the Las Vegas Metropolitan Police Department lost four officers in motor-vehicle crashes and news outlets reported that three of the four were not wearing their safety belts. As this research project began, traffic crashes nationally were the leading cause of officer deaths for 13 consecutive years (NLEOMF, 2011). As it concluded, traffic-related incidents were the leading cause of fatal injuries to officers in 14 of the last 15 years (NLEOMF, 2013).

While the NLEOMF collects and maintains data on the causes of officer deaths, its mission is to memorialize fallen officers rather than to conduct research. Despite the fact that police officers are the experts in crash investigations, it appeared as if little was known about the characteristics of crashes that resulted in deaths of police officers until two years ago when two data sets maintained by the federal government were combined for an in-depth analysis. They were presented for the first time by a retired state police crash investigator at a workshop I attended at the 2011 National Institute of Justice
Annual Conference in Arlington, VA. The presenter unknowingly encouraged me by confirming the relevance of this under-studied area.

In his discussion of how science is used in making decisions, Pielke (2007) quite simply defines policy as a “decision,” politics as “bargaining, negotiation, and compromise in pursuit of desired ends,” and science as the “systematic pursuit of knowledge” (p. 37). I have been told by scholars that one reason why more studies have not focused on this topic may be because police work is considered to be inherently risky and attempts to generalize about the entire population based on the small number of officers killed annually in motor vehicle crashes may yield idiosyncratic results.

Cognizant of the fact that the number of police officers who die in crashes is not a large number, I decided to proceed. Driven by the knowledge that some things worth pursuing are not easily obtained, I persisted in my efforts. My motivation was three-fold: first, to satisfy my own long-standing curiosity and work on a topic I care about; second, to contribute to the existing literature and knowledge by collecting and establishing baseline data; finally, and perhaps most importantly, to pay tribute to those police officers who, in serving the public, died in the line of duty.
# Table of Contents

Abstract ........................................................................................................................................... iii

Acknowledgements........................................................................................................................... v

Preface ............................................................................................................................................. viii

Chapter 1 Introduction .................................................................................................................... 1

Chapter 2 Literature Review .......................................................................................................... 9

Chapter 3 Theoretical Framework .................................................................................................. 42

Chapter 4 Research Design and Methods ...................................................................................... 46

Chapter 5 Findings ......................................................................................................................... 64

Chapter 6 Discussion ...................................................................................................................... 93

Appendix A Survey Items .............................................................................................................. 102

Appendix B Survey Codebook ...................................................................................................... 114

Appendix C Hierarchy of Concepts ............................................................................................... 121

References ....................................................................................................................................... 122

CV .................................................................................................................................................. 134
### List of Tables

| Table 4.1 | Summary of Relevant Categories, Variables, and Survey Items | 47 |
| Table 4.2 | Frequency Distribution of City Agencies by Size | 54 |
| Table 4.3 | Frequency Distribution of County Agencies by Size | 55 |
| Table 5.1 | Comparison of Respondent Sample to Target Population | 65 |
| Table 5.2 | Respondent Demographics | 66 |
| Table 5.3 | Driving Policies | 71 |
| Table 5.4 | Driving Training | 73 |
| Table 5.5 | Organizational Culture | 75 |
| Table 5.6 | Hypothetical Policy Violation; Ignore Command End Pursuit | 79 |
| Table 5.7 | Hypothetical Policy Violation; Speed | 79 |
| Table 5.8 | Hypothetical Policy Violation; Seat Belt | 80 |
| Table 5.9 | Hypothetical Policy Violation; MDT | 80 |
| Table 5.10 | Hypothetical Policy Violation; Cell Phone | 80 |
| Table 5.11 | Hypothetical Policy Violation; Texting | 80 |
| Table 5.12 | Chief’s View of Sanctions/Discipline – Should/Would | 85 |
| Table 5.13 | Within-Group Comparison of Means, All Agencies in Paired-Samples | 86 |
| Table 5.14 | Between-Group Severity Means Comparison, Independent Samples | 88 |
| Table 5.15 | Between-Group Sanction Means Comparison, Independent Samples | 89 |
| Table 5.16 | Predictors of Motor Vehicle Related Injuries | 91 |
## List of Figures

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Figure 2.1</td>
<td>Three Eras of American Policing</td>
<td>24</td>
</tr>
<tr>
<td>Figure 2.2</td>
<td>Comparison of UCR Agencies by Type and Size</td>
<td>27</td>
</tr>
<tr>
<td>Figure 5.1</td>
<td>Number of Responding Agencies Injuries-Fatalities by Agency Size</td>
<td>67</td>
</tr>
<tr>
<td>Figure 5.2</td>
<td>Number of Responding Agencies Injuries, Including Fatalities, by Agency Size</td>
<td>67</td>
</tr>
<tr>
<td>Figure 5.3</td>
<td>Additional “Other” Factors</td>
<td>76</td>
</tr>
<tr>
<td>Figure 5.4</td>
<td>Recoded – Top Crash Factors</td>
<td>77</td>
</tr>
</tbody>
</table>
Chapter 1

Introduction

Problem Overview

The issue of police officer safety is a local problem of national concern. When preliminary 2010 law enforcement fatality data were released, the chairman of the National Law Enforcement Officers Memorial Fund (NLEOMF) issued a news release proclaiming an “alarming rise” in officer fatalities from all causes. It stated that officers are expected to “do more today with less, and it is putting their lives at risk” (NLEOMF, 2011). The problem has not been ignored by police leaders. In an article published in Police Chief, a publication of the International Association of Chiefs of Police (IACP) co-authors Gustafson and Cappitelli wrote, “The surprising reality is that the greatest threat law enforcement officers face today is their own patrol vehicles” and “until recently, little has been done to actively understand and address the problem” (2010, p. 38).

NLEOMF, a Washington, D.C. based nonprofit, has been tracking officer fatalities for decades and predicted that if the trend continued, 2010 would be the 13th consecutive year in which more law enforcement officers died in traffic-related incidents than from any other cause. It was. Of the 73 officers killed in traffic-related incidents in 2010, 50 were the result of crashes, 16 officers were struck and killed while outside their vehicles, six died in motorcycle crashes, and one bike patrol officer died after being struck by a vehicle (NLEOMF, 2011). Quantitative researchers may ignore an N this small across a large variation of agencies; qualitative researchers may wonder what happened and why more officers died in vehicle crashes than from firearms and bullets.
In light of statistics that show officers dying at a higher rate than drivers in the general population, this study was designed to survey police leaders for their insight into factors that contribute to the problem.

To aid in understanding the significance of the number of officers killed and put it into context, the number of officers who died in motor vehicle incidents in the U.S. during the first half of 2010 equaled the number of officers who died in traffic crashes during an entire year before the nation’s first mandatory seat belt law was enacted in 1984 in New York State. Disturbing for other police and families of victims is that the number of fatalities in motor vehicle traffic incidents has been declining during the same time period for the general population (FARS, 2011). Federal reports claim that the issuance of federal motor vehicle safety standards as well as behavioral and vehicle safety programs implemented by state and local law-enforcement agencies contributed to the downward trend in motor vehicle fatalities for the general public (Longthorne et al., 2010).

**Research Overview**

The purpose of this research was to learn what the leaders in various police organizations with jurisdiction in states, counties and cities believe are salient factors in crashes causing injuries and death to police officers in the United States. Police chiefs were targeted for this study because although vehicle crashes occur at the individual officer level, police chiefs are responsible for agency performance, creating and implementing police policy, and developing organizational culture. Harvard Kennedy School’s Executive Session on Policing and Public Safety discussed police leadership in the context of challenges and opportunities given that today’s leaders in police agencies
were trained in bureaucratic structures but are being called upon to adapt and be flexible in operating in rapidly changing environments (Batts, Smoot, & Scrivner, 2012).

A goal of this research project was to examine a topic that has been either omitted from or understudied in previous academic research to help reduce the number of injuries and deaths of police officers in motor vehicle incidents. A second goal was to invite practitioners to share their expertise with academic researchers by answering questions through participation in a self-administered online survey. Incidents of concern reflect categories identified and reported by the National Law Enforcement Officers Memorial Fund; those categories include fatal injuries involving automobiles, motorcycles, and those in which officers are “road struck.”

In this study police chief executives were asked questions that revolve around the impact of new technologies on existing policies, factors surrounding policy implementation, and hypothetical situations toward what may be defined as the culture in individual police organizations. The key research question being asked of police chiefs in the survey is, “What appears to be the top contributing condition or confounding factor that YOU believe may lead to on-duty police officer driving-related injuries and deaths in your agency?”

Variables in this study were derived from inductive reasoning and preliminary information gathered from informal interviews with practitioners and academics, as well as from literature reviews in related disciplines. Initially, five categories emerged to inform the independent variables that are believed to exert influence on two dependent variables, deaths and injuries. During the course of the research, the categories were collapsed into four: legislation and politics, public administration, organizational culture,
and social/demographics. The dependent variable, injury crashes, is part of the demographic category.

The research questions posed for this study are drawn from literature in three areas of scholarship: public administration, political science, and criminal justice. Relevant aspects of the vast amount of literature available in each of these disciplines are provided in this study’s review of literature.

Research Approach

The approach used in this study is both applied and theoretical in its framework. Police work may be described as both multidisciplinary and interdisciplinary; thus, the framework constructed and proposed to study the issues of policy and practices related to officer fatalities in motor-vehicle incidents reflects the nature of the target population. In 2009, the Las Vegas Metropolitan Police Department suffered its deadliest year when four officers died in motor-vehicle crashes and three of the four were not wearing their safety belts. It was during this time period that the idea for this research began to take form as the local community grieved with the local police and the media reported on the police agency’s response to the deaths of the officers, who were not only in violation of agency policy but also state law.

The timely importance of this topic was evident when the National Institute of Justice (NIJ) offered a workshop titled “Traffic Fatalities: Preventing A Leading Cause of Officer Line-of-Duty Deaths” at its 2011 national conference – Translational Criminology – Shaping Policy and Practice with Research. NIJ is a branch of the U.S. Department of Justice and serves as the research, development and evaluation agency of the Justice Department (US DOJ, 2011).
The rationale for using academic research from the fields of political science, public administration, and criminal justice as a framework for this study is explained as follows:

**Political Science.**

For the last four decades, the federal government has encouraged the police community through grant-funding initiatives and incentives to use research findings from social science empirical studies toward better understanding and better outcomes in addressing real-world problems in the communities they serve (Rojek, Alpert, Smith, 2012). One of the key recommendations of the 1967 President’s Commission on Law Enforcement and Administration of Justice was for the federal government to fund research because state and local agencies did not have their own resources to improve practices. Local, state, and federal branches of government share authority and responsibility for decisions on policy, infrastructure, maintenance, delivery, and services associated with conditions related to all modes of transportation that serve this nation. Millions of Americans depend on and are affected by transportation systems in the United States each day. Federal funds are appropriated to states to construct, maintain, and support more than 8.2 million miles of roadways in the United States. In this study, legislation is examined as a factor in political science literature for its influence on police organizations.

**Public Administration.**

The transportation department’s mission is to “contribute fast, safe, efficient, and convenient transportation at the lowest cost” while conserving the national resources (U.S.DOT, 2006). According to its strategic plan for the years 2006 through 2011, the
DOT’s focus is the general welfare, economic growth and stability, and the security of the nation. Toward that end, federal funds from the National Highway Traffic Safety Administration are distributed to states and local entities for project implementation, including traffic safety education and enforcement programs. This proposal acknowledges that police agencies and their officers are bureaucratic actors needed for successful implementation of such programs. Scholars have written about traffic safety with regard to the general public’s use of safety belts, issues related to driving under the influence of alcohol and other drugs, and more recently about the impact of texting and talking on cell phones with regard to distracted driving. Public administration literature related to organizational theories and management practices is relevant to study of traffic safety policy implementation and outcomes. Social, economic, and public health considerations also must be factored into organizational culture and individual decision-making; therefore, this study also draws upon theories of organizational management, organizational culture, and leadership in organizations.

**Criminal Justice.**

Law enforcement’s role and responsibilities in helping to reduce the number of deaths and injuries in highway crashes were featured in the well-respected police magazine published by the International Association of Chiefs of Police (Ashton, March 2010). The author, a police chief, stated, “Officers understand more than most that the lives wasted in traffic crashes are far more than mere numbers: each fatality is a loss to someone: a parent, a child, a sibling, a teacher, a neighbor, a friend, or even a partner” (p. 81). In listing contributing factors and reasonable goals, the chief reinforced the effectiveness of properly worn seat belts, improved vehicle safety designs, roadway...
improvements, and targeted patrols aimed at impaired drivers. The article did not discuss police behavior or setting good examples by modeling prescribed behavior. If the use of technology in vehicles affects the driving performance of the general population, it is reasonable to believe that technology affects the driving performance of police officers. Criminal justice literature related to police management, leadership, and culture is relevant to police policy implementation and public personnel outcomes.

A paper, written as part of a series in connection with the Harvard Kennedy School’s Executive Session on Policing and Public Safety on the topic of police leadership and its challenges, focuses attention on efforts to address issues related to managing today’s police culture. The paper states “there are forces to which police organizations must adapt and evolve in order to remain effective in a changing world” (Batts, Smoot, Scrivner, 2012, p.1). American police leaders know that balancing “complex demands” is only one of their roles; as leaders of “multi-layered bureaucratic” police departments they are expected to adapt, keep pace with the technological changes and data driven environments in which they operate and may view as challenges or opportunities (p. 15).

The policies and practices adopted by leaders of police organizations to meet those challenges are a focus of this study. As previously stated, relevant concepts are categorized but are not easily bound, and may, at times, overlap. For example, does cell phone legislation fit into the category of political science or public administration? Which category should include discussion of police violations of driving policies or breaking traffic laws? It may be logical to include it in criminal justice, public administration, or political science. Thus, discussion about policy implementation and
other broader issues will be presented in the literature review and defined in the contexts in which they are relevant to the issue of police culture and behavior.

The outline for the next chapter and the remainder of this document is as follows:

Chapter 2 begins with an overview of literature in three disciplines that reflect the multi-disciplinary nature of this research study. It concludes with a review of literature related to the culture of police and organizational culture theory.

Chapter 3 presents the theoretical framework of this study. It begins with a description of the conceptual framework and concludes with an explanation of how organizational culture theory may be applicable to fundamental practices in police organizations.

Chapter 4 describes the overall strategy of the research design and the methods used. It presents the general research question from which more specific questions were developed. The chapter also describes the survey strategy, access to the sample frame, data collection process, and response rates related to e-mail surveys. It concludes with a description of the analytic strategy used in the study.

Chapter 5 contains findings to answer research questions. The chapter begins with an overview of respondent demographics. Descriptive statistics related to key variables (policies, training, culture, and demographics) are included, and consideration of culture as an avenue to explore in greater detail. It concludes with results of statistical analysis and inferential statistics, including binary logistic regression.

Chapter 6 contains a discussion of findings and limitations of the completed study, examines policy implications, and makes recommendations for areas of continued research.
Chapter 2

Literature Review

Overview

Three primary areas of academic research in the social sciences form the basis of this literature review: political science, public administration, and criminal justice. These three areas cannot be defined succinctly or viewed as having discrete boundaries, yet they individually are relevant to the research questions in this study. Combined they allow us to better understand the complex nature of the work of police practitioners related to driving policies and practices.

Chapter 1 included a brief synopsis of how and why literature in each of the three academic areas is deemed relevant to this study and my research questions. Those three areas are more fully explored in this chapter, which follows a schema to reflect the multidisciplinary and theoretical framework that guides the inquiry process. This chapter presents relevant aspects of the vast amount of literature within each of the three research areas relevant to the research topic. To explore areas where little academic research exists, publications from government and police practitioner references are used to help fill in gaps within scholarly literature. This chapter concludes with a review of research related to the culture of police.

Political Science.

The Highway Safety Act of 1966 created a unique partnership among federal, state, and local governments to address the issue of highway safety. The U.S. Department of Transportation is the lead agency responsible for administering all modes of safe and effective transportation. Section 402 of the Highway Safety Act of 1966 authorizes the
federal government to provide leadership and assistance for effective state safety programs, and it requires all states to have a highway safety program. The formula is based on population and road miles. Federal grants to states for policy and program implementation pre-date the federal Constitution and exemplify fiscal federalism as federal regulations dictate state and local services (Wilson, 2007). Congress from time to time earmarks other funds for special purposes and for incentive grants to states that qualify based on criteria that may include laws and provisions related to goals such as occupant protection or countermeasures to alcohol-related crashes.

The value of injury prevention is “underappreciated” as a major health problem (Miller, et.al, 2000). Public health advocates have lobbied for stronger laws in all states pointing out that as motor vehicle crashes are a leading cause of death and injury in the U.S., prevention of childhood unintentional injuries, which result in long-term disabilities and expensive lifetime medical costs, add to societal burden (Miller et al., 2000). Houston et al. (1996) concurred with previous empirical research that “seat belt laws have been found to improve traffic safety” and found in a pooled time series analysis of fatal and serious injury patterns in all 50 states for the period of 1975-1991 that “seat belt laws significantly reduce state fatal injury rates.” The study concluded that “primary enforcement and all-seat coverage provisions appear to be particularly effective in reducing fatality rates” (p.155). It found that seat belt laws significantly impact state fatality rates and may contribute to a “cascading effect” in which more serious injuries are reduced to less serious injuries because of safety belts (Houston, et al., 1996).

In his discussion about how academics study organizations and view government agencies, Wilson explains that studies focused on elected officials generally employ a
“top down” look at what government does (1989, p. 11); it is when the work of government is viewed from the “bottom up” that allows a more focused picture of what government agencies do and how administrative processes are suited to the tasks the agencies are expected to perform (p. 12).

In theory, laws and regulations are effective instruments for ensuring successful outcomes at both the federal and state levels when the goal is to get large population groups to adopt safety behaviors and to prevent the occurrence of injuries (Schieber, Gilchrist & Sleet, 2000). A policy statement on the website of the National Highway Traffic Safety Administration (NHTSA) informs that “The primary responsibility of the driver is to operate a motor vehicle safely” (NHTSA-4, 2011). In practice, federal and state agencies tasked with implementation of traffic safety policies require willing partners, namely local and state police officers, to perform the street-level duties necessary for successful outcomes.

Pioneers in public policy implementation literature, Pressman and Wildavsky argued that studying implementation is important because many of the problems encountered by those carrying out policy mandates are predictable (1984). The tone of the lengthy title of their book speaks volumes about the purpose of their study; the short version is “Implementation.” The longer and complete title is “Implementation: How great expectations in Washington are dashed in Oakland; Or why it’s amazing that federal programs work at all, this being a saga of the Economic Development Administration as told by two sympathetic observers who seek to build morals on a foundation of ruined hopes.”
Pressman and Wildavsky’s well-known research is presented as a case study that begins at the end and asks the question of “why” a $23 million federal Economic Development Administration’s employment program in Oakland, CA, was not successfully implemented. The authors used interviews and documents to piece together significant events that occurred during a span of four years and yielded new knowledge for the academic community about the relationship between implementation and evaluation and the importance of both stages during program design. In their discussion about the complementary relationships between implementers and evaluators, the authors stated that both aspects of policy research are concerned with classifying objectives, which must be viewed within an “evolutionary framework” because objectives are and should be changing as programs evolve, and “It is intelligent to alter objectives to fit resources” (p. 204).

Surface transportation is an important federal and state issue because of its impact on commerce and industry as well as on individuals’ dependence on safe and affordable options to get to and from work and other destinations (Wilson, 2007). For at least the last decade and largely through the efforts of the National Highway Traffic Safety Administration (NHTSA), the number of fatalities has been on a steady decline despite the fact that the number of miles driven has increased. In a press release issued April 2011, U.S. Transportation Secretary Ray LaHood announced that “the number and rate of traffic fatalities in 2010 fell to the lowest levels since 1949” with just under 32,800 deaths and a rate of 1.09 fatalities per 100 million vehicle miles traveled (NHTSA-3, 2011).
The wording of the problem statement in the National Highway Transportation Safety Administration 2020 Report titled “People Saving People: On the Road to a Healthier Future” is simply stated: “Motor vehicle crashes are the number one safety problem in American transportation” (U.S. DOT, 1997). The report stated that in 1966, when more than 50,000 people died in traffic crashes and the fatality rate was three times higher than it was when the report was published, Congress created the Department of Transportation and the National Highway Safety Bureau in response to what it called a public health crisis. Its goal was to reduce preventable roadway deaths and traumatic injuries by (US DOT, 1997).

In an overview of public policy implementation research not specific to transportation policy, Lester et al. (1987) credits Van Meter and Van Horn in 1975 for being the first to develop a model that included six variables to link policy to performance in a “top-down” direction and depiction (p. 202). Their variables were policy standards and objectives; policy resources; inter-organizational communication and enforcement activities; organizational characteristics; economic, political, and social conditions; and disposition of implementers (p.203). Two other “top down” models of the public policy implementation process were put forth by policy scholars Sabatier and Mazmanian (1980) and Edwards (1980).

Writing in Policy Studies Journal, Saetren (2005) set out to dispel and rectify what he termed “Facts and Myths about Research on Public Policy.” He summarized results of a quantitative bibliometric survey of literature surrounding policy implementation to trace not only the number but also the origin of empirical research. He finds that: 1.) academic dissertations, despite being a rich but ignored source of multi-
disciplinary new knowledge, are underrepresented in much of the research (p. 559); 2.) authors from the Western hemisphere or with a focus on policies in the Western hemisphere account for most of the literature; and 3.) a bias exists toward certain policy fields (p. 571). Saetren addressed the notion that policy scholars became disinterested in studying implementation and said one factor that may have irritated and caused some scholars to abandon implementation studies was the “long and protracted” debate surrounding “top down” vs. “bottom up” ways of analyzing policies and practices. He argued that it is the responsibility of policy scholars to continue working toward development of a theory of policy implementation (p. 573) and that there is a need not for more but for better research (p. 574).

In her book Policy Paradox: The art of political decision making, Deborah Stone (2002) writes that Americans would like to replace politics with rational decision making. She claims that American see politics as “messy,” “unpredictable,” and an area dictated by emotion, self-interest, and power. They see policy as “rational analysis, objectivity, allegiance to truth, and pursuit of the well-being of society as a whole (p. 376.) Stone claims that policy analysts discuss policy-making as a “sequential process that sometimes gets out of order” (p. 377). She likens it to that of a conveyer belt in which an issue is placed on an agenda, moves from committees to a voting group where it becomes a policy or program before moving on to the bureaucrats and into the field for implementation and evaluation (p. 377). Her point is to challenge the dichotomous placement of analysis and politics and she argues that “reasoned analysis is necessarily political” (p. 378). Societies use policies as instruments or solutions to problems to shape people’s behaviors (p. 261). Stone believes such policy actions are not permanent
solutions but “ongoing strategies for structuring relationships and coordinating behavior to achieve collective purposes” (p. 261).

Meier and O’Toole’s (2006) policy implementation research challenged the widespread and commonly held notion that political factors exert a great deal of influence on the actions of bureaucrats, and they argued that “work grounded in representative bureaucracy” will help scholars balance the equation that had been weighted toward “misleading inferences about the forces shaping bureaucratic action” (p. 177). Though the scholars studied school districts and used data from 1043 districts in Texas in their analysis to find that bureaucratic values exert far more influence on bureaucracies than political values do (p. 177), an argument may be made that these findings might also be relevant to studies of other “street-level” bureaucracies, such as police agencies.

Traffic safety experts today are discussing whether legislators should be extending bans on cell phone use from secondary enforcement to primary enforcement to lower motor vehicle fatality rates (Fowles et al., 2010). Such debates are complicated by competing goals, interests, objectives and values. Goal conflict is found in the struggle between bureaucratic values and political factors (Meier and O’Toole, 2006).

For several decades, police officers have acted in the roles of enforcer and educator for traffic safety behavioral programs targeted toward the general population of drivers and passengers on public roadways. The police are at once “instruments of public policy” and “interpreters of policy applications” (Hunt and Magenau, 1993, p.60). An example of the dual roles held by police officers is seen in the collaborative efforts to reduce highway fatalities among the general public is the Click It or Ticket campaign, which began in 1993 in North Carolina as a state-wide occupant protection campaign.
The annual Memorial Day campaign is funded by Congressional appropriations. NHTSA relies on support from state and local law enforcement agencies working in partnership with state highway safety offices, traffic safety advocates, and local and state law enforcement officers to implement the program (Tison et al., 2008). NHTSA also makes direct appeals to the general public to operate motor vehicles responsibly by providing content on its official website that includes policy statements, press releases, data, and frequently asked questions on a variety of other safety topics, including the dangers of cell phone use (“Just Put it Down”), impaired driving, proper use of child safety seats, and teen driving (U.S. DOT, NHTSA, 2011).

A large body of academic literature exists on behavioral interventions, vehicle safety standards, and strategies targeting prevention of motor vehicle injuries. Public health professionals – including physicians and other members of the medical community – academicians, and data analysts employed by the federal government and with auto makers have concluded that the use of safety belts is statistically and substantively significant in reducing the number of fatal and injury crashes, yet “state laws related to occupant protection and drunk driving are a patchwork quilt, varying considerably from one state to another” (Rivara et al., 1999). A national repository, the Fatality Analysis Reporting System (FARS) collects crash data from local and state agencies, and maintains a database that serves as the government’s census of all crashes on the nation’s public roads that result in death within 30 days of the crash. FARS was established in 1975 and provides data to NHTSA, Congress, academics, and the American public.

Theoretically, the majority of unintentional injuries are preventable, and treatment generally costs more than prevention (Miller, et al., 2000). Successful injury prevention
strategies are not universally practiced, and federal agencies do not fund injury prevention research and programming with large amounts of public dollars (Miller, et al., p.137).

Most scholarly literature related to traffic injuries is focused on the general public, but in an article published in the *Journal of Trauma: Injury, Infection, and Critical Care*, FARS data from 1997 to 2001 was used to examine injuries and deaths to occupants in marked police vehicles. Researchers studied both emergency and non-emergency responses to test for the reduction in police officer deaths if officers increased their use of safety belts (von Kuenssberg Jehle, Wagner, Mayrose, Hshmi, (2005). Their review suggested that “interventions and legislation that improves the rate of seat belt use among police officers should be investigated to reduce the number of police officer fatalities” (p. 120).

Until New York passed the first safety belt law in 1984, the use of safety belts was voluntary and largely driven by issue advocates at the national Ad Council who encouraged individuals through public safety announcements to drive safely and to buckle up for safety (AEF). Scholarly literature in the areas of preventive medicine, communication, psychology, and sociology published findings that messages alone were ineffective at significantly increasing the use of safety belts (Robertson, 1974, Soames Job, 1988).

A study in a major U.S. metropolitan area in 1970 found usage rates at seven percent for drivers in vehicles built in 1968 and later who were using lap and shoulder belts; rates were an additional 16 percent for those using lap belts only (Robertson et al., 1974). Societal change then began shifting attention to regulation and legislation
combined with education campaigns to promote the use of safety belts. By early 1986, 20 states and the District of Columbia had enacted belt use laws (Williams, Lund, Preusser and Blomberg, 1987, p. 243). Today, 32 states, the District of Columbia, American Samoa, Guam, the Northern Mariana Islands, Puerto Rico and the Virgin Islands have primary seat belt laws, meaning that police may stop a driver who is unbelted. Seventeen states have secondary laws, meaning that police who stop a driver for a different reason also may cite an unbelted driver or passenger. New Hampshire has enacted neither a primary nor a secondary seat belt law for adults, although the state does have a primary child passenger safety law that covers children under 18 (GHSA, 2012).

**Public Administration.**

The field of public administration in the United States is generally traced to Woodrow Wilson’s 1887 “The Study of Administration,” in which he called for a “science of administration” and the “detailed and systematic execution of public law” (Fry, 1989, p. 2). In the United States, the process of managing public personnel has evolved over the span of two centuries. Public managers today make decisions about public jobs, including which ones are critical, what functions can be outsourced, and what values will be reflected in service delivery (Klingner et al., 2010). Sometimes referred to as the “dean of public administration,” Luther H. Gulick is credited with the well-known acronym POSDCORB, which stands for the administrative functions in planning, organizing, staffing, directing, coordinating, reporting, and budgeting (Wilson and McLaren, 1972; Fry, 1989). Within the past 10 years, the federal government initiated The President’s Management Agenda, which stressed the importance of strategic human resources planning (Klingner et al., p. 74) and managing “human capital,” which elevates
workforce planning and emphasizes strategic thinking (p. 65). Managers of human
resources focus on four main functions: planning, acquisition, development, and
sanctions. All are essential in reaching goals and fulfilling missions of public
organizations at any level of government (p. 4).

Public administrators commonly are charged with carrying out organizational
missions and reaching identified goals; while all public administrative processes require
time and human capital, not all public managers supervise workers with high degrees of
authority and discretion as police chiefs and managers do. Lipsky’s book, Street-Level
Bureaucracy (1980), is a study of various large public bureaucracies that employ
teachers, police officers, social workers, and lawyers with a focus on their job conditions,
workloads, discretion regarding their decision-making authority, and service delivery.
Lipsky frames discussion about the dilemma of street-level workers’ behavior in the
context of power, control and ambiguity, which is persistent in bureaucracies. Street-level
bureaucrats typically work in jobs with goals and performance measures that are both
“conflicting and ambiguous” (p. 40). He explains that ambiguity can be traced forward
and backward in time: those who craft legislation may intentionally desire ambiguity,
leaving details to those tasked with implementation. Those who implement toward
“client-centered” rather than “organizational goals” are caught in an environment where
contradictory expectations add to the ambiguity and goal conflicts (p. 45).

In his description of administrative and institutional behaviors with discussion of
public “maladministration” and “bureaupathologies,” Caiden claims that the largest
roadblock for public administrators is organizational complacency and inertia (1991, p.
486). He describes a scenario in which public servants go about their daily duties with the
knowledge that changes might improve performance, but without changing routines and patterns of behaviors or acknowledging responsibility for their actions (p. 491). He claims an outcome of such inertia, if left uncorrected, is to harm the reputation of public administration).

Academics generally view government agencies from a perspective influenced by Max Weber, which draws attention to the top-down model in which bureaucrats are neutral servants of political masters, and later by business economic theories (Wilson, 1989). Academics typically focus on structures, purposes, and resources of the organization. In a revised preface (2000) to his book *Bureaucracy: What Government Agencies Do and Why They Do It*, Wilson discusses significant changes in the way government does business made possible through legislation in the 1990s when President Bill Clinton and Vice President Al Gore led efforts officially known as the National Performance Review (NPR). Since then, long-time public administrators at all levels of government adopted strategies to accommodate the shift in management philosophy. Existing organizational models and systems, especially in the areas of procurement and personnel policies, were changed with the goal of being more entrepreneurial, competitive, efficient, and effective. In a departure from previous administrative practices, the notion of accountability was now directed to the public rather than to politicians, Wilson claimed.

Bureaucracies are complex organizations that in reality do not conform to “scholarly theories or popular prejudices” (Wilson, 2010, p. xvii). Wilson maintained that an understanding of how front-line workers, or *operators*, learn what to do is necessary in order to understand a government bureaucracy. In organizations with clear operational
goals, employees are able to observe and construct information on how to do their jobs. More commonly, however, when agencies have vague or inconsistent goals, circumstances become more significant and employees are prone to rely on prior experiences, personally-held beliefs, and external pressures. Wilson believed that many public agencies, including police departments, resist efforts to apply general rules to specific cases and deliberately steer away from efforts to establish clear rules and policies. For example, in police departments, new officers – *rookies* – are told to “forget” about what they learned in the police academy training classes and to follow the lead of their field training officers (p. 37).

In some bureaucratic organizations, rank-and-file personnel respond in part to formal goals of the agency but their authority and discretionary actions more often depend on the situations they encounter (Wilson, 1989). Experiences, beliefs, peer expectations, and values embedded in the work environment become blended into what some describe as an *organizational culture*. Wilson described this as a “distinctive way of viewing and reacting to the bureaucratic world” (p. 27). In environments where actions are critically scrutinized by politicians or the citizenry, tasks defined by “situational imperatives” may lead to a culture of caution (p. 42) and peer expectations may determine what an employee decides the job actually is (p. 48).

Fry (1989) credits German sociologist Max Weber not only as one of the founders of modern social science but also as a major contributor to the field of public administration in the United States even though Weber died in 1920 and his work was relatively unknown during the discipline’s early days. Fry wrote that the broad scope of Weber’s interests allowed him to see administration and bureaucracy as “vital” to the
processes of rationalization and authority in organizations, which was tied to Weber’s interest in legal-rational domination in the modern state. Weber identified characteristics of a legal-rational society’s bureaucracy to include an administration that operates on a continuous basis, tasks that are divided into functions within distinct areas with each having authority and sanctions, hierarchical positions, and internal controls based on impersonally applied rational rules (p. 31). Such characteristics appear to be especially relevant to police agencies.

In their view of the relationship of modernism and bureaucracy with decisions and conventions of social action, Hunt & Magenau state that the hallmark of modern rational-legal bureaucracy is its reliance on formal legal bases of authority and due process (Hunt and Magenau, 1993). They explain that actors are role-players carrying out duties defined by their positions, which they do not “own.” Their authority, rights, and responsibilities, which may appear to be power, belongs to their positions; their relationships and interactions with others depend on the status of their roles rather than to their individual characteristics (p. 12). Hunt and Magenau state that strategies used by police to manage their public activities emerge from adaptations of the bureaucratic ideal and credit Manning (p. 128) with the assertion that “police professionalism cannot be easily separated from the bureaucratic ideal epitomized in modern police practice” (p. 22).

**Criminal Justice.**

Policing in America grew and took shape from the English version, which was designed as an “efficient” public administration model with emphasis on depoliticized rational decision making, administrative accountability, and fact-based action (Manning, 1977). During the first era of the American police system, generally recognized as the period between the 1850s and the 1920s, police officers’ duties covered a broad array of
services and were conducted on foot. In the political era, police organizations were decentralized and officers functioned as problem solvers. Outcomes were based on political satisfaction. Despite efforts and desires to “depoliticize” them, urban American police forces were seen to be allies with urban political machines into the early 20th Century (Hunt and Magenau, 1993, p.21). Efforts to reform or transform police agencies did not happen at once but they occurred as a result of internal and external forces and were necessary so police would remain legitimate in the public’s eyes and could continue to enforce the law and to maintain order in their own communities (Barlow and Barlow, 1999).

Next to war, the second greatest immediate threat to people and property is criminality, and society’s inability to diminish crime imposes heavy burdens on citizens not only in loss of life and property costs but also in terms of psychological well-being due to fear of crime (Wilson and McLaren, 1972). In their initial discussion of the role of police administrators’ responsibilities and relationships, the authors claim that a police department’s main purpose is the “preservation of peace and protection of life and property against attacks by criminals and injury by the careless and inadvertent offender” (p. 5). They claim that tasks of the police in the 1970s in the United States differed from those a century earlier because modern technology, such as automobiles, became instruments of choice for use by adult criminals and delinquent juveniles engaging in criminal acts. They wrote, “Traffic accidents and congestion demand a large part of police attention, and transient populations resulting from rapid and easy transportation have added to the growing list of problems” (p. 7).
Editors of a collection of classical and contemporary readings, “The Police in America” discuss the function of police in the United States and refer to police as “social institutions that grew and evolved in response to political, economic, and social forces” (Brandl and Barlow, 2004, p. 1). They refer to “The Evolving Strategy of Policing” by Kelling and Moore (1988) as a widely-accepted article that describes three eras of policing but acknowledge other perspectives. For purposes of this study, Kelling and Moore’s framework, which divides the history of American policing into three eras, political, reform, and community policing is useful. Characteristics are shown in Figure 2.1.

![Three Eras of American Policing](image)

Figure 2.1. Characteristics of policing are compared across three eras of American policing. Adapted from Kelling, G.L. and Moore, M.H. (November 1988). *The evolving strategy of policing* (Report No.4) U.S. Department of Justice, Office of Justice Programs, National Institute of Justice.
In *Fixing Broken Windows*, Kelling and Coles (1996) devote considerable attention to the stages or eras of American policing and how the police role has shifted from *order maintenance* to *crime control* to *law enforcement* and then “*crime fighters*” at the front end of the criminal justice *system* (p.70). Police agencies were conceived as administrative arms of local government to provide a “variety of services” (Kelling and Coles, 1996, p. 84). In a chapter titled *The Failure of Past Policing Strategies*, the authors blame academics in the “criminal justice industry spawned by the Law Enforcement Assistance Administration” for spreading the idea that if the police did their jobs (arrested criminals) at the front end of the system but the crime rate still increased, then some other part of the criminal justice system was to blame (p. 84). The system concept is “faulty” (Kelling and Coles, p. 83); the authors argue that components do not have common goals (p. 84).

Twenty-five years earlier, O.W. Wilson and McLaren discussed the impact and attention of several national commissions focused on the role of police in the control of crime and violence (1972). They wrote that the 1967 President’s Commission on Law Enforcement and the Administration of Justice led to creation of the Office of Law Enforcement Assistance Administration in the U.S. Department of Justice; its “immediate benefit” was focusing national attention on the problem of crime and the subsequent “financing of comprehensive state law enforcement planning and the massive grants and action programs resulting therefrom” (p.10, 11). To put the salient issues in context, Wilson and McLaren wrote “the various functions of the law enforcement and criminal justice process can no longer be considered as isolated activities, unrelated to one another” (p. 11) because the Omnibus Crime Control and Safe Streets Act of 1968
defined law enforcement to include police, prosecution, courts, and corrections as an “entire system of criminal justice” (p. 11). The authors also noted that until recently, meaning 1972, no college or university in the U.S. offered a degree in the administration of criminal justice (p. 11).

**Agency demographics.**

It is important to know that not all agencies with police authority are the same. Some differences involve jurisdiction and authority (tribal areas, college campuses or parks), which impact mission, purpose, training, and operations. Other differences involve settings (urban, rural), size, (very large to very small), and funding resources.

Approximately 18,000 agencies representing 94.6 % of the total population participate in the Federal Bureau of Investigation (FBI’s) voluntary Uniform Crime Reporting (UCR) program. The program defines law enforcement officers as “individuals who ordinarily carry a firearm and a badge, have full arrest powers, and are paid from governmental funds set aside specifically for sworn law enforcement representatives” (FBI, 2012). Considerably more police agencies are small or very small. Large agencies make up a small percentage of the total population. A breakdown of local city and county agencies, based on number of police officers in each agency, is shown in Figure 2.2.
As illustrated, the majority of police agencies in the U.S. are either small or very small. An assumption about small communities is that police can live, work, and know their neighborhoods in a way that officers in large or very large agencies cannot, unless they get out of their patrol vehicles and get to know the neighborhoods they are to serve. Eterno wrote that the term “community” refers to the nature of the neighborhood in which the officer works and Wilson (1977) pointed out that “the socioeconomic composition of the neighborhood is critical to explaining police behavior.” Many factors influence police behavior, such as the “socioeconomic composition of the community, the law enforcement standards set, implicitly or explicitly, by the political systems, and the special interest and concerns of the police chief” (Wilson, 1977, p. 143; Eterno, 2003, p.25).
Social considerations.

In addition to the demographic differences, leaders in police agencies must continually adapt to changes in society as they balance stability and predictability with innovations and incremental adaptations. One way police practitioners do this is by reaching out or responding to federal agencies that were formed as a result of the 1967 President’s Commission on Law Enforcement and the Administration of Justice. The President’s Commission “called for the use of social science to assist law enforcement agencies in their efforts to understand and better address the problems they face in their related communities (Rojek, Alpert, Smith, 2012, p. 1). Among the federal agencies charged with helping police practitioners through federal grant programs are the National Institute of Justice, the Bureau of Justice Assistance, and the Office of Community Oriented Policing Services. To what extent resources are used is still being studied. Rojek, Alpert, and Smith surveyed a random sample of 2,015 state and local agencies drawn from among 16,000 listed in the 2009 National Directory of Law Enforcement Agencies in an exploratory study funded by a grant from NIJ, the Office of Justice Programs, and the US Department of Justice to discover to what extent police practitioners use empirical research to help them develop policy and improve operations. The sample frame was stratified by community size, region, and agency type; survey questions were directed to the executive (chief, sheriff, director or superintendent) of each agency. “These individuals, along with their senior staff, are the key decision-makers on the implementation of policy and operations” (Rojek, et al, p.5, 6). They noted they intentionally did not define the term “research findings;” they also stated, “Although the research findings vetted through some form of peer review process may be
the preferred academic standard, there is little evidence that such consideration is given in the police practitioner community” (p. 6). Findings revealed that the majority, nearly 75 per cent of police executives reported using research sometimes or very often to inform decisions (p. 9); however, the definition of what constitutes research appears to vary from that defined by the scholarly community. For example, nearly 60 per cent of the respondents reported using NIJ publications (p. 10) and only 34 per cent of agency respondents reported using peer-reviewed journals that publishes research conducted by the academic community (p.8).

The study also revealed that practitioners commonly consulted professional journals, namely Police Chief Magazine, the FBI Law Enforcement Bulletin and other publications of the International Association of Chiefs of Police (IACP), and it stated that partnerships between university-based researchers and police in their communities are necessary and desirable. They note that the IACP formed a Research Advisory Committee (RAC) with responsibility for promoting such relationships, and that the goal is to encourage decision-making with a basis on rigorous empirical evidence to become practice (p. 10).

In the early 1980s, an Executive Session on Policing was conducted at Harvard’s Kennedy School that “helped resolve many law enforcement issues of the day” (Batts, Smoot, Scrivner, 2012). In recognition of the “changing environment” Harvard’s Executive Sessions were reconvened and an Executive Session on Policing and Public Safety was held where “individuals of independent standing” work together to “rethink and improve society’s responses to an issue.”
In the first of a series of papers as a deliverable of the session, its authors note “there are forces to which police organizations must adapt and evolve in order to remain effective in a changing world” (Batts, Smoot, Scriver, 2012, p.1). Their paper, “Police Leadership Challenges in a Changing World,” argues that police forces face an “urgent need for a new way of managing and leading police agencies” driven by a “new generation of officers” and the “significant opportunities and challenges in the availability of new technology” (p. 2). They examine the traditional organizational police agency model, multi-generational personnel, and traditional methods used to track and measure a department’s overall effectiveness, which has often been based on response time or number of calls for service (p.3).

The authors describe characteristics of contemporary employees and cite research (Rein, 2010) that indicates that “almost one in three new federal workers being hired is 29 years of age or younger and is part of the texting generation (p.5). The details raise the following rhetorical questions: “Will the new generation, like those before it, need to change in order to fit into the prevailing police culture, or will the traditional structure and the culture of policing need to change?” (p. 5). Rapid technological innovations, such that allow virtual roll calls and virtual membership meetings, are often referred to as drivers of change, are relevant to this study of police practices.

*Relevant research findings.*

Police administrators tasked with deployment of resources have learned through research by criminologists and sociologists that rapid response to the general public’s calls for service does not significantly impact the apprehension of suspects (Apel & Nagin, 2011). In another study (von Kuenssberg Jehle, Wagner, Mayrose, and Hashmi,
2005, p. 119) found empirical evidence that indicates the relative risk of death for unbelted police vehicle occupants paralleled that of unbelted civilians who died in passenger vehicles in 2001. The study published in The Journal of Trauma Injury, Infection, and Critical Care analyzed crashes in which 516 occupants in police cars met the criteria for the study of police vehicle crashes in the U.S. between 1997 and 2001. The authors hypothesized that “there would be a significant reduction in police officer deaths if officers increased their use of seat belts” (p. 119). The study used crash data from the Fatality Analysis Reporting System (FARS) and concluded that within its study population of 516 occupants, the risk of death was 2.6 times higher for unbelted occupants of police vehicles than for belted occupants. A police vehicle was defined for this study as an automobile specifically labeled with official identification such as the words “sheriff” or “police.” Results indicated that of the 516 occupants, 410 survived and 106 died. Of those who died, 103 were in the front seat and three were in the rear seat. Fifty-nine percent were responding to non-emergency calls, and safety belt use was not statistically related to emergency vs. non-emergency calls for service.

In their discussion, the study’s authors point out a paradox: that police officers often issue tickets to drivers or their unbelted passengers, yet officers may be exempt for a variety of reasons, including the perception that belts encumber them. They also note that “even those police departments that create seat belt rules for their officers often do not enforce them” (p. 120).

A decade later in January 2011, a NHTSA technical report based on FARS data from 2000 to 2008 was published and presented by James Bean at the National Institute of Justice’s Annual Conference in Arlington, Va. in June 2011. Among its many findings
was that, while the number of law enforcement officers struck by vehicles or killed in motorcycle crashes has remained fairly stable, the number of officers killed in automobile crashes has increased since the end of the 1990s (Noh, 2011).

The study compared characteristics of crashes involving law enforcement officers with those of non-law enforcement officers. Significant differences were found with regard to a variety of variables, among them crash time, impact point, vehicle maneuver, first harmful event, most harmful event, seating position, and restraint use. The report suggested that findings “can be useful” to agencies in addressing vehicle safety issues (Noh, p. 38). The report also dispelled the incorrect assumptions that the majority of officers killed are young rookies and that population increases were not accounted for. Both assumptions were found to be incorrect in an analysis of data in the Fatality Analysis Reporting System (FARS) dating back to 1975 (Gustafson and Cappitelli, 2010, p. 39).

In their discussion about risk control techniques, Head and Herman (2002, p. 71) focus attention on nonprofit organizations and state that risk managers rely on foundations of five risk control techniques that allow them to create strategies. Many organizations use a combination of all five: avoidance, loss prevention, loss reduction, segregation of exposure units, and contractual sharing for risk control. Each organization decides what combination of techniques will work best after it determines how and why accidents occur in the course of its service delivery (p. 73).

It is reasonable that public organizations, such as state or local police agencies would find risk assessment and risk management methods used by nonprofits similarly useful. It is unknown if the following four nonprofits, The National Law Enforcement
Officers Memorial Fund, the International Association of Chiefs of Police, the Commission for Accreditation of Law Enforcement Agencies, and the Governors’ Highway Safety Association, are working together in formal partnerships or with academic researchers to study the pattern and problem of police officer deaths in motor vehicle incidents.

**Police Culture.**

Academic interest in studying the existence, formation and parameters of police culture began in the 1950s with Westley’s study of policing in Gary, Indiana (Hunt and Magenau, 1993). Westley’s thesis provided officers’ perspectives and “focused on ways in which officers cope with the strains of their occupational and organizational environment” (p.1003).

A long-term and often-cited study of the police culture at the precinct level in New York City, known as the Reuss-Ianni study, conducted two decades later added to understanding the culture of police as we know it today. Supported by the National Institute of Law Enforcement and Criminal Justice, the study was based on two years of observations and interviews at two borough precincts and found two distinct cultures of police: one of management cop and another of street cop (Reuss-Ianni, 1983). It found that “the two cultures are increasingly categorized by competing and often conflicting perspectives on procedure and practice in policing,” contrary to much of the research of the time that portrayed a “single cop culture” in police organizations. The study was important because it led to “new techniques for management and operation, and for the introduction of new personnel policies and procedures, as well as for understanding the manner and method of the day-to-day practice of policing” (p. 1).
The Reuss-Ianni study was criticized by Bittner (1990) for its street-cop vantage point and its solely qualitative methods but he also praised it for its realistic portrayal of a street-cop’s perspective of work environments in current-day police organizations (Hunt and Magenau, 1993). In their book Power and the Police Chief: An Institutional Analysis, Hunt and Magenau discuss the concept of culture in societies as similar to that of personalities in people. Used more broadly by others outside the field of anthropology since the 1970s, the term culture is often applied to inanimate organizations. The idea of a culture as a “collective quality” provides a framework that supports “broad thematic similarities and contrasts among social systems and their members that seem so evident in common experience (Hunt and Magenau p. 69). Eterno (2003, p. 26) noted that the concept of police culture is defined by others as an “informal code of conduct that emphasizes the danger and unpredictability of the work environment, the consequent dependence of officers on each other for assistance and the protection, officers’ autonomy in handling situations, and the need to assert and maintain one’s authority (Westley, 1970; Brown, 1981; Skolnick, 1966; Worden, 1992).

In their discussion of police work as a “traditional craft,” Hunt and Magenau (1993) laud Tony Bouza, former chief of New York City and Minneapolis police departments for his reference to the danger, authority and autonomy of police work in a “typical police agency” as “powerful and self-reinforcing” and “as hermetically sealed as the Vatican” (p. 44). The authors also credit Bouza (1990) with writing that police “work in a world shrouded with mystery and power, value orthodoxy, loyalty, obedience, and silence” (p.73).
They suggest that the “real work” of police appears to be as variable as individual personalities. For example, Bittner (1990) understood and agreed, according to Hunt and Magenau, that cops value the “huff and puff of the chase” more than they value “methodical police work” (p. 82). It seems logical that officers would wish to rely on their judgment without regard to regulations. It also seems logical that just as the term “law enforcement” popularized during the reform era did not describe the broad scope of the job of police, “preventive patrol” had been seen by some in the police culture not only as untested, and unproven, but also as not “real” police work. Real police work was “riding in cars, responding to calls, and arresting criminals” (Kelling and Coles, 1996, p. 85). The idea of “omnipresence implicit in preventive patrol was a tentative and unproven assumption at best,” and “more than anything else, the idea of omnipresence did little but turn police work into riding around in cars, rather than dealing with citizens” (p. 85).

Hunt and Magenau note that Bittner (1990) supported Reuss-Ianni’s portrayal of conflicts between the two cop-cultures in police agencies. Reuss-Ianni’s research revealed key factors that fuel conflict from the perspective of the street-cop culture. They include: management cops are responsible for the “broken or weakened” bonds of police solidarity because they have allowed insiders to penetrate the traditional operations; management cops have “sold out” by allowing themselves to be influenced by external forces affecting recruitment (affirmative action); career-long management cops are unreliable and cause internal conflicts; and that management cops have changed the environment by allowing “civilians” into management positions that were previously filled by cops who retired or who were no longer able to “work the streets” (Hunt and Magenau, pp.369-372).
In the same way it is important to know that the police culture is comprised of a street cop and a management cop culture, it also is important to acknowledge that all police agencies are not the same. Hunt and Magenau (p. 70) describe police in America as “heterogeneous” in a large and diverse country. This situation of differences is appropriate; it reflects the diversity of the various police organizations. Differences can easily be seen in size of work forces, training policies, operational codes, and available resources.

Diversity and ethnic composition of police departments also has become a topic of interest to academic researchers and others. Hunt and Magenau (p. 74) quote Eterno’s claim (1986, p.34) that police agencies are “remarkably stable, white, male institutions, and Martin’s (1989) research that showed a steady increase in the number of women entering the police field but advancement moving in different tracks according to gender (men into investigations and women moving into administrative and staff positions). More current research on racial, ethnic, and gender composition in police organizations is available but is beyond the scope of this study. The point to be made is that the culture of police appears to have impacted organizations in ways that are the topic of interest and research.

Reuss-Ianni (1983) claimed that in the “good old days” of policing, the public valued and respected police officers, cops could count on their “fellow officers,” and that higher ranking officers were “an integral part of the police family” (p. 2). This single monolithic cultural climate allowed street cops to do their jobs with a great degree of discretion and without outside interference or too many questions. Valued then were loyalty, privilege, and keeping department business private and out of public view (p. 2).
The management cop culture, seen as a “manifestation of the modern public-administration/scientific management principles,” appeared to create a “disparity between policy and performance” as it imposed the ideology of modern management practices on the police culture and eliminated much of the street cop’s discretionary authority (p. 4).

Klockars, Ivkovich, Harver, and Haberfield (2000) used a framework of organizational theory to better understand the issue of police corruption. They conducted survey research in 30 U.S. police agencies to measure the culture of police integrity. The survey included 11 hypothetical situations related to police misconduct and measured how seriously officers regarded corruption, how willing officers were to support punishment for it, and how willing they were to report it. The survey found major differences in the cultural environments of the agencies involved in the study. Among the findings: the more serious the officers judged a behavior to be, the more likely they were to support more severe discipline and the more likely they were to turn in another officer for behavior violations. Funded by the National Institute of Justice, the study by Klockars et al. defined corruption as “the abuse of police authority for gain” and identified it as one type of police misconduct. The study was based on four organizational and occupational “dimensions” to include rules, prevention methods, “the Code” or culture, and the public’s expectations.

Commenting on ways that police management might improve the performance of officers, Hunt and Magenau point to Klockars’ work related to the cop’s code as an “impediment” to improving the performance of officers and note that Klockars, like Bittner, would support the modern management technique of “total quality management”
in which missions and values lead workers toward goals and where coaching replaces coercion and training replaces punishment (p. 125).

**Organizational and Culture Theories**

In his discussion of organizational culture, Schein (1993) states, “Neither culture nor leadership, when one examines each closely, can really be understood by itself” (Shafritz et al., 2005, p. 360). The problems with the varied definitions of the word *culture* are more complex when applied to concepts in various academic disciplines. One likely reason for the diversity of definitions and approaches “is that culture, like role, lies at the intersection of several social sciences and reflects some of the biases of each – specifically, those of anthropology, sociology, social psychology, and organizational behavior” (Schein, 1990, p. 109). For purposes of this study, the literature review does not provide a complete historical chronology of organizational theory. Rather, it focuses on definitions and concepts useful to police departments, which may be thought of as public organizations that are bureaucratic, quasi-military, and hierarchically organized.

A theory may be thought of as a proposition or set of propositions that seeks to explain or predict something. In the new 2010 preface of his 1989 book on bureaucracies, Wilson wrote that he once hoped to create a “simple, elegant, comprehensive theory of bureaucratic behavior” but as time passed he doubted “that anything worth calling organization theory would ever exist” because it would be too vague to be of much use (p. xix). Wilson wrote extensively and in great detail about the operations of specific government agencies, including police organizations. He drew on his 30 years of teaching and research on bureaucratic organizations, books, articles, dissertations and seminar papers to provide details. His advice to college students and other scholars
studying public management was to stay “as close as possible to what actually happens in real bureaucracies” (p. xx). I took Wilson’s advice, which is why I looked to police chiefs for answers to my questions about their organizations’ policies, practices, and culture. Crashes occur at an individual officer level, but officers are directed by policies and under the command of chiefs, who are responsible for their organizations. Organizations with cultures that inspire members to transcend short-term interest have an advantage over those that do not (Mahoney, Huff & Huff, 1994a, b; Miller, 1992). Police chiefs are committed to their organizations and are likely to be interested in helping other chiefs, if they think they can.

A single theory of organizations does not exist (Shafritz, Ott, Suk Jang, 2005, p. 3), but the ideas surrounding the notion that culture is important to management systems are ancient and can be traced back to Aristotle and Socrates. There are several theories in a variety of disciplines that pertain to organizations. They all attempt to predict and explain how the organizations and the people within them behave. The vast body of literature on organizational theories is discussed as philosophies or schools that exist as constructs to classify, organize, and build upon existing knowledge. Often the literature is grouped as schools of thought or in time order, the authors claim.

For purposes of discussion on the evolution of organizational theories, Shafritz et al. refer to an organization as a “social unit with some particular purposes” (p. 1), a bureaucracy as a “specific set of structural arrangements” (p. 32) and to organization theory as “how groups of individuals behave in varying organizational structures and circumstances” (p. 1). Since organizations are part of society and the culture, they reflect
their environments, including the existing culture (p. 2). I have determined those definitions are suitable for purposes here.

Classical organization theory is considered traditional and the basis for other schools of organization theory. It grew from the industrial revolution, which was rooted in the context of professions focused on mechanical engineering, industrial engineering, and economics. The classical approach to studying organizations was dominant in the United States before 1940; theorists during this period viewed workers as interchangeable parts to keep machines operating and producing goods. Chester Barnard, a theorist whose work transcended more than one organizational period and school, defined an organization as a “system of consciously coordinated activities or forces of two or more persons;” he is widely regarded as a major contributor to studies of cooperation within organizations (Shafritz et. al, p. 89). Barnard’s *The Functions of the Executive* (1938) encouraged thinking about organizational behavior that continues to influence management and leadership studies (Gabor and Mahoney, 2010). In discussing Barnard’s work, Gabor and Mahoney note Barnard’s description of formal organizations as “organic and evolving social systems” in which management’s chief challenge is to gain “cooperation” toward achieving organizational goals (p. 3). They state that Barnard’s description of informal organizations would be considered by today’s managers as organizational culture (p. 13).

Barnard, who was president of New Jersey Bell in 1938, is credited with the idea that executives of organizations must bear the responsibility of setting aside their own self-interests and organizing personnel to achieve common goals (Khademian, 2002).
Schein argued that the heart of culture, basic assumptions, operates at an unobservable level and motivates behavior. Two other more visible layers of what is often described as culture are what we label values (beliefs) and artifacts, which are outward symbols of values, beliefs, and basic assumptions (Schein, 1985; Khademian, 2002).

**Summary**

The conflict between bureaucratic values and political factors was addressed by Wilson (1989) and other political scientists, such as Meier and O’Toole (2006), concerned with goal conflicts and bureaucracies. Wilson argued that when the mission and purpose of an organization is unclear, circumstances matter. Hunt and Magenau (1993) claimed that police are “actors” and role-players, who are carrying out their assigned duties. In the United States, police chiefs are publicly recognized as leaders of organizations granted formal and legal authority to act on behalf of the state. Acting in their role as chiefs, they are concerned with all levels of government, are expected to interact with elected officials in their jurisdictions, public managers and administrators, as well as police employees in their own agencies. As such, police chiefs are simultaneously politicians, public administrators, and criminal justice professionals who must navigate within a complicated organizational culture. It is important to ask police chiefs about the organizational climate of the agencies for which they are responsible.
Chapter 3

Theoretical Framework

Conceptual Overview

As previously stated, the key research question being asked of police chiefs in this study is “what appears to be the top contributing condition or confounding factor that YOU believe may lead to on-duty police officer driving-related injuries and deaths in your agency?” This study assumes that all police agencies are not the same and is grounded in research pertaining to driving policies and variations of implementation of policies between and among each police agency’s organizational structure. This study also assumes that the nature of police work affects policy implementation in police agencies, which are considered to be street-level bureaucracies. Literature has been categorized into four key categories: 1. legislation and politics, 2. public administration, 3. police agency culture, and 4. social, economic, and public health. Although traffic-related injuries affecting officers is an understudied research topic, the conceptual framework formed by scholarly literature is the basis for relevant variables.

In this study, which draws from organizational culture theory, variables of interest include types of casualties (injuries that include fatalities), safety belt laws, written driving policies (including communication technology commonly used in police vehicles), training to support policy implementation, organizational behavior related to driving policies, and agency demographics.

Theoretically, two police cultures exist: one of management cop (chiefs) and street-level cop (officers). Theoretically, all police organizations have similar missions
and purposes, yet the extent to which agencies suffer losses due to injury crashes is unknown. This could be measured by testing theoretically relevant hypotheses.

Two research hypotheses in this study are tested. The first is:

*The likelihood of police officer injury crashes in states with primary safety belt laws differs from those in states without primary safety belt laws.*

Theoretically, agencies that prioritize enforcement of primary belt use laws and mandate that officers use safety belts on-duty will experience fewer casualties. Forty-nine of the 50 states in the U.S. have safety belt laws that are enforced by police officers.

The second hypothesis is:

*The likelihood of police officer injury crashes in agencies with written driving policies differs from those in agencies without written driving policies.*

In theory, agencies with written driving policies that are clearly communicated and implemented will experience fewer losses. Since the number of injury crashes involving police officers in the United States is unknown, this study is a starting point that both encompasses as well as expands the boundaries of political science, public administration and criminal justice policy implementation research. Implementation of policy in any bureaucratic organization requires training. Theoretically, all officers are well-equipped, well-trained, and better able than others to multi-task while operating a motor-vehicle. The survey in this study attempts to quantify policy and training variables by type, amount, and priority in agencies nationally.

**Common Elements**

Research by Khademian (2002) finds that culture advocates have demonstrated the responsibility of leaders for bringing about organizational culture change. She claims
a “broad perspective” is required and that a view other than a “top down” and normative
acknowledges constraints and limitations imposed on public managers who attempt to
bring about changes to the ways “jobs get done” in government (p.137). Khademian’s
research spans disciplines and contributes to a better understanding of how culture and
leadership are associated.

Common elements of interest to researchers in political science, public
administration, and police science, within the field of criminal justice, include the
functions of government, public policies and processes, bureaucratic structures, systems
and political behaviors. In this study, police chiefs, who share responsibility for what gets
done and serve as leaders in police organizations in the U.S., were being asked to provide
quantifiable data by answering survey questions. Survey items (see Appendix A) were
developed to help answer a series of five research questions. The research questions are:

1. What is the relationship between primary enforcement of safety belt laws and
   police officer traffic injuries?

2. What is the relationship between agencies’ driving policies (including
   communication technology in vehicles) and police officer traffic injuries?

3. What is the relationship between agencies’ driving training and police officer
   traffic injuries?

4. What is the relationship between organizational culture/behavior and police
   officer traffic injuries?

5. What is the relationship between organizational demographics (size,
   jurisdiction, accreditation status) and police officer traffic injuries?
The first research question, which is tested by Hypothesis 1, contributes to the body of knowledge in the field of political science by providing quantifiable data used to determine if a statistically reliable association exists between state laws mandating primary safety belt enforcement and public safety, specific to injury crashes involving police officers. Examination of legislation’s influence on police management and organizational policies spans the disciplines of political science, public administration, and criminal justice.

The remaining research questions, which are tested by Hypothesis 2, contribute to the fields of public administration and criminal justice by testing to see if there are statistically reliable associations between police officer injuries due to motor vehicle crashes and organizational driving policies, training, cultural environments, and demographics. In addition, the questions related to the culture indicators contribute to literature in the field of policing and criminal justice, building on the work of Reuss-Ianni (1983) and Klockars, et al (2000).

Drawing on organizational theory, I posit that police policies and the resulting behavior represent artifacts of organizational culture. Also, in theory, variation should exist among agencies and be visible in organizational policies as well as in implementation of policies between and among agencies. It is unknown how the sample frame will respond to the invitation to help a researcher studying the issue of police officer injury crashes, but the expectation is that the baseline data collected in this study will contribute to the existing policy implementation literature in each of the three disciplines and may be useful to researchers and practitioners in subsequent studies.
Chapter 4

Research Design and Methods

Overall Strategy

King, Keohane, and Verba argue that all social science research projects should satisfy two criteria. First, the question posed should be “important in the real world.” Second, it should add significantly to academic literature by enabling researchers to “construct verified scientific explanations” of what’s being studied (1994, p. 15).

This particular research study is based on a general model of empirical research designed to answer one main research question and to test two hypotheses culled from five specific questions through an organized, systematic, and logical process. The general research question is “What factors contribute to the problem and pattern of police officer fatalities and injuries in motor vehicle incidents?” The general model in this research moves from the abstract to the specific. The two hypotheses are used not only to test the theory but also to build the model.

The objectives of this study may be thought of as levels of abstraction and as structured constructs, which are simply described as complex concepts, and variables to be measured in a questionnaire developed for this survey research (see Survey Codebook in Appendix B). A more complete visual depiction of the hierarchy of concepts (see Appendix C) from the abstract to the specific questions is a useful method to specify the objectives of a research study (Punch, 2003).

Conceptual Framework

The broader concepts, which were identified in the review of literature and described more fully in the end of Chapter 3, are depicted as relationships from abstract
concepts to variables measured by specific questions. A summary of their relationships is illustrated in Table 4.1.

Table 4.1

<table>
<thead>
<tr>
<th>Concepts/Literature</th>
<th>Variables</th>
<th>Survey Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Legislation and Politics</td>
<td>Safety belt state law (X1)</td>
<td>Q # 25</td>
</tr>
<tr>
<td>Public Administration (including Technology &amp; Communication issues)</td>
<td>Policies (X2)</td>
<td>Q # 10, 11, 12, 13, 14, 15, 16, 17, 26, 27</td>
</tr>
<tr>
<td></td>
<td>Training (X3)</td>
<td>Q 21, 22, 23, 24, 28, 29</td>
</tr>
<tr>
<td>Police Culture</td>
<td>Organizational Behavior (X4)</td>
<td>Q # 8, 9, 18, 19, 20, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44</td>
</tr>
<tr>
<td>Social, Economic, Public Health</td>
<td>Casualties/Loss Type* (X5)</td>
<td>Q # 1 – 7</td>
</tr>
<tr>
<td></td>
<td>DV – Injuries</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Demographics (X6)</td>
<td>Q # 45-50</td>
</tr>
</tbody>
</table>

As previously stated, the research questions related to the main research question are grounded in a review of literature and were developed through informal conversations with police practitioners, other researchers, and a logical process of inductive and deductive inquiry.

They are:

1. What is the relationship between primary enforcement of safety belt laws and police officer traffic injuries?
One item on the survey addresses this question.

2. What is the relationship between agencies’ driving policies (including technology in vehicles) and police officer traffic injuries?

Ten items on the survey address this question.

3. What is the relationship between agencies’ driving training and police officer traffic injuries?

Six items on the survey address this question.

4. What is the relationship between organizational culture/behavior and police officer traffic injuries?

Twenty items on the survey address this question.

5. What is the relationship between organizational demographics (size, jurisdiction, accreditation status) and police officer traffic injuries?

A total of 13 items on the survey address this question; six relate to agency demographics and seven relate to injuries experienced by respondents’ agencies.

To test the general model and framework described earlier, two research hypotheses were formulated. They are:

Research Hypothesis 1: The likelihood of police officer injury crashes in states with primary safety belt laws differs from those in states without primary safety belt laws.

Research Hypothesis 2: The likelihood of police officer injury crashes in agencies with written driving policies differs from those in agencies without written driving policies.
The research questions also dictate what data are needed; thus, the general and specific research questions determine the sample population and the methods required to generate the data. If causal relationships exist, it is reasonable to ask if the relationships are affected by other variables, if there are relationships between variables, and if there are differences between groups. Those questions cannot be answered until the data is collected and analyzed.

Surveys are used extensively in both qualitative and quantitative social science research. Small scale studies are not uncommon when resources are limited and the researcher is working alone, such as when students are engaged in dissertation research in the social sciences (Punch, 2003). When designed and deployed well, small scale surveys are able to make important substantive contributions to both the academic community and to practitioners’ knowledge (p. 22). Cross-sectional surveys, also commonly used by students, are designed to collect data at one point in time rather than at different time periods.

The main objective of quantitative survey research is to generate numerical data that represent measurable variables, study the relationships between variables, and to see how the variables are distributed. In quantitative surveys, variables are operationalized through questions that generate numerical data (Punch, 2003). In qualitative survey research with open-ended questions, the goal is to generate nominal data that may or may not be transformed or converted into numbers for analysis. Most questions in this study’s survey instrument were not open-ended; however, there were opportunities for chiefs to select an “other” category or to include an explanation in some situations. In this study, nominal and interval data were converted to binary numbers to represent categories, such
as yes or no to indicate whether an organization experienced crashes resulting in officer injuries, including fatalities.

Available Data

This study’s main objective was to learn more about factors that contribute to police officer deaths and injuries in traffic related incidents. To answer the research questions, the overall strategy was to learn what data exist and what data would be needed. Early in the research stage it became evident that data from individual police organizations do not exist and would need to be collected through a survey and development of a questionnaire specific to this project.

Geoffrey P. Alpert, a professor in the Department of Criminology and Criminal Justice at the University of South Carolina, is considered to be an expert on research related to police driving policies and practices. When asked (via email, January 8, 2010) if he knew of any national studies on driving deaths of officers, he pointed to data available from the National Law Enforcement Officers Memorial Fund. He stated that he knew of no national studies on police injuries, suggesting that individual agencies would need to be notified individually for any statistics they collect and maintain.

Quantitative data are maintained by the nonprofit National Law Enforcement Officers Memorial Fund (NLEOMF) for officer deaths in motor vehicle incidents in every state for the past 40 years. While such data may be useful to generate descriptive statistics that inform relevant questions, they were deemed insufficient for this study because additional details about characteristics of organizational polices and culture are not captured (K. Morison, personal communication, 2010). For example, information
about excessive speed, use of safety belts, or policy violations is not collected. NLEOMF only began recording safety belt data in police officer fatalities in 2008 (Floyd, 2010).

The only database with detailed information on fatal injuries to law enforcement officers is the Fatality Analysis Reporting System (FARS), which is maintained by the Department of Transportation’s National Highway Traffic Safety Administration (Noh, 2011). The Federal Bureau of Investigation (FBI) collects data on Law Enforcement Officers Killed & Assaulted (LEOKA), which includes those killed accidentally as well as those killed violently and intentionally (Noh, 2011). Results from a study that combined both data sets, (using FARS data from the period from 1980 to 2008 and LEOKA data) for analysis were presented in June 2011 for the first time by Det. (Ret.) James Bean, a crash investigation specialist, at a workshop at the National Institute of Justice Annual Conference. FARS is a fatality based system, so the only injuries collected are “by chance, if another occupant was fatal” (J. Bean, personal communication, June 28, 2011).

The unit of analysis for this study is organizations rather than individuals; therefore, the data collection strategy requires contacting agencies and inviting official responses. Chiefs were targeted as survey participants and questionnaire respondents.

**Questionnaire**

Some of the survey questions in this study on police officer injuries were modeled or drawn from methods and findings of a National Institute of Justice study of police corruption (Klockars, Ivkovich, Harver, and Haberfeld, 2000) in which researchers created hypothetical cases of police misconduct and found significant differences in the environments of integrity of the 30 police agencies studied. In this traffic safety research
study, a series of hypothetical questions related to police behavior and organizational consequences was asked to gauge chiefs’ perceptions of their organizational environments. Other questions were drawn from concepts and variables grounded in the literature and from experienced practitioners. Survey questions are included in Appendix A; the survey codebook is seen in Appendix B.

Consideration must be given to the population when designing an online survey since respondents vary in their access to and knowledge of computer technology (Dillman, 2009, p. 200). Many police departments have been using computer technology since the 1970s (Northrup, Kraemer, & King, 1995), and 90 percent of local police departments serving communities with populations of 25,000 or more now use computers in the field and in vehicles (Reaves, 2010).

The use of computers permits more options, including web-based surveys, which allow respondents to answer self-administered questions by linking to a web site (Groves, Fowler, Couper, Lepkowski, Singer, Tourangeau, 2004). Internet survey instruments are considered by the social science community to be viable, valid and reliable; precision, validity, and reliability depends not only on the design but also on the response to the instrument (Fowler, 2009; Dillman, 2007). Email has been used by researchers since 1986, but response rates have declined significantly over the years (Sheehan, 2001). In her study of 31 survey studies, Sheehan found mean response rates varied from 61.5 in 1986 to 19.0 in 1994 and 35.97 in 1998. Some of the reasons for negative impacts on response rates, the author claims, are design problems, survey length, topic salience, and number of contacts with respondents, which is challenging when random sampling techniques are used. Her study found only one predictor variable (year of survey) to be
significantly related to response rates. She also found that the number of follow-up notices may increase response rates to a slight extent, but cautioned researchers that too many contacts may irritate individuals, who may already suffer from e-mail overload. Kaplowitz, Hadlock & Levine (2004) found response rates for Web survey applications to be comparable with mailed hard-copy questionnaires when advance mail notifications were used in both modes, but noted substantially higher costs associated with mailings.

**Survey Pre-test**

The survey was developed in fall 2010 and spring 2011. It was pre-tested in spring 2011 prior to the prospectus defense in May 2011. None of the pre-testing involved those in the sample frame. To test the software functions, an email with a link to the survey was sent to 20 people, who are personally and professionally known to me. This ensured that the language was clear and that questions could be answered appropriately. For example, if a question asked for only one answer, was it possible to select more than one? Results of the pre-test were used to finalize the questionnaire with minor revisions, as needed, and the questionnaire was pre-tested a second time to determine whether the non-parametric, or categorical, variables could be converted and continuous variables would result in data that could be analyzed appropriately.

**Sample Frame**

The list from which a sample is drawn to represent the survey population is known as the sample frame (Dillman, 2009). Theoretical sampling builds on logic, and it involves selecting groups or categories relevant to research questions. It also may involve studying phenomena that occurs less frequently than in larger populations (Mason, 2002). Police chiefs are public figures and professionals responsible for leading their organizations; therefore, theoretically, the chiefs of local, county and state police
organizations are in the best role to represent their agencies or to appoint a designee to answer questions in this study. Officers in federal, tribal and university settings were intentionally excluded.

Police employee data tables on the Federal Bureau of Investigation’s Uniform Crime Reporting (UCR) system’s web pages were used to generate a list of agencies for this study. The tables list the number of sworn officers by agencies that serve cities and counties. Approximately 17,000 agencies participate in the UCR program. After downloading UCR Table 78 (cities) and UCR Table 80 (counties) from 2010 and deleting columns not relevant to agency name or number of sworn officers employed, the lists were sorted by size based on the total number of officers. Each jurisdiction was then stratified into five size categories, which were modeled after the agency-size categories used in the Klockars et al. study. A breakdown of the UCR Table 78, which listed a total of 10,208 city agencies, was sorted, grouped, and saved as an Excel spreadsheet. Table 4.2 shows the size categories of city police agencies.

<table>
<thead>
<tr>
<th>Size Category</th>
<th>Number of Officers</th>
<th>#</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Large</td>
<td>500+ officers</td>
<td>78</td>
<td>.8</td>
</tr>
<tr>
<td>Large</td>
<td>201-500</td>
<td>133</td>
<td>1.3</td>
</tr>
<tr>
<td>Medium</td>
<td>76-200</td>
<td>619</td>
<td>6.1</td>
</tr>
<tr>
<td>Small</td>
<td>25-75</td>
<td>2,020</td>
<td>19.8</td>
</tr>
<tr>
<td>Very Small</td>
<td>&lt; 25</td>
<td>7,358</td>
<td>72.1</td>
</tr>
<tr>
<td>Total Reporting</td>
<td></td>
<td>10,208</td>
<td>100.1</td>
</tr>
</tbody>
</table>
Table 80, which listed a total of 2,840 county agencies, was sorted, grouped, and saved in an Excel spreadsheet. Its composition of categories is shown in Table 4.3

Table 4.3

<table>
<thead>
<tr>
<th>Size Category</th>
<th>Number of Officers</th>
<th>#</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Large</td>
<td>500+ officers</td>
<td>53</td>
<td>1.9</td>
</tr>
<tr>
<td>Large</td>
<td>201-500</td>
<td>128</td>
<td>4.5</td>
</tr>
<tr>
<td>Medium</td>
<td>76-200</td>
<td>291</td>
<td>10.2</td>
</tr>
<tr>
<td>Small</td>
<td>25-75</td>
<td>738</td>
<td>26.0</td>
</tr>
<tr>
<td>Very Small</td>
<td>&lt; 25</td>
<td>1,630</td>
<td>57.4</td>
</tr>
<tr>
<td>Total Reporting</td>
<td></td>
<td>2,840</td>
<td>100.0</td>
</tr>
</tbody>
</table>

After determining that 92 percent of city police agencies that reported to UCR are small (2,020 agencies; 20 percent of total) or very small (7,358; 72 percent of total) and that 83 percent of county agencies that reported to UCR are small (738 or 26 percent) and very small (1,630 or 57 percent) a decision was made to randomly sample 100 agency city and county chiefs in all size categories with the exception of “very large” cities and counties, which number fewer than 100 agencies. All very large city and county agencies would be included in the sample frame. All 50 states have state police or state highway patrol agencies and would be included in the sample frame without regard to number of officers. The result is a disproportionate stratified random sample.

A web site (http://www.random.org/sequences/) that offers a service to generate true random number sequences at no cost was used to create lists of random numbers for each of the categories shown in the two (city and county) tables. The randomly drawn
numbers were used to identify which agencies would be invited to participate in the sample survey.

To create a list of 50 agencies representing the state police in all states, a web site with links to official state police and highway patrol web sites was used. The site is known as The Official Directory of State Patrol & State Police and is maintained by a retired state police trooper. Each agency name and its uniform resource locator (URL), or Internet address, was copied to an Excel spreadsheet for use in gathering email addresses of agency chiefs.

**Access to Sample Frame**

Modes of collecting data in survey research have evolved and expanded in recent decades from the traditional face-to-face, mail, and telephone methods. Electronic mail (e-mail) has been used for online survey distribution and data collection for the last two decades (Sheehan, 2001). Access to the targeted agencies and specifically to the chief executive population was problematic. Understandably, a list of email addresses is not available from the FBI or from the International Association of Chiefs of Police, a membership organization. Postal mailing addresses for police agencies are more easily obtained, but mail surveys are more expensive to conduct. Collecting data via the Internet provides benefits in terms of reduced costs, and quicker response time.

**Data collection preparation**

In order to deploy a self-administered online questionnaire, e-mail addresses were required. Internet searches were conducted from December 2011 to May 2012, to locate email addresses for the chiefs of each agency in the sample frame. Whenever possible, individual agency websites were located, and the information was copied from the site.
When that was not possible, other sources, such as the National Association of Counties (NACO) website, or state sheriff association directories were used. The goal was to collect a total of 1,000 email addresses for 50 state, 475 city, and 475 county agencies. Various websites for state sheriff and police membership associations also were used to locate contact information and email addresses. In some cases, online forms on agency websites were completed with requests for the chief officers’ email address with a brief explanation that it was needed for an academic research study.

In December 2011, a group of undergraduate journalism and media studies students assisted in gathering email addresses and names of police chief executives for agencies identified through the random selection process described earlier. The exercise was intended to assist students advance their Internet research skills using public and nonprofit web sites and to assist the study in generating a large number of email addresses in a relatively short period of time. The strategy was revised after two group sessions prompted the realization that close familiarization by the primary investigator with various agency web sites would offer valuable insight into various sub-cultures and such familiarization might offer ideas and rich data for future related research.

In May 2012 after being unable to obtain 1,000 email addresses for all agencies in the sample, a decision was made to make phone calls and to submit online requests using web forms on agency websites to obtain email addresses of very large and large cities and counties on the randomized lists. When email addresses could not be found, the original lists of randomized numbers were used to select additional agencies of the size needed until the end of May. A list of 921 email addresses was collected by the deadline.
Survey Mode

Electronic survey software (SelectSurvey.NET) and support was available at UNLV at no cost to student researchers; therefore, a web-based self-administered questionnaire was selected as the mode of choice for this study limited by time and financial resources. A challenge was to notify police chiefs, sheriffs, and heads of state police agencies in advance that their participation in this particular university study was requested and deemed important, and that confidentiality would be honored. Police chiefs are public servants who use technology and are accustomed to responding to calls for help; it is logical to expect they would be willing to participate if the topic being investigated was important, of interest, and worth their time. The rationale for this decision is grounded in the fact that data on individual police deaths in traffic crashes are collected and analyzed at the national level, but centralized data on police injuries in traffic crashes is not collected (personal communication, Bean, 2011). Those invited to participate were told that survey results would be made available to them upon request.

Response Rates

Being able to capture enough complete responses to make generalizations is always a concern of quantitative researchers who design surveys. As previously mentioned, response rates to email surveys have declined since 1986 when results of the first e-mail survey were published in Public Opinion Quarterly (Sheehan, 2001). A key finding of a study conducted on the Internet and Society (Nie & Erbring, 2002) was that 55 percent of the population in America had access to the Internet, and that 90 percent with access to the Internet claimed to use e-mail. The Internet has been found to be sensible way of conducting research for some populations (Sills and Song, 2002). Thus, it
is reasonable to believe that the targeted audience of police chiefs is computer literate, and that they would be willing, if asked, to help a graduate student conducting research on a topic of interest to them.

Dillman, Smyth, and Christian (2009, p. 1) refer to current innovative technology and cultural transformations as “turbulent times for survey methodology.” They categorize historical changes over a span of 75 years of survey research in terms of the following characteristics: human interaction, trust that the survey is legitimate, time involvement, attention to respondents, respondent control over access, and respondent control over whether to respond (p. 2). In this era, 1990s to the present, survey respondents exert a high level of control over access and whether to respond; they give little time or attention to emails; they exhibit low levels of trust and time interacting with humans (p.2). Little research exists on using multiple contacts in maximizing response rates in web surveys (Dillman et al., 2009, p. 275). Some studies report multiple contacts in the form of pre-survey messages and follow-up reminders to be effective, but none targeted the population targeted in this study. In some populations, if follow-up emails yield low numbers of additional responses, follow-ups may serve as an irritant (Dillman et al., p.275).

Data Collection

Knowing the untrusting nature of police officers, and to encourage participation and to boost response rates in this study, the design called for one pre-survey message and one reminder inviting chief executives or their designees to help a doctoral student working on dissertation research to understand the current climate within police organizations with regard to traffic safety policies and practices. Chiefs were told that
other chiefs in all 50 states in state, county, and city agencies were being asked to answer
questions on behalf of their own organizations. The pre-survey message also stated that
their agency was selected at random from those participating in the UCR program, and
that the survey should take between 10 and 15 minutes to complete. The message further
stated that the link to the survey would arrive via email within a week and that if they
were willing to participate but preferred using a different email address, they could
respond to contact the researcher or the student’s advisor via email.

A pre-survey message was sent to 921 email addressed on May 31, 2012 via e-
mail five days prior to the actual survey deployment. Forty (40) email addresses were
identified as undeliverable for one of the following reasons: connection timed out, host
unknown, user unknown, message would exceed quota, client not authenticated, or
mailbox currently suspended. Six agencies responded and declined to participate; 20
others provided alternate email addresses; 12 others sent auto-generated emails stating
they were away from the office or on vacation.

The pre-survey message had several purposes in addition to requesting assistance
and opinions from chiefs of police organizations. It allowed email addresses to be tested;
it informed police practitioners of independent academic research being conducted; it
provided chiefs additional time to consider participation; it alerted them to expect the
online questionnaire; and it invited them to designate an alternate if they were personally
unable to respond. One reminder message was sent to those identified by the survey
software as not having responded.

The survey questionnaire was deployed via email to 823 email addresses on
Tuesday, June 5, 2012. The email message contained a link that led respondents to the
Informed Consent Statement. The page following the Informed Consent Statement was the first page of the survey (see Appendix A).

**Delivery and Response Issues**

A recap of the data collection process is needed before frequency distributions and further analysis are presented in Chapter 4. As previously stated, email addresses were obtained mainly from public websites. The survey in the current study was deployed via email to 823 individual addresses at 9:53 a.m. (Pacific Daylight Time) on Tuesday, June 5, 2012. Among the email addresses were those of the author and her advisor. This was intentional and served as verification that the messages and survey link were sent and received. Respondents were told that the link to the survey would be active throughout the month of June. In the first 24 hours, the software registered 63 responses. Thirty-five (35) emails were returned on June 10, 2012 with the auto-reply language that “the message could not be delivered after five days.” A reminder message was emailed on June 26, 2012 to the original list of recipients; thirty-eight (38) bounced back as “undeliverable” immediately, 12 auto-responses acknowledged receipt of the email but indicated that the recipients were “out of the office,” seven were returned on July 1 and were marked as having “permanent fatal errors” in the email addresses. Eight recipients provided alternate email addresses requesting that the link to the survey be sent to the alternate address; one person asked to see questions in advance and subsequently declined participation “based on advice from legal counsel.” Three people wrote to say they would decline participation without giving reasons, and 11 responses were received with requests for survey results when they are available. The survey was officially closed on July 10, 2012, 35 days after it was deployed.
The survey software showed that a total of N = 215 respondents opened the link to the 50-question, self-administered survey; however, fewer than 215 responded. Twenty-six of the 215 who clicked on the link appear to have closed the survey without answering any of the 50 questions. Those cases were removed from the data set. This left N=189 respondent cases for analysis. Not everyone who responded answered all of the questions, but 153 respondents answered 90 percent (45 of 50) questions. The issue of missing data will be addressed more fully in Chapter 4 where relevant to specific questions.

**Analytic Strategy**

As stated previously, social science researchers often use surveys as a central strategy (Punch, 2003). In this particular study, one general question led to five other research questions that may be viewed as sub-categories of the main question. Since the number of injury crashes involving police officers is unknown, this study’s method of a national survey of chiefs was seen as a starting point that both encompasses as well as expands the literature of policy implementation in political science, public administration and criminal justice. Data collected were used to test two hypotheses related to the five research questions. The survey in this study attempts to quantify policy and training variables by type, amount, and priority in agencies nationally.

Univariate analysis was a starting point to show frequencies for variables of interest in answering the five research questions. It should be noted that in cases where frequency distributions indicated variance, other more sophisticated tests, such as crosstabulations and chi-square, were conducted to determine whether the differences were significant and should be retained for the logistic regression model. In some cases
there was little variance among key independent variables and it was determined that
their influence on the dependent variable was not statistically significant. Those variables
were no longer considered for continued analysis. In the end, the regression analysis
included a model with two independent variables, one representing policy and the other
representing demographics.
CHAPTER 5

Findings

Overview

This chapter begins with demographic characteristics of the respondent sample. The remainder of the chapter is organized around each of the research questions with results of univariate, bivariate, and logistic regression analysis. It should be noted that one of the research questions, the one related to culture, requires further explanation and is treated uniquely and separately at the end of the chapter and prior to logistic regression results.

Demographics

It is important to identify characteristics of the respondents in the sample frame compared to those of the target population. Data available on the FBI’s web pages about the national population of agencies participating in its Uniform Crime Reporting (UCR) program in 2010 indicate that 90% of the municipal and county police organizations in the U.S. were either small (26-75 officers) or very small (1-25 officers). In the current study, 158 respondents answered the demographic questions in this survey related to agency size. Those who indicated they work in very small or small agencies made up 25 percent of the sample. Table 5.1 shows how the sample of respondents compares to the target population of those reporting crimes to the FBI’s Uniform Crime Reporting program in 2010 in city and county agencies in terms of size, based on number of officers in each agency.
Table 5.1

*Comparison of Respondent Sample to Target Population*

<table>
<thead>
<tr>
<th>Agency Size</th>
<th>Target Population</th>
<th>Respondent Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>#</td>
<td>%</td>
</tr>
<tr>
<td>Very Small (&lt;25 officers)</td>
<td>8,988</td>
<td>69</td>
</tr>
<tr>
<td>Small (25 to 75 officers)</td>
<td>2,758</td>
<td>21</td>
</tr>
<tr>
<td>Medium (76 to 200 officers)</td>
<td>910</td>
<td>7</td>
</tr>
<tr>
<td>Large (201 to 500 officers)</td>
<td>261</td>
<td>2</td>
</tr>
<tr>
<td>Very Large (500 + officers)</td>
<td>131</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>13,048</td>
<td>100</td>
</tr>
</tbody>
</table>

Research Questions

**Question 1. Demographics.**

*What is the relationship between organizational demographics (size, jurisdiction, accreditation status) and police officer traffic injuries?*

**Agency Demographic Descriptives.**

In terms of agency size, which was measured by the number of sworn officers, the largest group of respondents, 45 (28%) of 158 represented agencies with more than 200 officers. Perhaps this has something to do with the administrative capacity of larger agencies. Medium and very large agencies both contributed the next highest percentage at 23% and one quarter of the respondents were in very small (21, 13%) or small agencies (19, 12%).

The majority of responses, 56%, came from police chiefs in municipal agencies. Also a majority, 55% of the 157 respondents who answered the question about whether their agencies are professionally accredited by either a regional or national accrediting organization, said their agencies are accredited. Table 5.2 summarizes other demographics.
Table 5.2

**Respondent Demographics**

<table>
<thead>
<tr>
<th>Variable</th>
<th>#</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jurisdiction (n=158)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>City</td>
<td>89</td>
<td>56</td>
</tr>
<tr>
<td>County</td>
<td>53</td>
<td>34</td>
</tr>
<tr>
<td>State</td>
<td>16</td>
<td>10</td>
</tr>
<tr>
<td>Size (n=185)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very Small (&lt;25 officers)</td>
<td>21</td>
<td>13</td>
</tr>
<tr>
<td>Small (25 to 75 officers)</td>
<td>19</td>
<td>12</td>
</tr>
<tr>
<td>Medium (76 to 200 officers)</td>
<td>36</td>
<td>23</td>
</tr>
<tr>
<td>Large (201 to 500 officers)</td>
<td>45</td>
<td>28</td>
</tr>
<tr>
<td>Very Large (500 + officers)</td>
<td>37</td>
<td>23</td>
</tr>
<tr>
<td>Region (n=158)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NE</td>
<td>15</td>
<td>9</td>
</tr>
<tr>
<td>South</td>
<td>42</td>
<td>27</td>
</tr>
<tr>
<td>Midwest</td>
<td>24</td>
<td>15</td>
</tr>
<tr>
<td>Central</td>
<td>8</td>
<td>5</td>
</tr>
<tr>
<td>Southwest</td>
<td>22</td>
<td>14</td>
</tr>
<tr>
<td>West</td>
<td>47</td>
<td>30</td>
</tr>
<tr>
<td>Accredited (n=157)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>86</td>
<td>55</td>
</tr>
<tr>
<td>No</td>
<td>71</td>
<td>45</td>
</tr>
<tr>
<td>Casualties/Losses</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Death, any means (n=181)</td>
<td>41</td>
<td>23</td>
</tr>
<tr>
<td>Death, auto (n=178)</td>
<td>18</td>
<td>10</td>
</tr>
<tr>
<td>Death, motorcycle (n=179)</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Death, road struck (n=180)</td>
<td>28</td>
<td>16</td>
</tr>
<tr>
<td>Injuries (n=180)</td>
<td>148</td>
<td>82</td>
</tr>
</tbody>
</table>

When all injuries and fatalities are identified and categorized by size of agency, it becomes apparent that injuries due to motor vehicle incidents occurred in agencies of all sizes but that fatal injuries occurred only in medium, large, and very large agencies in the respondent sample. Figures 5.1 and 5.2 illustrate evidence of the findings.
Figure 5.1. When deaths are identified independently and apart from injuries, it is evident that medium, large, and very large agency respondents experienced fatal injuries in crashes.

Figure 5.2. When fatalities are incorporated into all other injuries and recoded, very large agencies appear to experience the largest number of losses.

Most responding agencies have experience with injury crashes. Since deaths are fatal injuries, the decision was made to create a new binary variable by combining the binary death variable (1 = yes and 0 = no) and the binary injury variable (1 = yes and 0 = no) into a new recoded variable representing all injuries that includes fatalities. It should
be noted that the variable’s value is categorical rather than numerical, meaning that each 
1 represents an agency that has experienced one or more injuries, including fatalities. It 
does not represent the number of injuries experienced. In the same way, each 0 represents 
an agency that has not experienced injuries, including fatalities. The new recoded 
variable, named “injury_recode” became the new dependent variable of interest.

*Agency Demographic Relationships.*

In a few subsets, crosstabulations for variables in the demographics category were 
unable to yield chi-square test results. This is because as subsamples or smaller sets are 
created to conduct crosstabs between each size of agency and the dependent variable, the 
number of observations is decreased. Cells must contain a minimum count of five, and 
due to small sample size and that some respondents did not answer all questions, 
bivariate analysis yielded unreliable results in a few comparisons. This is the case in two 
categories of agency size, small and very small, and its association with injuries; it also 
was the case with categories of regions and its association with injuries. Partial results of 
the chi-square test produced evidence of significant associations between injuries and two 
categories of agency size as well as one region.

Frequencies crosstabulated at the 99% Confidence Interval show a statistically 
significant relationship between large agencies and injuries $\chi^2 (1, N = 181) = 9.83$, $p = .002$. The relationship between very large agencies and injuries also is statistically 
significant at the 99% Confidence Interval, $\chi^2 (1, N = 181) = 7.17$, $p = .007$.

The relation between injuries and agencies in the South (AL, AR, FL, GA, KY, 
LA, MD, MS, NC, SC, TN, VA, WV) was significant, $\chi^2 (1, N = 157) = 5.34$, $p = .02$. 

68
Question 2. Safety Belt Laws.

What is the relationship between primary enforcement of safety belt laws and police officer traffic injuries? Variables of interest included the independent variable, primary law, and the dependent variable, injury. To determine if the likelihood of injuries from motor vehicle crashes differs in police agencies in states that have primary safety belt enforcement laws from those in agencies in states without primary safety belt enforcement laws, the expected frequencies under the null hypothesis of no difference must be determined. The research hypothesis related to safety belt laws is stated as:

Research Hypothesis 1: The likelihood of police officer injury crashes in states with primary safety belt laws differs from those in states without primary safety belt laws.

Primary Safety Belt Law Descriptives.

A frequency test shows that 65% of the 169 respondents who answered whether their state’s safety belt law was a primary or secondary enforcement law said they worked in a state with primary enforcement laws. This means that the law allows officers to stop and cite unbelted motorists seen driving without using a safety belt. It is logical to think that officers who work in states where primary enforcement exists would be knowledgeable about the benefits of safety belt use and more likely to use them.
Primary Safety Belt Law Relationships.

Crosstabulations were conducted and chi-square analysis was performed. In each crosstab, the dependent variable was “injury.” Each variable’s value was dichotomous; the answer was either yes (1) or no (0). Significance levels for tests were set at a minimum of \( p < .05 \) and were conducted to determine if the results might be due to chance or random factors. The relationship between the independent variable and the dependent variable was not significant, \( \chi^2(1, N = 169) = .645, p > .05 \).  

Because the chi square value returned is not statistically significant at the \( p < .05 \) level, it was not necessary to include safety belt laws in logistic regression analysis. It is not possible to reject the null hypothesis; therefore the research hypothesis is unsupported and will not be included as a predictor variable in the logistic regression model.


*What is the relationship between agencies’ driving policies (including technology in vehicles) and police officer traffic injuries?* Variables of interest included the independent variables related to driving policies and the dependent variable (injuries). The research hypothesis related to policies is stated as:

*Research Hypothesis 2: The likelihood of police officer injury crashes in agencies with written driving policies differs from those in agencies without written driving policies.*

Driving Policy Descriptives.

Ten questions were used to measure the *policy* category. The number of responses to each of the policy questions ranged from a low of 159 to a high of 175. Responses indicate a high level of uniformity within some areas of policy. For example, 100%
answered that driving records are investigated prior to employment of job candidates.

Almost that many, 173 (99%) of all respondents indicated that their agencies have written
driving policies, and 96% indicate that safety belt use is mandated by policy, with 4%
saying they are not mandated. Table 5.3 shows that less uniformity is seen in other areas
of policy, namely, that fewer than 60% indicated monitoring driving records of off-duty
officers, and fewer than 60% have policies restricting speed, cell phone and MDT use.

Table 5.3

<table>
<thead>
<tr>
<th>Driving Policies</th>
<th>Yes</th>
<th>%</th>
<th>No</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Policies</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Written Driving (n = 175)</td>
<td>173</td>
<td>99</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Use MDTs (n=175)</td>
<td>160</td>
<td>91</td>
<td>15</td>
<td>9</td>
</tr>
<tr>
<td>MDT use restricted (n=159)</td>
<td>82</td>
<td>52</td>
<td>77</td>
<td>48</td>
</tr>
<tr>
<td>Speed restricted (n=159)</td>
<td>90</td>
<td>51</td>
<td>85</td>
<td>49</td>
</tr>
<tr>
<td>Speed restricted in pursuits (n=175)</td>
<td>74</td>
<td>43</td>
<td>99</td>
<td>57</td>
</tr>
<tr>
<td>Use Cell Phones (n=175)</td>
<td>161</td>
<td>92</td>
<td>14</td>
<td>8</td>
</tr>
<tr>
<td>Cell Phone use restricted (n=162)</td>
<td>94</td>
<td>58</td>
<td>68</td>
<td>42</td>
</tr>
<tr>
<td>Safety Belts Mandated (n=174)</td>
<td>167</td>
<td>96</td>
<td>7</td>
<td>4</td>
</tr>
<tr>
<td>Driving Records Pre-employ (n=167)</td>
<td>167</td>
<td>100</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Off-duty Monitoring (n=168)</td>
<td>98</td>
<td>58</td>
<td>70</td>
<td>42</td>
</tr>
</tbody>
</table>

Driving Policy Relationships.

When policy responses are viewed by jurisdiction, cities have the highest
percentage (61.8%) of policies restricting speed in emergency responses and in speed-
restricted pursuits; state agencies indicate the highest percentage of policies that restrict
cell phone use (80%) and MDT use (57%). When frequencies for injury crashes for all
agencies in the sample are crosstabulated, Pearson chi square values for two policy variables are statistically significant. At the 95% Confidence Level (2-tailed), there is a significant relationship between policies permitting MDTs in vehicles and injury crashes, \( \chi^2 (1), N = 175 \) = 5.59, \( p = .018 \). At the 99% Confidence Level (2-tailed) there is a significant relationship between policies permitting cell phones in vehicles and injury crashes, \( \chi^2 (1), N = 175 \) = 10.88, \( p = .001 \).

It is interesting to see that policies related to vehicle technology, specifically the use of mobile data terminals and cell phones, return statistically significant values. This indicates that two independent policy variables, MDTs and Cell Phones permitted, are variables of interest. Because of their significance of the chi-square values, one or both of them should be included in the logistic regression model. It is important to note that it is not possible to reject the null hypothesis on the basis of whether agencies have written driving policies, since 99% of all respondents indicate that their agencies do have written driving policies, and policies are not predictors of behavior.

Driving policies are reviewed in an ongoing and regular basis in 141 (87%) of the 171 agencies that responded to this question. Of those who answered “yes” to the question, more than two-thirds, 96 (66%) indicated that policies are reviewed annually.

**Question 4. Driving Training.**

*What is the relationship between agencies’ driving training and police officer traffic injuries?* Independent variables of interest are those in the training category and their relationship to the dependent variable, injuries.

**Driving Training Descriptives.**

Answers to the question of how many hours of driving training after the academy
is provided to officers annually ranged from a low of 0 to a high of 40 with a mean of 6.78 and 153 valid responses. Most common are four (39 agencies; 25.5%) and eight (36 agencies; 23.5%) hours of training. Notable is that 19 (12.4%) of the total responded that their officers receive no additional driving training after the academy.

Table 5.4 shows the frequency distribution of the type of driving training in agencies that responded to the survey question.

Table 5.4

<table>
<thead>
<tr>
<th>Driving Training Type</th>
<th>Yes</th>
<th>%</th>
<th>No</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emergency Response (n=151)</td>
<td>125</td>
<td>83</td>
<td>26</td>
<td>17</td>
</tr>
<tr>
<td>Pursuit (n=150)</td>
<td>121</td>
<td>81</td>
<td>29</td>
<td>19</td>
</tr>
<tr>
<td>Skills (steering, braking, speed, etc.) (n=151)</td>
<td>115</td>
<td>76</td>
<td>36</td>
<td>24</td>
</tr>
<tr>
<td>Judgment, performance under stress (n=151)</td>
<td>104</td>
<td>69</td>
<td>47</td>
<td>31</td>
</tr>
<tr>
<td>Use of Vehicle Technology (n=152)</td>
<td>54</td>
<td>36</td>
<td>98</td>
<td>64</td>
</tr>
<tr>
<td>Use of Safety Belts (n=151)</td>
<td>70</td>
<td>46</td>
<td>81</td>
<td>54</td>
</tr>
</tbody>
</table>

The variable for the number of hours driving training, which was numerical and contained a range of values from zero to 40, was recoded into a new variable. The recoded variable is dichotomous; 0 = eight hours or less, and 1 = more than eight hours.

Driving Training Relationships.

Chi-square analysis was performed to determine whether the training variable (type of training or amount of training) was associated with injuries. The results of the chi-square test suggest no evidence that any association is significant.
Question 5. Organizational Culture.

*What is the relationship between organizational culture/behavior and police officer traffic injuries?* Variables of interest included the independent variables related to culture and the dependent variable, injuries.

Twenty questions were used to measure the *culture* category and were placed throughout the survey within the most relevant and related topics. For example, the page with questions pertaining to what types of training are provided also included questions about the priority of training as a measure of culture. Thus, questions targeting culture appeared within various pages of the seven-page questionnaire and were interspersed among other categories without the label “culture.”

*Culture of Driving Safety Descriptives.*

Agencies use several methods to communicate driving policy, but policy and procedure manuals are used in 168 (99.4%) of the 169 respondents’ agencies. Other methods include field training officers (FTOs), supervisors, a variety of other methods. Some wrote in answers such as annual (8), bi-annual (8), semi-annual (1), periodic (6), and remedial review of crashes (1). Other “other” answers included EVOC (Emergency Vehicle Operations Course) in-service (5), newsletters/bulletins (3), and Lexipol (1).

The best way to communicate driving policy is *not* at the police academy, but through field training officers, according to 122 (71.3%) of the respondents; written policies are the best way according to 30 (17.6%).

Of the 180 responses to the question about whether an outside agency investigates motor vehicle incidents involving police officers, answers were split three ways. Those who responded “yes” or “depends,” indicated reasons for calling for outside
investigations to include agency policy, severity of injury or property damage, jurisdiction, and the chief’s discretion. When asked to prioritize all training topics, the use of personal protective equipment ranked first, next was community expectations/officer conduct, use of force was third, and driving was fourth. See Table 5.5.

Table 5.5

<table>
<thead>
<tr>
<th>Organizational Culture</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ways to Communicate Policy (n=178)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Academy</td>
<td>109</td>
<td>61</td>
</tr>
<tr>
<td>Field Training Officer</td>
<td>159</td>
<td>89</td>
</tr>
<tr>
<td>Written Manual</td>
<td>168</td>
<td>94</td>
</tr>
<tr>
<td>Supervisors</td>
<td>119</td>
<td>67</td>
</tr>
<tr>
<td>Best Way Communicate Policy (n=171)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Academy</td>
<td>19</td>
<td>11</td>
</tr>
<tr>
<td>Field Training Officer</td>
<td>122</td>
<td>71</td>
</tr>
<tr>
<td>Written Manual</td>
<td>30</td>
<td>18</td>
</tr>
<tr>
<td>Top Training Priority (n=163)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personal Protective Equipment</td>
<td>59</td>
<td>36</td>
</tr>
<tr>
<td>Community Expectations/Officer Conduct</td>
<td>47</td>
<td>28</td>
</tr>
<tr>
<td>Use of Force</td>
<td>32</td>
<td>20</td>
</tr>
<tr>
<td>Driving</td>
<td>25</td>
<td>15</td>
</tr>
<tr>
<td>Outside Agency Investigates Officer Crashes (n=180)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depends on circumstances</td>
<td>65</td>
<td>36</td>
</tr>
<tr>
<td>Top Factor in Officer Crashes (n=106)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Speed</td>
<td>70</td>
<td>66</td>
</tr>
<tr>
<td>Inexperience</td>
<td>21</td>
<td>20</td>
</tr>
<tr>
<td>Road Conditions</td>
<td>13</td>
<td>12</td>
</tr>
</tbody>
</table>

Top Factors in Crashes.

Recall that the general or main research question asked of police chief executives in the survey was, “What factors contribute to the problem and pattern of police officer
fatalities and injuries in motor vehicle incidents?” The question on the survey was, “What appears to be the top contributing condition or confounding factor that YOU believe may lead to on-duty police officer driving-related injuries and deaths in your agency?”

Chiefs responded clearly that they believe the top factor in crashes is speed, according to 70 (66%) of the 106 chiefs who selected it. Twenty-one (19.8%) cited inexperience; 13 (12.3%) said road conditions; 2 said “other” factors. Space was provided for those choosing “other” to write in a response. Interestingly, while only two respondents chose “other” as their answer, 59 respondents opted to provide more detail by using the space provided for an “other” answer. The 59 additional responses were coded and are shown categorized in Figure 5.3.

![Additional "Other" Factors](image)

Figure 5.3. Police chiefs offered 59 “other” contributing factors in police crashes. Categorized by frequency, distractions were identified most often.

In analyzing results and when further consideration was given to the voluntary additional responses, it appeared as if “technology,” “driver inattention,” and
“distractions” may be considered related. Without the ability to go back to the chiefs for clarification about why so many chiefs volunteered additional information after having selected a primary factor, the decision was made to combine “other” answers and incorporate them into the original categories where they reflect a larger number of “distractions” as shown in Figure 5.4. Perhaps chiefs are saying that speeding, even if it is within policy and/or legal limits, becomes the cause of a crash because of other distractions. In other words, speeding could be interpreted as driving too fast given conditions that included distractions.

![Recoded - Top Crash Factors](image)

Fig. 5.4. Factors identified by chiefs as “other” factors are included in the original set of factors identified as contributing to police crashes; speed and distractions top the list.
Quantifying indicators of driving culture.

Is it possible to quantify and measure the culture of driving safety in police agencies? As previously explained, in the absence of a known valid and reliable instrument to measure the culture of driving safety in police organizations, the survey questions related to culture in this study were adapted from those used in the Klockars et al. (2000) study. The questions in this study of traffic-related injuries were designed around the driving safety environment as they relate to driving policies, policy violations, and discipline for such violations. Borrowing from the Klockars et al. study, the questions revolved around hypothetical scenarios. The goal was to prompt answers that might be considered indicators of an agency’s organizational culture of its driving safety environment and to add to the body of knowledge and understanding of the problem, pattern, and degree of traffic-related injuries.

Two questions on policy violations were related and first asked chiefs first to rate on a scale of 1-5 how serious they believe a set of six hypothetical behaviors to be, and then to indicate how they think officers in their agencies would rate the same six scenarios.

Severity of policy violations.

In response to the question asking for the chiefs to rate the severity of six hypothetical patrol situations both from their perspective and from how they believe officers in their agencies would respond, 142 (91%) view ignoring a command to terminate a pursuit as the most serious policy violation. All 156 respondents agreed it was either “serious,” “more serious,” or “most serious.” They also indicated that their officers would consider (to a lesser extent) the same policy violation to be the most serious of the
six scenarios provided for consideration.

When chiefs’ perspectives are compared to those they believe are their officers’ perspectives, it appears as if policy violations are viewed as more serious by chiefs than by their officers. Frequency distributions for six hypothetical patrol situations, both from their perspective as chiefs as well as how they perceive that officers in their own agencies would rank the severity of the same violations, are shown in Tables 5.6 - 5.11.

Table 5.6

<table>
<thead>
<tr>
<th>Hypothetical Policy Violation: Ignore Command End Pursuit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ignore Command End Pursuit</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Least serious</td>
</tr>
<tr>
<td>Less Serious</td>
</tr>
<tr>
<td>Serious</td>
</tr>
<tr>
<td>More Serious</td>
</tr>
<tr>
<td>Most Serious</td>
</tr>
</tbody>
</table>

Table 5.7

<table>
<thead>
<tr>
<th>Hypothetical Policy Violation: Speed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speed</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Least serious</td>
</tr>
<tr>
<td>Less Serious</td>
</tr>
<tr>
<td>Serious</td>
</tr>
<tr>
<td>More Serious</td>
</tr>
<tr>
<td>Most Serious</td>
</tr>
</tbody>
</table>
Table 5.8

*Hypothetical Policy Violation; Seat Belt*

<table>
<thead>
<tr>
<th></th>
<th>Chief; N=157</th>
<th></th>
<th>Chief / Officer; N=155</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>#</td>
<td>%</td>
<td>#</td>
</tr>
<tr>
<td>Least serious</td>
<td>5</td>
<td>3.2</td>
<td>23</td>
</tr>
<tr>
<td>Less Serious</td>
<td>17</td>
<td>10.8</td>
<td>37</td>
</tr>
<tr>
<td>Serious</td>
<td>40</td>
<td>25.5</td>
<td>40</td>
</tr>
<tr>
<td>More Serious</td>
<td>50</td>
<td>31.8</td>
<td>32</td>
</tr>
<tr>
<td>Most Serious</td>
<td>45</td>
<td>28.7</td>
<td>23</td>
</tr>
</tbody>
</table>

Table 5.9

*Hypothetical Policy Violation; MDT*

<table>
<thead>
<tr>
<th></th>
<th>Chief; N=154</th>
<th></th>
<th>Chief / Officer; N=154</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>#</td>
<td>%</td>
<td>#</td>
</tr>
<tr>
<td>Least serious</td>
<td>34</td>
<td>22.1</td>
<td>64</td>
</tr>
<tr>
<td>Less Serious</td>
<td>35</td>
<td>22.7</td>
<td>45</td>
</tr>
<tr>
<td>Serious</td>
<td>43</td>
<td>27.9</td>
<td>33</td>
</tr>
<tr>
<td>More Serious</td>
<td>34</td>
<td>22.1</td>
<td>8</td>
</tr>
<tr>
<td>Most Serious</td>
<td>8</td>
<td>5.2</td>
<td>4</td>
</tr>
</tbody>
</table>

Table 5.10

*Hypothetical Policy Violation; Cell Phone*

<table>
<thead>
<tr>
<th></th>
<th>Chief; N=157</th>
<th></th>
<th>Chief / Officer; N=155</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>#</td>
<td>%</td>
<td>#</td>
</tr>
<tr>
<td>Least serious</td>
<td>37</td>
<td>23.6</td>
<td>76</td>
</tr>
<tr>
<td>Less Serious</td>
<td>40</td>
<td>25.5</td>
<td>48</td>
</tr>
<tr>
<td>Serious</td>
<td>45</td>
<td>28.7</td>
<td>21</td>
</tr>
<tr>
<td>More Serious</td>
<td>27</td>
<td>17.2</td>
<td>9</td>
</tr>
<tr>
<td>Most Serious</td>
<td>8</td>
<td>5.1</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 5.11

*Hypothetical Policy Violation; Texting*

<table>
<thead>
<tr>
<th></th>
<th>Chief; N=157</th>
<th></th>
<th>Chief / Officer; N=155</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>#</td>
<td>%</td>
<td>#</td>
</tr>
<tr>
<td>Least serious</td>
<td>4</td>
<td>2.5</td>
<td>24</td>
</tr>
<tr>
<td>Less Serious</td>
<td>21</td>
<td>13.4</td>
<td>47</td>
</tr>
<tr>
<td>Serious</td>
<td>24</td>
<td>15.3</td>
<td>40</td>
</tr>
<tr>
<td>More Serious</td>
<td>41</td>
<td>26.1</td>
<td>27</td>
</tr>
<tr>
<td>Most Serious</td>
<td>67</td>
<td>42.7</td>
<td>16</td>
</tr>
</tbody>
</table>
Sanctions for policy violations.

A second set of questions asked chiefs to indicate which sanctions or discipline should and would be imposed for the same six specific but hypothetical policy violations if they were to occur in their own agencies. Chiefs were provided six answers from which they could choose only one of the following: 1. None; 2. Verbal reprimand; 3. Written reprimand; 4. Period of suspension without pay; 5. Demotion in rank; 6. Dismissal. Questions are listed below for each scenario followed by data tables and charts to illustrate answers by respondents.

The number of valid responses ranged from 152 to 155 for the set of questions. Ignoring a command to terminate a pursuit received 155 responses in the should category and 156 in the would category. For that scenario, 105 (68%) said the sanction should be “suspension without pay,” 34 (22%) said it should be a written reprimand, and 13 (8.4%) selected the most serious discipline, “dismissal.” It is worth noting that no one chose the most lenient sanction level, “none,” for this scenario violation, which was designed to be the most serious and was selected as most serious by the respondents.

For the part of the question on what sanction would occur for the same scenario policy violation (ignoring a command), the responses were closely connected to the first part regarding severity of policy violations; however, 156 responses (rather than 155) were recorded. One hundred five (105, 68%) selected “suspension without pay,” 38 (24%) said “written reprimand,” and 8 (5%) said “dismissal.” Again, none chose the most lenient level, “none.”

It is interesting to note that the same number of chiefs selected the “suspension without pay” option for what should and would occur as a sanction imposed for ignoring
an order to terminate a pursuit, which is considered to be the most serious policy violation scenario presented. It also is interesting to note that a slightly larger number indicated that what would occur is a sanction less than what they think should be imposed. This suggests differences not only between agencies but also within agencies.

Sanctions for violating the agency’s speed policy received 154 responses in the should category and 152 in the would category. The majority, 82 (53%), said the sanction should be “written reprimand,” 37 (24%) said it should be the less serious “verbal reprimand,” and 28 (18%) selected the more serious “period of suspension without pay.” One person chose “demotion in rank.” None chose the most serious sanction level, “dismissal,” but six (4%) said the least serious, “none,” should be the sanction for this policy violation if it were to occur in their own agency.

For the second part of the question based on what sanction would occur for violations of policy related to speeding (79, 52%) selected “written reprimand,” 42 (28%) said “verbal reprimand,” and 23 (15%) said “period of suspension without pay.” None selected the two most serious sanctions and eight (5%) said “none,” meaning that nothing would happen for such a violation in their own agency. Here it is interesting to see that while differences between the should and would answers are minimally different, the frequency of would answers appear to be shifting toward more lenient sanctions than what chiefs think should be imposed as appropriate.

The majority of chiefs said sanctions for violations of safety belt policy should be “verbal reprimands” (77, 50%) or “written reprimands (71, 46%). Five (3%) respondents said “suspension without pay” and one (<1%) said “none” and one (<1%) said “dismissal.” The number of respondents to this part of the question was 155.
The same total number (155) of responses was recorded for what would happen for safety belt policy violations. Again, the majority chose written (65, 42%) and verbal reprimands (75, 48%), but in slightly different percentages. Four (3%) said “suspension without pay,” and none chose the two most serious sanctions of demotion or dismissal. Interestingly, the number of those who selected “none” increased by 10 (6%) when compared to answers regarding what should occur.

When viewed as comparisons between what chiefs believe should happen and what chiefs believe would happen in each of the three scenarios already mentioned, differences appear to be minimal. The three scenarios related to technology-related policies are presented next and results appear to show that technology-related policy violations – with the exception of texting while driving – are considered to be less serious and worthy of more lenient discipline than those involving speed and pursuit-related driving.

The majority of chiefs (78, 51%) chose “verbal reprimand,” 52 (34%) chose “written reprimand,” and 20 (13%) said “none” meaning that no sanction should be imposed for violating MDT policy violations. Three (2%) said “suspension without pay” and none chose the two most serious sanctions. A total of 153 responses was recorded.

Two more responses were received for the answer of what sanctions would occur, with 155 answers received for the MDT policy violations. Again, the majority chose verbal (78, 50%) and written (44, 28%) reprimands, 31 (20%) said “none” and two (1%) said “suspension without pay.” Also again, no one chose the most serious sanctions, and answers indicate a shift toward more lenient sanctions suggesting that what would occur is less than what chiefs believe should occur. This is interesting because the technology
policies are considered less serious than the three policies previously discussed that relate to ignoring a command, speeding, and not wearing a safety belt.

A similar pattern is seen in results for the cell phone policy violation scenario. One hundred and fifty four chiefs answered both sets of questions. For the sanctions that should occur for cell phone policy violations, the majority (80, 52%) said “verbal reprimand,” (39, 25%) said “written reprimand” and 31 (20%) said “none.” Four (3%) said “suspension without pay” and none selected the two most serious sanctions of demotion or dismissal.

Responding to what would happen for cell phone policy violations, the same categories were represented but there was a shift toward greater percentages selecting sanctions that are more lenient than what chiefs said they think should be imposed. Here, 71 (46%) selected “verbal reprimand,” 35 (23%) said written reprimand, 46 (30%) said “none” and 2 (1%) said “suspension without pay.”

Frequencies for the sanctions that should and would occur for violations of texting policies showed a similar shift toward leniency from but with a slightly different selection of sanctions. It appears as if texting is considered by chiefs to be more serious than MDT and cell phone policy violations. One chief said “dismissal” should occur, 73 (47%) said “written reprimand,” 51 (33%) said “verbal reprimand,” 21 (14%) said “suspension without pay” and eight (5%) said “none.”

When answering what would occur as a sanction for a texting policy violation, none said “dismissal,” but 18 (12%) said “suspension without pay,” written and verbal reprimands were evenly split at 63 (41%) each, and 10 (6%) said “none.” As seen in Table 5.12, frequencies by percentages for chiefs’ answers regarding sanctions that they
believe *should* and *would* occur for policy violations in all six scenarios indicate that technology policies are considered worthy of less serious sanctions than other policy violations.

Table 5.12

*Chief’s View of Sanctions/Discipline – Should/Would*

<table>
<thead>
<tr>
<th>Sanctions:</th>
<th>Ignore Command</th>
<th>Speed</th>
<th>Seat Belt</th>
<th>MDT</th>
<th>Cell Phone</th>
<th>Texting</th>
</tr>
</thead>
<tbody>
<tr>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>Shd</td>
<td>Wd</td>
<td>Shd</td>
<td>Wd</td>
<td>Shd</td>
<td>Wd</td>
<td>Shd</td>
</tr>
<tr>
<td>Dismissal</td>
<td>8</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Demotion</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Suspend</td>
<td>68</td>
<td>67</td>
<td>18</td>
<td>15</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Written</td>
<td>22</td>
<td>24</td>
<td>53</td>
<td>52</td>
<td>46</td>
<td>42</td>
</tr>
<tr>
<td>Verbal</td>
<td>1</td>
<td>2</td>
<td>24</td>
<td>28</td>
<td>50</td>
<td>48</td>
</tr>
<tr>
<td>None</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>5</td>
<td>1</td>
<td>7</td>
</tr>
</tbody>
</table>

Respondent N 155 156 154 152 155 155 153 155 154 154 154 154

*Culture of Driving Safety Relationships.*

Because no known valid and reliable method exists to measure of the culture of driving safety in police agencies, crosstabulations between culture variables and the dependent variable were not conducted. Instead, paired samples t-tests were used to determine if mean differences of scores to quantify chiefs’ perceptions of severity varied significantly from their perceptions of how they believe officers in their agencies would view the severity of the same policy violations as well as the sanctions or discipline appropriate for the hypothetical violations. T-scores are appropriate when analyzing small samples and when the mean of the population is unknown. Paired samples t-tests also were used to determine if sanctions police chiefs believe *should* occur for the six
policy violations varied significantly from what they believe *would* occur for the same policy violations in their own agencies. It is interesting to note statistically significant differences in every one of the scores for both categories of policy violation severity and should/would discipline. This suggests that chiefs believe officers view policies differently than chiefs do.

Since the number of respondents varied slightly with each scenario, degrees of freedom are listed with t-statistics and p values. Results of a comparison of mean scores are shown with paired-sample t-test statistics in Table 5.13.

<table>
<thead>
<tr>
<th>Severity, Policy Violations</th>
<th>Chief's Own View Mean</th>
<th>Chief Says of Officers Mean</th>
<th>Difference</th>
<th>t(df),</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ignore Command</td>
<td>4.90</td>
<td>4.65</td>
<td>.25</td>
<td>5.24(153)</td>
<td>p=.00*</td>
</tr>
<tr>
<td>Speed</td>
<td>3.54</td>
<td>2.78</td>
<td>.76</td>
<td>9.88(152)</td>
<td>p=.00*</td>
</tr>
<tr>
<td>Seat Belt</td>
<td>3.71</td>
<td>2.95</td>
<td>.75</td>
<td>9.75(153)</td>
<td>p=.00*</td>
</tr>
<tr>
<td>MDT</td>
<td>2.64</td>
<td>1.96</td>
<td>.68</td>
<td>8.84(150)</td>
<td>p=.00*</td>
</tr>
<tr>
<td>Cell Phone</td>
<td>2.54</td>
<td>1.77</td>
<td>.77</td>
<td>9.12(153)</td>
<td>p=.00*</td>
</tr>
<tr>
<td>Texting</td>
<td>3.93</td>
<td>2.76</td>
<td>1.17</td>
<td>13.01(152)</td>
<td>p=.00*</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Discipline:</th>
<th>Should</th>
<th>Would</th>
<th>Difference</th>
<th>t(df),</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ignore Command</td>
<td>2.93</td>
<td>2.83</td>
<td>.10</td>
<td>2.58(154)</td>
<td>p=.01*</td>
</tr>
<tr>
<td>Speed</td>
<td>1.88</td>
<td>1.77</td>
<td>.11</td>
<td>2.78(151)</td>
<td>p=.01*</td>
</tr>
<tr>
<td>Seat Belt</td>
<td>1.55</td>
<td>1.40</td>
<td>.15</td>
<td>3.56(153)</td>
<td>p=.00*</td>
</tr>
<tr>
<td>MDT</td>
<td>1.25</td>
<td>1.12</td>
<td>.13</td>
<td>3.96(152)</td>
<td>p=.00*</td>
</tr>
<tr>
<td>Cell Phone</td>
<td>1.10</td>
<td>.96</td>
<td>.14</td>
<td>4.59(152)</td>
<td>p=.00*</td>
</tr>
<tr>
<td>Texting</td>
<td>1.73</td>
<td>1.58</td>
<td>.15</td>
<td>4.09(152)</td>
<td>p=.00*</td>
</tr>
</tbody>
</table>

*2-tailed significance at 99% Confidence Interval
Given the striking results of within-group differences for all agencies, it is reasonable to wonder if the differences between answers of chiefs in agencies “with injuries” vary significantly from those of chiefs in agencies “without injuries.” The null hypothesis is that there is no difference in chiefs’ views of severity of policy violations in agencies without injuries than in those with injuries when measured by mean scores for each scenario.

An Independent Samples t-test is used to determine if the means from two groups that have not been matched are different from each other. The t-test assumes that the variability of the two groups is approximately equal. A special form of the t-test, Levene’s Test for Equality of Variance, was used in SPSS to determine whether variances between the groups were equal in each category of analysis in order to decide which p value should be associated with the output.

An independent sample t-test was used to test for significance; results are shown in Table 5.14 for severity of violations. Answers reflect the chiefs’ perspectives and what chiefs think their own officers would say.
Table 5.14

*Between-Group Severity Means Comparison, Independent Samples*

<table>
<thead>
<tr>
<th>Severity of Policy Violations</th>
<th>Group w/Injuries</th>
<th>Group w/o Injuries</th>
<th>Mean Difference</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chiefs’ View &amp; (Chief of Officers)</td>
<td>Mean</td>
<td>N</td>
<td>Mean</td>
<td>N</td>
</tr>
<tr>
<td>Ignore Command</td>
<td>4.89</td>
<td>131</td>
<td>4.96</td>
<td>25</td>
</tr>
<tr>
<td>(Chief of Officers)</td>
<td>4.64</td>
<td>132</td>
<td>4.75</td>
<td>24</td>
</tr>
<tr>
<td>Speed</td>
<td>3.54</td>
<td>130</td>
<td>3.64</td>
<td>25</td>
</tr>
<tr>
<td>(Chief of Officers)</td>
<td>2.79</td>
<td>130</td>
<td>2.79</td>
<td>24</td>
</tr>
<tr>
<td>Seat Belt</td>
<td>3.68</td>
<td>132</td>
<td>3.92</td>
<td>5</td>
</tr>
<tr>
<td>(Chief of Officers)</td>
<td>2.97</td>
<td>131</td>
<td>2.96</td>
<td>24</td>
</tr>
<tr>
<td>MDT</td>
<td>2.57</td>
<td>131</td>
<td>3.13</td>
<td>23</td>
</tr>
<tr>
<td>(Chief of Officers)</td>
<td>1.89</td>
<td>132</td>
<td>2.50</td>
<td>22</td>
</tr>
<tr>
<td>Cell Phone</td>
<td>2.48</td>
<td>132</td>
<td>2.88</td>
<td>25</td>
</tr>
<tr>
<td>(Chief of Officers)</td>
<td>1.71</td>
<td>132</td>
<td>2.17</td>
<td>24</td>
</tr>
<tr>
<td>Texting</td>
<td>1.55</td>
<td>130</td>
<td>1.75</td>
<td>24</td>
</tr>
<tr>
<td>(Chief of Officers)</td>
<td>2.68</td>
<td>130</td>
<td>3.21</td>
<td>24</td>
</tr>
</tbody>
</table>

*Significant (2-tailed) at 95% Confidence Interval using Levene’s Test for Equality of Variances.

Results of the t test revealed a statistically reliable difference between the mean scores of the chiefs’ views regarding severity of policy violations related to MDT communication technology used by officers in agencies with injuries vs. views of chiefs in agencies without injuries. Specifically, for chiefs in agencies with injuries that permit MDTs (M = 2.57, SD = 1.183), and those in agencies without injuries that permit MDTs, (M = 3.13, SD = 1.18) t(152) = 2.09, p = .039, α = .05). Results also appear to indicate that we can reject the null hypothesis of no difference between groups when comparing the mean scores of how they think officers in their agencies view the severity of...
violations for other forms of communication technology commonly used in patrol vehicles. Specifically, how chiefs think officers’ view MDT policy violations in agencies with injuries (M = 1.89, SD = 1.006), and those without injuries (M = 2.50, SD = 1.102) t(152) = 2.58, p = .011, α = .05); how chiefs think officers view cell phone policy violations in agencies with injuries (M = 1.71, SD = .890), and those without injuries (M = 2.17, SD = 1.090) t(153) = 2.23, p = .03, α = .05; and how chiefs think officers view texting policy violations in agencies with injuries (M = 2.68, SD = 1.188), and those without injuries (M = 3.21, SD = 1.285), t(152) = 1.96, p = .052, α = .05). Table 5.15 shows what chiefs in two groups think should and would happen as violation sanctions.

Table 5.15

<table>
<thead>
<tr>
<th>Sanctions for Policy Violations</th>
<th>Group w/Injuries</th>
<th>Group w/o Injuries</th>
<th>Mean Difference</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chiefs Say Should (Chiefs Say Would)</td>
<td>Mean</td>
<td>N</td>
<td>Mean</td>
<td>N</td>
</tr>
<tr>
<td>Ignore Command</td>
<td>Should</td>
<td>2.88</td>
<td>130</td>
<td>3.16</td>
</tr>
<tr>
<td></td>
<td>Would</td>
<td>2.82</td>
<td>131</td>
<td>2.88</td>
</tr>
<tr>
<td>Speed -</td>
<td>Should</td>
<td>1.88</td>
<td>129</td>
<td>1.88</td>
</tr>
<tr>
<td></td>
<td>Would</td>
<td>1.75</td>
<td>127</td>
<td>1.88</td>
</tr>
<tr>
<td>Seat Belt</td>
<td>Should</td>
<td>1.55</td>
<td>130</td>
<td>1.52</td>
</tr>
<tr>
<td></td>
<td>Would</td>
<td>1.42</td>
<td>130</td>
<td>1.32</td>
</tr>
<tr>
<td>MDT</td>
<td>Should</td>
<td>1.19</td>
<td>129</td>
<td>1.54</td>
</tr>
<tr>
<td></td>
<td>Would</td>
<td>1.09</td>
<td>130</td>
<td>1.20</td>
</tr>
<tr>
<td>Cell Phone</td>
<td>Should</td>
<td>1.08</td>
<td>130</td>
<td>1.25</td>
</tr>
<tr>
<td></td>
<td>Would</td>
<td>.94</td>
<td>129</td>
<td>1.04</td>
</tr>
<tr>
<td>Texting</td>
<td>Should</td>
<td>1.70</td>
<td>130</td>
<td>1.83</td>
</tr>
<tr>
<td></td>
<td>Would</td>
<td>1.55</td>
<td>130</td>
<td>1.75</td>
</tr>
</tbody>
</table>

*Significant (2-tailed) at 95% Confidence Interval; ** Significant (2-tailed) at 99% Confidence Interval.
Significant differences between the means of two groups allow researchers to reject the null hypothesis, which, in this case, is that there is no difference in views from the chiefs and officers and/or chiefs in both groups regarding severity of policy violations and sanctions for violations. Despite the fact that answers are highly correlated because chiefs provided answers to the sets of questions, the fact remains that most chiefs acknowledge that officers view policy violation differently than they, as chiefs, do. This is reflected in the significance of the mean differences.

As shown, when the mean scores of answers from chiefs about their own points of view regarding severity of policy violations in agencies with injuries are compared to those from chiefs in agencies without injuries, differences in mean scores are significant in half of the scenarios. The fact that the significant scenarios are those involving technology and how they believe officers view seriousness of policy violations suggests that further analysis with a larger sample size should be conducted.

In the comparison of mean scores for sanctions that chiefs in two groups of agencies are compared, a t test revealed a statistically reliable difference between the mean number for sanctions that chiefs believe should be imposed for MDT policy violations in agencies with injuries (M = 1.19, SD = .674) compared with those of chiefs in agencies without injuries (M = 1.54, SD = .779), t(151) = 2.264, p = .025, α = .05.

Also interesting is that for the most part, chiefs in agencies without injuries gave higher scores in both severity and sanction categories than those in agencies with injuries. None of the comparisons between groups on the “should/would” sanction categories revealed statistical significance. This may indicate that chiefs in all agencies believe they have more control over sanctions than over violations.
**Logistic Regression**

Logistic regression analysis indicates that policies permitting cell phone use have the strongest effect on the dependent variable; it also shows that two independent variables, policies permitting cell phone use and agency size, are statistically significant predictors to injury-crashes involving police officers. Specifically, the odds of experiencing injury crashes are 14.42 times greater in agencies with policies permitting cell phones compared with those that don not, when size of agency is held constant. Results also indicate that agency size has a strong effect on the dependent variable. In the model, which included a recoded dependent variable with three size categories (1=Very Small and Small, 2= Medium, and 3 = Large and Very Large), the largest agencies were the referent category. Standardized logit coefficients represent an odds ratio to indicate the odds of experiencing injury crashes in very small and small agencies are .02 times less than in large and very large agencies when cell phone policy is held constant. In medium agencies, the odds of experiencing injury crashes are .15 times less than in large and very large agencies, when cell phone policy is held constant. Table 5.16 shows regression coefficients and significance.

Table 5.16

<table>
<thead>
<tr>
<th>Predictors of Motor Vehicle Related Injuries</th>
<th>B (S.E.)</th>
<th>Wald</th>
<th>df</th>
<th>exp b</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>1.63 (.88)</td>
<td>3.48</td>
<td>1</td>
<td>5.109</td>
<td>.06</td>
</tr>
<tr>
<td>Policy Permits Cell Phone</td>
<td>2.67 (.85)</td>
<td>9.92</td>
<td>1</td>
<td>14.419</td>
<td>.00**</td>
</tr>
<tr>
<td>Agency Size_ recode</td>
<td>22.81</td>
<td></td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Size (1) Very Small &amp; Small</td>
<td>-3.95 (.87)</td>
<td>19.85</td>
<td>1</td>
<td>.019</td>
<td>.00**</td>
</tr>
<tr>
<td>Size (2) Medium</td>
<td>-1.92 (.93)</td>
<td>4.31</td>
<td>1</td>
<td>.147</td>
<td>.04*</td>
</tr>
</tbody>
</table>

Note: N=158; * Significance at 95% Confidence Interval; ** Significance at 99% Confidence Interval.
As shown in Table 5.16, the referent category, Size (3) Large & Very Large, is the constant in the logistic regression model; it appears to have an effect but is not statistically significant. Findings from binary logistic regression testing show that one policy variable and one demographic variable are statistically significant predictors of injuries in motor vehicle incidents involving officers. Discussion of policy implications is included in Chapter 6.
CHAPTER 6
Discussion

Overview

This chapter begins with findings and limitations. It also examines policy implications with recommendations for areas of continued research.

Findings

The findings of this study indicate that not all factors considered relevant were predictive of police officer injuries in motor vehicle incidents. Regarding safety belt laws, while safety belts are known to reduce the severity of injuries in crashes, results in this study do not support the hypothesis that officers who work in states with primary safety belt laws are less likely to be injured in a motor vehicle crash. Theoretically, agencies that enforce primary belt use laws for the general driving population and mandate that officers use safety belts on-duty would suffer fewer casualties. That does not appear to be the case.

Safety belt policies were not statistically significant in this sample, but two other policy variables, cell phones-permitted and MDTs-permitted, were found to be statistically and significantly associated with the dependent variable, injuries. Only one policy variable, cell phone-permitted, was selected for inclusion in the logistic regression model in an effort to create a conservative and parsimonious equation. As shown in the logistic regression analysis in Chapter 4, results indicate that policies permitting cell phones in vehicles are strong predictors of injury crashes.

Though not hypothesized, this study also found that agency size is statistically significant and predictive of injury crashes. Large and very large agencies experienced the greatest number of injuries and the most severe injuries, fatalities, but it is certain that
agencies of all sizes are likely to notice the impact of injured police officers and out-of-service vehicles.

Limitations

The idea to target police chiefs as experts in police organizations throughout the nation via an online format appeared to be logical and straightforward. However, a list of current chiefs’ email address either does not exist or is not available to the general public. Without letters of support or funding from a partner such as the International Association of Chiefs of Police or the National Institute of Justice, the process was more complicated and time-consuming for the researcher. The process of preparing to deploy the survey involved two phases; the first involved collecting email addresses, and the second involved testing addresses with a pre-survey letter prior to actual deployment. The two phases took about six months, from December 2011 until June 2012, to complete.

The rate of response (25%) may have been negatively affected for various reasons. First, police chiefs likely are not in the practice of answering questions posed by unknown email contacts. Second, some email addresses were incorrect and could not be delivered. Third, some who were targeted but whose agencies did not experience injuries or deaths may have dismissed the email thinking it did not apply to them. Fourth, others may not have had time or thought the cost (about 10-15 minutes of time) outweighed the benefit (intrinsic). And finally, the decision to use survey software available to students at UNLV was made for practicality and affordability. However, unanticipated system maintenance took the software offline for 12 hours two days after the survey was initially deployed, and it undoubtedly affected the momentum and response rate. To compensate for the time lost, the survey remained open after the July 4 holiday weekend.
The survey intentionally did not capture information about whether the chief was appointed or elected, whether the area served is urban or rural, age of patrol vehicles, length of shifts, and other fatigue factors. Other omitted variables that might have been considered more standard or consistent measures may have included number of vehicle miles driven, size of population served, or the ratio of officers to residents. The decision to exclude such variables was intentional, in part, to identify new less observable avenues to explore.

**Policy Implications**

Are police officers better able than the general population is to drive while distracted by communication technology? We know that the general population is discouraged from using such technology while driving, yet this study’s findings indicate that some agencies offer no driving training above and beyond what is obtained at the police academy and that the majority allow cell phone and MDT use. In 2012, motor-vehicle collisions again were the leading cause of officer fatalities, taking the lives of 50 officers (NLEOMF, 2013) and injuring an unknown number of other officers. What can agency leaders do to change outcomes?

The academic community and police practitioners have been working together for decades to solve problems. They recognize the benefits of empirical evidence and data-driven strategies, such as problem-oriented policing and hotspots, for the reduction of crime. Now, police researchers are calling for improvement in data collection and measurement of relevant police practices to assist police agencies in personnel and staffing challenges both to serve and to improve police science (Wilson and Heinonen, 2011, p. 293). In summarizing limits to accessibility of data related to police personnel,
Wilson and Heinonen suggest the “most obvious explanation for non-response (to a survey for personnel data) is scarcity of resources” (p. 290).

It is interesting that police chiefs in large and very large agencies, those experiencing the most losses, made up the largest percentage of respondents. Perhaps large agencies have more capacity to complete surveys, but the most obvious explanation for the response rate from larger agencies is that the problem affects them and that chiefs in larger agencies are aware and interested in the problem, willing to participate, and are more motivated to explore other avenues for solutions.

The findings in this study show significant differences in the mean scores of answers to cultural and hypothetical scenarios from chiefs in agencies that have experienced injury crashes when compared to those from chiefs in agencies that have not experienced injury crashes. While hypothetical situations may not be considered in the same way as self-reported behaviors or observations, we know that the work of officers involves a great deal of discretion and decision-making. As previous research has revealed, the work of police officers is necessarily driven but not clearly defined and prescribed by formal organizational rules in part inherent in the nature of the street-level nature of the tasks involved (Wilson, 1989). Wilson believed that culture matters. The findings in this study may indicate support for Wilson’s belief that bureaucratic agencies, over time, will take on a culture or personality that influences the behavior of those who join the organization. This study found that both cell phones and MDTs are covered by agency policies and are commonly used by officers as communication tools in the field in more than 90% of the responding agencies. It also found that training in the use of such technology is not provided as extensively and that there may be lessons learned from
agencies that do not experience injuries. It is imperative to explore if, and to what extent, new technologies are contributing to the inattention or distractions of officers driving on-duty that lead to crashes. More research should be conducted on the organizational cultures within and among police agencies.

There is a need for evidence-based academic research specific to this topic that may be used by police managers tasked with mitigating such risks. A central repository for tracking all police injuries does not exist. Some have said police agencies should collect data on injuries to officers and that it should be submitted and stored in a central data repository for use by researchers. Yet, there may be reasons that police do not want that information tracked. Perhaps they would then need to respond to requests for information, including information that might be used against their agency in some way.

One of the mechanisms used to discourage the committing of crime in the general population is deterrence. Academic literature on the effect of deterrence and strategies employed by police includes examples of “hot spots” policing and problem-oriented policing (Apel & Nagin, 2011). New research on criminal deterrence related to traffic safety and policy implementation suggests that standard or consistently used variables in studies on the impact of speed limits on traffic-related fatalities have missed an important variable – deterrence – on the effect of implementation of speed limit laws (Ritchey, Nicholson-Crotty, 2011). The study’s findings suggest that fines have a modest impact on fatalities unless the posted limits are enforced.

The same logic should also be applied to policy violations and sanctions within police agencies. Deterrence theory may be worthy of consideration as it relates to organizational cultures. Chiefs might begin by asking all ranks if their individual
agency’s culture permits or deters policy violations and how closely sanctions actually match with violations in their individual agencies.

As more governmental agencies borrow successful business practices to achieve goals, it is appropriate to investigate how business schools teach, prepare, and coach students on the importance of leadership as it relates to organizational design. In an elective class taught at Harvard Business School, students are told that before managers are able to create a climate of “shared responsibilities” in work environments, they must foster an awareness of “shared purpose” to allow employees to be proud of the part they play in achieving the organizations’ mission and purpose (Simons, 2005, p. 175). Managers also must: construct a “cohesive group” that people will want to be associated with and belong; instill values of integrity and trust; and must see that the rewards are “fair” and “just” for those who contribute to the value of the organization (p. 175). Simons argues that most importantly, leaders must also “lead the way” by setting an example that illustrates the ideals others are to adopt and demonstrate, which requires that “slips in integrity” are to be considered reasons for eliminating managers from advancing to leadership positions (p. 176).

If police chiefs are to function as leaders in their organizations they must model good behavior and pay attention to best practices. Yet research shows that many practitioners don’t have time or access to reliable evidence-based data (Rojek, Alpert, Smith, 2012). It also shows that police agencies today face staffing challenges related to attrition, supply of qualified candidates, and expansion of officers’ responsibilities, notably those involving higher-level skills, such as those needed for community policing,
homeland security responsibilities and cybercrime investigations (Wilson and Heinonen, 2011).

Schein wrote more than 20 years ago that it is good to balance research on organizational culture with descriptive and clinical research because it is important to know first what is going on in organizations before investigators, theoreticians and consultants tell managers how to modify culture (1990). With regard to surveys as a research method to understand culture, Schein cautioned that a problem with attempting to measure culture through questionnaires is that it assumes knowledge of the dimensions to be studied. Practically speaking, we must remember that circumstances of a study reported in the aggregate do not consider or predict single situations. Nevertheless, the importance of empirical data on which evidence-based decision making in law enforcement can be useful cannot and should not be ignored (Schultz, Hudak, Alpert, 2010). Cultural climates within organizations are unwritten and unspoken. A decade ago, Khademian (2002) described culture as “subterranean,” but able to be changed by “skillfull” public managers (p. vii). Aware of the debates surrounding the proposition, Khedamian suggests that such public managers can help change the behavior of public employees toward better performance.

Findings from this study suggest that police chiefs are interested in being partners with academic communities to learn more about how to protect their own officers. Results of the hypothetical scenarios indicate there may be significant differences in the culture or environments of driving safety between agencies that experience injury crashes and those that do not. Much more study is needed in this area, and perhaps one or more of
the chiefs who chose to participate in this study would be willing to participate in future studies.

Conclusions

The findings of this study offer an exploratory first look into a population of drivers affected by organizational policies and individual circumstances. The issue of police officer safety continues to be a local problem of national concern. The issues expressed by police chiefs about officer-involved crashes raises the issue of distractions as another factor that influences motor vehicle crashes experienced by police agencies of all sizes. The results of this study suggest that communication technology in police vehicles is common to agencies of all sizes and is an important factor in predicting injury crashes. Large and very large agencies in this study report more frequent and more severe injuries than agencies of other sizes, yet generalization based on this small sample size would not be prudent.

The fact that more than 200 chiefs participated in this survey validates the importance of safeguarding current employees. Police leaders tasked with carrying out their agencies mission are forced to consider available resources. Administrators tasked with personnel management, scheduling, and deployment of officers in the times of economic downturns are faced with more complicated challenges that include increased attrition and decreasing revenues (Wilson and Heinonen, 2011). The problem and pattern of police officer injuries and fatalities in motor vehicle incidents does not belong solely to the police or to their governing authority. It is a public problem when officers responding to calls for service are involved in crashes and become additional burdens rather than solutions to the first call for help. An understanding of the contributing factors is
imperative and will help increase support for collecting more data on this topic so that more officers are able to arrive on scenes without incident.
Appendix A – Survey Items

Driving Forces

Informed Consent Statement
The following information is provided for the protection of human subjects in this research study.

Driving Forces: Factors Affecting Police Officer Deaths and Injuries in Motor Vehicle Incidents

Purpose of the Study
My name is Carol Servino, and I am a doctoral candidate in the Public Affairs Ph.D. program at the University of Nevada, Las Vegas, where I am conducting a research study. The purpose of this study is to learn more about factors related to the problem and pattern of increased numbers of police officers killed and injured in motor vehicle incidents throughout the United States. Incidents of concern involve automobiles, motorcycles, and those in which officers are "road struck."

Participants
You are being asked to participate in the study because of your position as the chief executive of a police agency.

Procedures
If you volunteer to participate in this study, you will be asked to take a self-administered online survey and to answer questions on behalf of your own individual agency.

Costs/Compensation
There is no compensation for participation in the study, which takes approximately 10-15 minutes to complete.

Benefits of Participation
There are no probable benefits of the research to individuals who participate; however, participants may request results, which will be stated in generalities and made public as a doctoral dissertation. Those chiefs or their designees who choose to participate on behalf of their agencies will benefit society by contributing their practical expertise to advance knowledge both within the profession and in social science research that involves traffic safety, public health, strategic risk management in public administration, and communication technology.

Risks of Participation
No risks are anticipated from taking part in this study. Respondents have the right to refuse to answer any questions; participation is entirely voluntary, and may be terminated at any time by striking the "cancel" button on the survey so that answers are not recorded.

Confidentiality
All information gathered in this study will be kept completely confidential by the investigators. No reference will be made in written or oral materials that could link you to this study. IP addresses are not maintained in this research survey’s design.

How Findings Will Be Used
Data collected will be analyzed and reported in generalities as doctoral dissertation public research conducted at the University of Nevada, Las Vegas. Respondents should not agree to participate until and unless they have had the chance to ask questions and have been given answers to all of their questions. If you have any questions or concerns about the study, you may contact Carol Servino at servino@unlv.nevada.edu or her faculty advisor, William Sousa, Ph.D., at william.sousa@unlv.edu. If you have questions about your rights as a research participant, please contact the UNLV Office of Research Integrity - Human Subjects at 702-895-2794 or toll free at 877-2794 or by email at IRB@unlv.edu.

Approved by the UNLV IRB. Protocol #1111-3967M
Received: 12-09-11 Approved: 12-16-11 Expiration: 12-15-2012
Executive Perspectives

The issue of police safety is a local issue of national concern. Input from police chiefs on this topic is essential, not only because all chiefs began their careers as patrol officers but also because those who achieve the title of chief are in better positions to understand the top-down and bottom-up forces that affect risk management in their agencies. Questions in this survey are directed to POLICE CHIEFS or their DESIGNEES on behalf of their agencies.

For the general population, fatalities caused by motor vehicle traffic crashes declined in the five years between a high in 2005 to a low in 2009. For law-enforcement officers, however, traffic-related fatalities have been the leading cause of officers’ deaths for more than a decade, up to and including 2010.

This survey is designed to collect data to better understand factors that police chiefs believe may have contributed to more officers dying in traffic-related incidents than from any other single cause of death since 1998. Your participation will allow researchers to work with practitioners to improve officer safety.

Thank you in advance for taking the time to complete this survey on behalf of your agency. Please know that you will remain completely anonymous, and that aggregate responses will be compiled in a report available upon request.

Answers are to be based on agencies rather than individuals. Unless otherwise specified, please consider only the last five years (2006-2010) as the basis for your answers. Rating scales are set from 1 to 5, with 1 indicating the least and 5 indicating the most.
Driving Forces

Social, Economic, and Public Health

The cost of crashes is on the rise. Costs are calculated not only in dollars but also in personal injuries that translate into time and productivity lost both at work and at home. The questions in this section refer to incident types or categories - AUTOMOBILE, MOTORCYCLE, and ROAD STRUCK - that resulted in on-duty officer fatalities and injuries.

1. Has your agency experienced the loss of any of its on-duty sworn personnel due to a fatal injury (by any means - not only by motor vehicle incidents) in the past five years?
   ○ Yes ○ No

2. Has your agency experienced the death of an on-duty police officer as a result of an AUTOMOBILE CRASH in the past five years? If the answer is "no," skip to Question #4.
   ○ Yes ○ No

3. If you answered yes to Question #2, was the officer a driver or a passenger in the most recent incident?
   ○ driver ○ passenger ○ both answers apply

4. Has your agency experienced the death of an on-duty police officer as a result of a MOTORCYCLE crash/incident in the past five years?
   ○ Yes ○ No

5. Has your agency ever experienced the death of an on-duty police officer 'ROAD STRUCK' while outside a patrol vehicle or motorcycle?
   ○ Yes ○ No

6. Has your agency experienced motor vehicle crashes resulting in on-duty police officer INJURIES (non-fatal) in the past five years?
   ○ Yes ○ No

7. Has your agency been named in a lawsuit as a result of an on-duty motor vehicle crash in the past five years?
   ○ Yes ○ No

8. When an officer in your agency is involved in a motor vehicle crash, does an outside agency investigate the incident?
   ○ yes ○ no ○ depends

9. If you answered "yes" or "depends" to Question #8, please describe the conditions:
Officer Safety Priorities and Procedures
Now, we would like you to consider YOUR AGENCY’S driving policies and procedures.

10. Does your agency have a written driving policy?
   ☐ Yes ☐ No

11. Does your agency use mobile data terminals in its police patrol vehicles? If your answer is "no," skip to Question #13.
   ☐ Yes ☐ No

12. If you answered yes to Question #11, are restrictions (such as reduced speed or the need for a second officer in the vehicle) placed on officers’ use of MDTs while vehicles are in motion?
   ☐ Yes ☐ No

13. Are there speed restrictions placed on officers’ responses to emergency calls?
   ☐ Yes ☐ No

14. Are there speed restrictions placed on officers involved in pursuit driving?
   ☐ Yes ☐ No

15. Does your agency permit police officers to use cell phones in police vehicles? If your answer is "no," skip to Question #17.
   ☐ Yes ☐ No

16. If you answered yes to Question #15, are restrictions placed on officers’ use of cell phones while vehicles are in motion?
   ☐ Yes ☐ No

17. Are officers in your agency always mandated to wear safety belts while driving on-duty?
   ☐ Yes ☐ No

18. What appears to be the top contributing condition or confounding factor that YOU believe may lead to on-duty police officer driving-related injuries and deaths in your agency?
   ☐ Inexperience
   ☐ Road conditions
   ☐ Speed
   ☐ Other
   ☐ If other, please specify______________
Driving Forces

Communication and Training Culture

Now, please consider how your agency TRAINS officers and COMMUNICATES its policies and procedures.

19. How is your agency’s driving policy communicated to patrol personnel? Check all that apply.

☐ Taught at academy
☐ Issued in a written policy/procedure manual (hard copy, online, or both)
☐ Incorporated as part of field-training by officers (verbally, written notes or reports, online, or any combination)
☐ Issued by supervisors (verbally, written notes or reports, online, or any combination)
☐ Other
☐ If other, please specify

20. With regard to traffic safety behaviors, which of the following factors do YOU believe exerts the MOST influence on officers in your agency?

☐ Training in the police academy
☐ On-the-Job training with a field training officer
☐ Written policies and procedures

21. Is your agency’s driving policy reviewed in an ongoing and regular basis? If your answer is “no,” skip to Question #23.

☐ Yes ☐ No

22. If you answered yes to Question #21, how often is your agency’s driving policy reviewed?

☐ As needed
☐ Annually or on a regular basis at set intervals
☐ Occasionally
☐ Don’t know

23. Has your agency received NHTSA highway safety grant funds for traffic safety education and enforcement programs in the past five years? If your answer is “no,” skip to Question #25.

☐ Yes ☐ No

24. If you answered yes to Question #23, indicate the targeted campaigns funded by NHTSA grants. Check all that apply.

☐ Seat belts / occupant protection
25. Is the safety belt law a primary enforcement law or a secondary enforcement law in your jurisdiction?
   - Primary
   - Secondary
   - Does not apply (New Hampshire only)

26. Does your agency investigate driving records of candidates being considered for and prior to employment as police officers?
   - Yes
   - No

27. Does your agency monitor off-duty driving records of police officers?
   - Yes
   - No

28. Approximately how many hours of training related to driving are provided after the academy to officers in your agency annually?
   - Annually

29. What type of training is provided? Check all that apply.
   - Emergency Response Driving
   - Pursuit
   - Skills (Steering, Braking, Speed)
   - Judgment / Performance under Stress
   - Use of vehicle technology
   - Proper use of safety belt
   - Community Expectations / Officer Conduct (Driving)

30. Now, please shift your attention to the four (4) training topics of driving, use of force, personal safety equipment, and officer conduct. Considering all training topics covered by policy, please rank the priority YOU believe your agency’s administration attaches to each category. (1 = least important; 4 = most important) Rank the items below, using numeric values starting with 1.
   - Driving
   - Use of Force
   - Personal Protective Equipment
   - Community Expectations/Officer Conduct
31. Assuming an agency has a policy on such behaviors, please rate the following HYPOTHETICAL behaviors. With 1 being the **least serious** and 5 being the **most serious**, please rate how serious **YOU** consider these hypothetical behaviors to be:

<table>
<thead>
<tr>
<th>Behavior</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ignoring a supervisor's command to terminate a pursuit.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exceeding the posted speed limit by 35 mph in violation of agency policy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not wearing a safety belt while responding to a call for service.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating a mobile data terminal while the patrol vehicle is in motion.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Talking on a cell phone while driving a patrol vehicle.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Composing a text message while driving a patrol vehicle.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

32. With 1 being the **least serious** and 5 being the **most serious**, please rate how serious you believe **MOST OFFICERS** in your agency consider these hypothetical behaviors to be:

<table>
<thead>
<tr>
<th>Behavior</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ignoring a supervisor's command to terminate a pursuit.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exceeding the posted speed limit by 35 mph in violation of agency policy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not wearing a safety belt while responding to a call for service.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating a mobile data terminal while the patrol vehicle is in motion.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
data terminal while the patrol vehicle is in motion.
Talking on a cell phone while driving a patrol vehicle.
Composing a text message while driving a patrol vehicle.

33. If an officer in your agency ignored a supervisor’s command to terminate a pursuit and was discovered doing so - in violation of policy - what discipline, if any, do YOU think SHOULD follow?
- none
- verbal reprimand
- written reprimand
- period of suspension without pay
- demotion in rank
- dismissal

34. If an officer in your agency ignored a supervisor’s command to terminate a pursuit and was discovered doing so - in violation of policy - what discipline, if any, do YOU think WOULD follow?
- none
- verbal reprimand
- written reprimand
- period of suspension without pay
- demotion in rank
- dismissal

35. If an officer in your agency exceeded the posted speed limit by 35 mph in violation of agency policy not to exceed 20 mph over the posted limit and was discovered doing so, what discipline, if any, do YOU think SHOULD follow?
- none
- verbal reprimand
- written reprimand
- period of suspension without pay
- demotion in rank
- dismissal

36. If an officer in your agency exceeded the posted speed limit by 35 mph in violation of agency policy not to exceed 20 mph over the posted limit and was discovered doing so, what discipline, if any, do YOU think WOULD follow?
- none
- verbal reprimand
- written reprimand
- period of suspension without pay
- demotion in rank
- dismissal

37. If an officer in your agency was reported to be not wearing a safety belt - in violation of policy - while responding to a call for service, what if any discipline do YOU think SHOULD follow?
38. If an officer in your agency was not wearing a safety belt - in violation of policy - while responding to a call for service, what if any discipline do YOU think **WOULD** follow?
- none
- verbal reprimand
- written reprimand
- period of suspension without pay
- demotion in rank
- dismissal

39. If an officer in your agency were operating a mobile data terminal while the patrol vehicle was in motion - in violation of policy - and was discovered doing so, what discipline, if any, do YOU think **SHOULD** follow?
- none
- verbal reprimand
- written reprimand
- period of suspension without pay
- demotion in rank
- dismissal

40. If an officer in your agency were operating a mobile data terminal while the patrol vehicle was in motion - in violation of policy - and was discovered doing so, what discipline, if any, do YOU think **WOULD** follow?
- none
- verbal reprimand
- written reprimand
- period of suspension without pay
- demotion in rank
- dismissal

41. If an officer in your agency were talking on a cell phone while driving a patrol vehicle while the patrol vehicle was in motion - in violation of policy - and was discovered doing so, what discipline, if any, do YOU think **SHOULD** follow?
- none
- verbal reprimand
- written reprimand
- period of suspension without pay
- demotion in rank
- dismissal

42. If an officer in your agency were talking on a cell phone while driving a patrol vehicle while the patrol vehicle was
43. If an officer in your agency, while driving a patrol vehicle was composing a text message and the vehicle was in motion - in violation of policy - what discipline, if any, do YOU think SHOULD follow?

- none
- verbal reprimand
- written reprimand
- period of suspension without pay
- demotion in rank
- dismissal

44. If an officer in your agency while driving a patrol vehicle was composing a text message and the vehicle was in motion - in violation of policy - what discipline, if any, do YOU think WOULD follow?

- none
- verbal reprimand
- written reprimand
- period of suspension without pay
- demotion in rank
- dismissal
Driving Forces

Demographics

Now, please provide some descriptive information about your agency's size, jurisdiction, and geographic location.

45. What is the size of your agency?
   - [ ] Very Small (fewer than 25 officers)
   - [ ] Small (25 - 75) officers
   - [ ] Medium (76 - 200) officers
   - [ ] Large (201 - 500) officers
   - [ ] Very Large (500 +) officers

46. Indicate your agency's primary jurisdiction:
   - [ ] Municipal
   - [ ] County
   - [ ] State
   - [ ] National
   - [ ] Special Jurisdiction (school, university, parks, etc.)

47. Indicate the approximate number of patrol officers driving marked patrol vehicles and are covered by the driving policy in your agency.

48. Indicate the approximate number of plain clothes police officers who drive unmarked cars on official duty and are covered by the driving policy in your agency.

49. In what region of the country is your agency located?
   - [ ] North/east (CT, DC, DE, MA, ME, NH, NJ, NY, PA, RI, VT)
   - [ ] South (AL, AR, FL, GA, KY, LA, MD, MS, NC, SC, TN, VA, WV)
   - [ ] Midwest (IO, IL, IN, KS, MO, NE, OH)
   - [ ] Central (MI, MN, ND, SD, WI)
   - [ ] Southwest (AZ, NM, OK, TX)
   - [ ] West (AK, CA, CO, HI, ID, MT, NV, OR, UT, WA, WY)

50. Is your agency professionally accredited by either a regional or national accrediting organization?
   - [ ] Yes
   - [ ] No
Driving Forces

Survey Completed

Thank you for helping researchers better understand this vital police issue.

Your time and attention is of great value, and your participation in this survey is sincerely appreciated.

If you would like to receive survey results when they are compiled and the final report is available, email Carol Servino at servinoc@unlv.nevada.edu or William Sousa, Ph.D. at william.sousa@unlv.edu.
### Appendix B – Survey Codebook

#### Police – Driving Forces

<table>
<thead>
<tr>
<th>Variable</th>
<th>Question (#) and Variable Names</th>
<th>SPSS Variable ID/ Values</th>
<th>Label/Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Law_SB_Prim</td>
<td>1</td>
<td>0=N/ 1=Y</td>
<td>Primary Seat Belt Law &amp; Enforcement</td>
</tr>
<tr>
<td>Law_SB_Sec</td>
<td>2</td>
<td>0=N/ 1=Y</td>
<td>Secondary Seat Belt Law &amp; Enforcement</td>
</tr>
<tr>
<td>Policies</td>
<td>10</td>
<td>Policy_writtendrvg</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>11</td>
<td>Policy-mdtsinvehicles</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>12</td>
<td>Policy_mdtrestrictions</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>13</td>
<td>Policy_speedrestrictions</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>14</td>
<td>Policy_speedrestrictions_pursuit</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>15</td>
<td>Policy_cellph_permitted</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>16</td>
<td>Policy_cellph_restricted</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>17</td>
<td>Policy_SB_mandate</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>26</td>
<td>Policy_priordrivingrecords</td>
<td>96</td>
</tr>
<tr>
<td></td>
<td>27</td>
<td>Policy-offdutydriving</td>
<td>97</td>
</tr>
<tr>
<td>Training</td>
<td>21</td>
<td>Policy_review</td>
<td>85</td>
</tr>
<tr>
<td></td>
<td>22</td>
<td>Policy_freq_review_</td>
<td>86</td>
</tr>
<tr>
<td></td>
<td>23</td>
<td>Grant_Recvd</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>24</td>
<td>Gant_Recvd_SB</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>24</td>
<td>Grant_Recvd_ImplDrv</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>24</td>
<td>Grant_Recvd_Speed</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>24</td>
<td>Grant_Recvd_DD</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>24</td>
<td>Grant_Recvd_Other</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>28</td>
<td>Train_hrs_yearly</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td>29</td>
<td>Train_emergency</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>29</td>
<td>Train_pursuit</td>
<td>19</td>
</tr>
<tr>
<td></td>
<td>29</td>
<td>Train_skills</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>29</td>
<td>Train_judg_stress</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>29</td>
<td>Train_vehicle Tech</td>
<td>22</td>
</tr>
<tr>
<td></td>
<td>29</td>
<td>Train_safetybelts</td>
<td>23</td>
</tr>
<tr>
<td></td>
<td>29</td>
<td>Train_community &amp; conduct</td>
<td>-</td>
</tr>
<tr>
<td>Title</td>
<td>Code</td>
<td>Response</td>
<td>Description</td>
</tr>
<tr>
<td>--------------------------------------------</td>
<td>------</td>
<td>----------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Investigate_outsideagency</td>
<td>69</td>
<td>0=N/1=Y 2=depends</td>
<td>Outside agency investigates crash</td>
</tr>
<tr>
<td>Outside_conditions</td>
<td>-</td>
<td>open comment</td>
<td>Conditions/circumstances described</td>
</tr>
<tr>
<td>TopFactor_Inexp_chf</td>
<td>70</td>
<td>0=N/1=Y</td>
<td>Top reason: Inexperience</td>
</tr>
<tr>
<td>TopFactor_RdCond_chf</td>
<td>71</td>
<td>0=N/1=Y</td>
<td>Top reason: road cond.</td>
</tr>
<tr>
<td>TopFactor_Speed_chf</td>
<td>72</td>
<td>0=N/1=Y</td>
<td>Top reason: speed</td>
</tr>
<tr>
<td>TopFactor_Other_chf</td>
<td>73</td>
<td>0=N/1=Y</td>
<td>Top reason: other</td>
</tr>
<tr>
<td>TopFactorCrashes_ranked</td>
<td>74</td>
<td>1-4</td>
<td>Top factor crashes ranked by chief</td>
</tr>
<tr>
<td>Comm_Pol_TAC</td>
<td>75</td>
<td>0=N/1=Y</td>
<td>Driving policy taught at academy (TAC)</td>
</tr>
<tr>
<td>Comm_Pol_WPPM</td>
<td>76</td>
<td>0=N/1=Y</td>
<td>written P&amp;P</td>
</tr>
<tr>
<td>Comm_Pol_FTO</td>
<td>77</td>
<td>0=N/1=Y</td>
<td>FTO officer</td>
</tr>
<tr>
<td>Comm_Pol_Supvr</td>
<td>78</td>
<td>0=N/1=Y</td>
<td>supervisor</td>
</tr>
<tr>
<td>Comm_Pol_other</td>
<td>79</td>
<td>open comment</td>
<td>Other methods</td>
</tr>
<tr>
<td>BestWayCommPol_TAC</td>
<td>80</td>
<td>0=N/1=Y</td>
<td>Best way communicate-TAC</td>
</tr>
<tr>
<td>BestWayCommPol_WPPM</td>
<td>81</td>
<td>0=N/1=Y</td>
<td>Best way - written P&amp;P</td>
</tr>
<tr>
<td>BestWayCommPol_FTO</td>
<td>82</td>
<td>0=N/1=Y</td>
<td>Best way - on-job/FTO</td>
</tr>
<tr>
<td>BestWayCommPol_Supervisor</td>
<td>83</td>
<td>0=N/1=Y</td>
<td>Best way - supervisor</td>
</tr>
<tr>
<td>Priority1Train_Driving</td>
<td>24</td>
<td>0=N/1=Y</td>
<td>Driving is Priority 1 for training</td>
</tr>
<tr>
<td>Priority1Train_UseForce</td>
<td>25</td>
<td>0=N/1=Y</td>
<td>Use of Force is Priority 1 for training</td>
</tr>
<tr>
<td>Priority1Train_PPE</td>
<td>26</td>
<td>0=N/1=Y</td>
<td>Personal Protective Equipment use is Priority 1 for training</td>
</tr>
<tr>
<td>Priority1Train_CEOC</td>
<td>27</td>
<td>0=N/1=Y</td>
<td>Community Expectations, Officer Conduct is Priority 1 for training</td>
</tr>
<tr>
<td>Priority2Train_Driving</td>
<td>28</td>
<td>0=N/1=Y</td>
<td>Driving is Priority 2 for training</td>
</tr>
<tr>
<td>Priority2Train_UseForce</td>
<td>29</td>
<td>0=N/1=Y</td>
<td>Use of Force is Priority 2 for training</td>
</tr>
<tr>
<td>Priority2Train_PPE</td>
<td>30</td>
<td>0=N/1=Y</td>
<td>Personal Protective Equipment is Priority 2 for training</td>
</tr>
<tr>
<td>Priority2Train_CEOC</td>
<td>31</td>
<td>0=N/1=Y</td>
<td>Community Expectations, Officer Conduct is Priority 2 for training</td>
</tr>
<tr>
<td>Priority3Train_Driving</td>
<td>32</td>
<td>0=N/1=Y</td>
<td>Driving is Priority 3 for training</td>
</tr>
<tr>
<td>Priority3Train_UseForce</td>
<td>33</td>
<td>0=N/1=Y</td>
<td>Use of Force is Priority 3 for training</td>
</tr>
<tr>
<td>Category</td>
<td>Hyp</td>
<td>Rating</td>
<td>Description</td>
</tr>
<tr>
<td>----------------------</td>
<td>-----</td>
<td>--------</td>
<td>---------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Priority 3 Training</td>
<td></td>
<td></td>
<td>Personal Protective Equipment is Priority 3 for training</td>
</tr>
<tr>
<td>Priority 3 Training</td>
<td></td>
<td></td>
<td>Community Expectations, Officer Conduct is Priority 3 for training</td>
</tr>
<tr>
<td>Priority 4 Training</td>
<td></td>
<td></td>
<td>Driving is Priority 4 for training</td>
</tr>
<tr>
<td>Priority 4 Training</td>
<td></td>
<td></td>
<td>Use of Force is Priority 4 for training</td>
</tr>
<tr>
<td>Priority 4 Training</td>
<td></td>
<td></td>
<td>Personal Protective Equipment is Priority 4 for training</td>
</tr>
<tr>
<td>Priority 4 Training</td>
<td></td>
<td></td>
<td>Community Expectations, Officer Conduct is Priority 4 for training</td>
</tr>
<tr>
<td>Culture</td>
<td></td>
<td></td>
<td>How serious chief sees -</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Ignoring order to terminate pursuit</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Exceeding speed; policy violation</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Not using safety belt</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Using MDT while veh. in motion</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Talking on cell phone while driving</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Texting on cell phone while driving</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Ignore order to stop pursuit</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Exceed speed; policy violation</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Not using safety belt</td>
</tr>
</tbody>
</table>

116
<table>
<thead>
<tr>
<th>Hyp_Ofcr_MDTmotion</th>
<th>49</th>
<th>1=least serious; 5=most serious</th>
<th>Using MDT while in motion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hyp_Ofcr_cellndriving</td>
<td>50</td>
<td>1=least serious; 5=most serious</td>
<td>Talking on cell phone while driving</td>
</tr>
<tr>
<td>Hyp_Ofcrsrs_textndriving</td>
<td>51</td>
<td>1=least serious; 5=most serious</td>
<td>Texting on cell phone while driving</td>
</tr>
<tr>
<td>Hyp_Dscpln_chf_shd_prst</td>
<td>98</td>
<td>0=none</td>
<td>Discipline Chief says should follow pursuit violation</td>
</tr>
<tr>
<td>Hyp_Dscpln_chf_shd_prst</td>
<td>99</td>
<td>0=none</td>
<td>Discipline Chief says would follow pursuit violation</td>
</tr>
<tr>
<td>Hyp_Dscpln_chf_prst</td>
<td>100</td>
<td>0=none</td>
<td>Discipline Chief says should follow speed violation</td>
</tr>
<tr>
<td>Hyp_Dscpln_chf_prst</td>
<td>101</td>
<td>0=none</td>
<td>Discipline Chief says would follow speed violation</td>
</tr>
<tr>
<td>Hyp_dscpln_chf_shd_SB</td>
<td>102</td>
<td>0=none 1=verbal reprimand 2=written reprimand 3=suspension w/o pay 4=demotion in rank 5=dismissal</td>
<td>Discipline Chief says should follow SB violation</td>
</tr>
<tr>
<td>----------------------</td>
<td>-----</td>
<td>-------------------------------------------------</td>
<td>--------------------------------------------------</td>
</tr>
<tr>
<td>Hyp_dscpln_chf_wd_SB</td>
<td>103</td>
<td>0=none 1=verbal reprimand 2=written reprimand 3=suspension w/o pay 4=demotion in rank 5=dismissal</td>
<td>Discipline Chief says would follow SB violation</td>
</tr>
<tr>
<td>Hyp_dscpln_chf_shd_MDT</td>
<td>104</td>
<td>0=none 1=verbal reprimand 2=written reprimand 3=suspension w/o pay 4=demotion in rank 5=dismissal</td>
<td>Discipline Chief says should follow MDT violation</td>
</tr>
<tr>
<td>Hyp_dscpln_chf_wd_MDT</td>
<td>105</td>
<td>0=none 1=verbal reprimand 2=written reprimand 3=suspension w/o pay 4=demotion in rank 5=dismissal</td>
<td>Discipline Chief says would follow MDT violation</td>
</tr>
<tr>
<td>Hyp_dscpln_chf_shd_cell</td>
<td>106</td>
<td>0=none 1=verbal reprimand 2=written reprimand 3=suspension w/o pay 4=demotion in rank 5=dismissal</td>
<td>Discipline Chief says should follow cell phone violation</td>
</tr>
<tr>
<td>Hyp_dscpln_chf_wd_cell</td>
<td>107</td>
<td>0=none</td>
<td>Discipline Chief says</td>
</tr>
<tr>
<td>Discipline Chief says would follow cell phone violation</td>
<td>Hyp_dscpln_chf_shd_text</td>
<td>0=none 1=verbal reprimand 2=written reprimand 3=suspension w/o pay 4=demotion in rank</td>
<td></td>
</tr>
<tr>
<td>--------------------------------------------------------</td>
<td>--------------------------</td>
<td>----------------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Discipline Chief says would follow text violation</td>
<td>Hyp_dscpln_chf_wd_text</td>
<td>0=none 1=verbal reprimand 2=written reprimand 3=suspension w/o pay 4=demotion in rank</td>
<td></td>
</tr>
</tbody>
</table>

**Casualties/Loss Type (Dependent Variables)**

<table>
<thead>
<tr>
<th>Casualties/Loss Type (Dependent Variables)</th>
<th>Loss_Death_ANY</th>
<th>62</th>
<th>0=N/1=Y</th>
<th>On-duty fatalities of any sworn personnel past 5 yrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loss_Death_Auto</td>
<td>63</td>
<td>0=N/1=Y</td>
<td>On-duty deaths – auto?</td>
<td></td>
</tr>
<tr>
<td>Loss_driverpassenger</td>
<td>64</td>
<td>1=driver; 2=pass; 3=both</td>
<td>Was victim driver or passenger?</td>
<td></td>
</tr>
<tr>
<td>Loss_Death_MCycl</td>
<td>65</td>
<td>0=N/1=Y</td>
<td>On-duty deaths – motorcycle?</td>
<td></td>
</tr>
<tr>
<td>Loss_Death_RdStrk</td>
<td>66</td>
<td>0=N/1=Y</td>
<td>On-duty deaths – roadstruck?</td>
<td></td>
</tr>
<tr>
<td>Loss_Injury</td>
<td>67</td>
<td>0=N/1=Y</td>
<td>On-duty M/V non-fatal injuries?</td>
<td></td>
</tr>
<tr>
<td>Loss-Lawsuits</td>
<td>68</td>
<td>0=N/1=Y</td>
<td>MVA related lawsuits?</td>
<td></td>
</tr>
</tbody>
</table>

**Demo-graphics**

<table>
<thead>
<tr>
<th>Demo-graphics</th>
<th>Size_agency</th>
<th>52</th>
<th>1=very small, less than 25 officers 2=small, 25-75 3=medium, 76-200</th>
<th>Size of agency; # sworn officers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Column 1</td>
<td>Column 2</td>
<td>Column 3</td>
<td>Column 4</td>
<td></td>
</tr>
<tr>
<td>---------</td>
<td>---------</td>
<td>---------</td>
<td>---------</td>
<td></td>
</tr>
<tr>
<td>46</td>
<td>Juris_City</td>
<td>53</td>
<td>0=N/1=Y</td>
<td>City- primary jurisdiction</td>
</tr>
<tr>
<td></td>
<td>Juris_County</td>
<td>54</td>
<td>0=N/1=Y</td>
<td>County-primary juris.</td>
</tr>
<tr>
<td></td>
<td>Juris_State</td>
<td>55</td>
<td>0=N/1=Y</td>
<td>State-primary juris.</td>
</tr>
<tr>
<td>47</td>
<td>Num_Ofcrs_5cat_mrk_veh</td>
<td>57</td>
<td>Very small, small, medium, large, very large</td>
<td>Total # of officers driving marked patrol vehicles</td>
</tr>
<tr>
<td>48</td>
<td>Num_Ofcrs_5cat_unmrk_veh</td>
<td>60</td>
<td>Very small, small, medium, large, very large</td>
<td>Total # of plain clothes officers driving unmarked vehicles</td>
</tr>
<tr>
<td>49</td>
<td>Region1NE</td>
<td>88</td>
<td>0=No/1=Yes</td>
<td>(CT, DC, DE, MA, ME, NH, NJ, NY, PA, RI, VT)</td>
</tr>
<tr>
<td></td>
<td>Region2South</td>
<td>89</td>
<td>0=No/1=Yes</td>
<td>South (AL, AR, FL, GA, KY, LA, MD, MS, NC, SC, TN, VA, WV)</td>
</tr>
<tr>
<td></td>
<td>Region3Midwest</td>
<td>90</td>
<td>0=No/1=Yes</td>
<td>Midwest (IO, IL, IN, KS, MO, NE, OH)</td>
</tr>
<tr>
<td></td>
<td>Region4Central</td>
<td>91</td>
<td>0=No/1=Yes</td>
<td>Central (MI, MN, ND, SD, WI)</td>
</tr>
<tr>
<td></td>
<td>Region5Southwest</td>
<td>92</td>
<td>0=No/1=Yes</td>
<td>Southwest (AZ, NM, OK, TX)</td>
</tr>
<tr>
<td></td>
<td>Region6West</td>
<td>93</td>
<td>0=No/1=Yes</td>
<td>West (AK, CA, CO, HI, ID, MT, NV, OR, UT, WA, WY)</td>
</tr>
<tr>
<td>50</td>
<td>Accredited</td>
<td>95</td>
<td>0=N/1=Y</td>
<td>Agency is professionally accredited</td>
</tr>
</tbody>
</table>
Appendix C – Hierarchy of Concepts

Hierarchy of concepts

<table>
<thead>
<tr>
<th>Hierarchy</th>
<th>Driving Forces Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research area:</td>
<td>Police officer traffic deaths</td>
</tr>
<tr>
<td>Research topic:</td>
<td>Contributing factors in police officer traffic deaths</td>
</tr>
<tr>
<td>Objectives:</td>
<td>To investigate relationship of one or more variables to the outcome of officer injuries, including fatalities, in motor vehicle crashes?</td>
</tr>
<tr>
<td>General Question:</td>
<td>What factors (as independent variables) contribute to the problem and pattern of police officer fatalities and injuries (as one dependent variable) in motor vehicle incidents?</td>
</tr>
<tr>
<td>Specific Questions:</td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>What is the relationship between primary enforcement of safety belt laws and police officer traffic injuries, including fatal injuries?</td>
</tr>
<tr>
<td>2.</td>
<td>What is the relationship between agencies’ driving policies (including technology in vehicles) and police officer traffic injuries, including fatal injuries?</td>
</tr>
<tr>
<td>3.</td>
<td>What is the relationship between agencies’ driving training and police officer traffic injuries, including fatal injuries?</td>
</tr>
<tr>
<td>4.</td>
<td>What is the relationship between organizational culture/behavior and police officer traffic injuries, including fatal injuries?</td>
</tr>
<tr>
<td>5.</td>
<td>What is the relationship between organizational demographics (size, jurisdiction, accreditation status) and police officer traffic injuries, including fatal injuries?</td>
</tr>
<tr>
<td>Data questions:</td>
<td>The specific items and questions used to collect the data for the independent variables (safety belt law, policies, training, organizational culture, demographics) and dependent variables (injuries, including fatal injuries).</td>
</tr>
</tbody>
</table>
References


http://www.nhtsa.gov/Driving+Safety/Distracted+Driving/Policy+Statement+and+Compiled+FAQs+on+Distracted+Driving


Carol Servino  
University of Nevada, Las Vegas  
Box 454030 S. Maryland Parkway  
Las Vegas, Nevada 89154-4030  
Email: servinoc@unlv.nevada.edu  
Phone (Mobile): 702-575-8776  
Web: http://faculty.unlv.edu/wpmu/servinoc/

EDUCATION

Ph.D., Public Affairs, School of Environmental and Public Affairs, Greenspun College of Urban Affairs, University of Nevada, Las Vegas (UNLV); defended dissertation April 8, 2013.


B.A. Communication Studies/Journalism, Rowan University

OTHER ACADEMIC TRAINING / CERTIFICATES

- Graduate Student Professional Development in College Teaching, UNLV, June 2010.
- Graduate Student Foundations in Learning Technologies, UNLV Teaching & Learning Center, June 2010.

RESEARCH INTERESTS

Public management, policy implementation, public administration, organizational missions and culture, traffic safety, communications, technology, e-government, community crime prevention programs.

EXPERIENCE

August 2012 to present

Research Assistant, Nonprofit, Community, & Leadership Initiative, School of Environmental and Public Affairs (SEPA), University of Nevada, Las Vegas.

- Prepare and analyze data for Nonprofit Economic Impact Project supported by the Lincy Institute and Brookings Mountain West.
- Co-author project reports on the economic impact of nonprofits in Nevada.
August 2008 to May 2012

**Teaching Graduate Assistant, School of Environmental and Public Affairs (SEPA), University of Nevada, Las Vegas.**

- Planned, developed and taught three upper-division online undergraduate courses in the public administration program: Ethics, Risk, and Public Personnel Management.
  - Risk Management in the Public and Nonprofit Sectors (PUA 403); Spring 2011 and Fall 2011; Spring 2012.
  - Risk Assessment and Risk Management (PUA 404); Spring 2009 and Spring 2010.
  - Public Personnel Administration (PUA 420); Fall, 2008 (face-to-face) and Fall 2009.
- Accomplished additional assignments:
  - Collaborated as liaison with the School of Environmental and Public Affairs (SEPA) and UNLV’s Web Communications staff.
  - Revised web content to maintain web site quality for the faculty/staff directory and the following SEPA programs areas: public administration, environmental studies, crisis and emergency management, urban leadership, and workforce development.
  - Interviewed program alumni to create content for online profiles on SEPA web pages.
  - Compared SEPA’s online program information with UNLV’s online catalog for quality assurance.


**Part-time Instructor, School of Environmental and Public Affairs (SEPA), University of Nevada, Las Vegas.**

- Developed and revised content of semester-long courses, created assignments, and taught the following 5-week classes online via WebCampus:
  - Risk Management in the Public and Nonprofit Sectors (PUA 403), Summer 2011 and Summer 2012.
  - Risk Assessment and Risk Management (PUA 404), Summer 2010.
  - Ethics in Public Administration (PUA 423), Summer 2009.

January to May 2006

**Research Graduate Assistant, Professional and Technical Communication Master of Science Program, Department of Humanities, College of Science and Liberal Arts, New Jersey Institute of Technology.**

- Collected data for MS-PTC program director to facilitate continued communication efforts between the department and its alumni.
- Designed and produced an online tutorial instructing graduate students how to develop their own e- portfolios as special project for NJIT’s MS-PTC program director.
June – December 2006

**Project Manager, Website Redesign, City of Astoria, Oregon.**
- Planned, managed, and implemented City of Astoria (OR)’s web site redesign project; conducted needs assessment and facilitated staff training for content editors as final project in NJIT’s master’s degree program in Professional and Technical Communication, 2006. Work led to paid part-time position as web administrator for City Manager’s Office (Jan. 2007 to Feb. 2012).


**Technical Communicator, Public Lands Institute, UNLV.**
- Reviewed and edited deadline-driven quarterly reports required for various federal research projects and programs managed by academic and administrative faculty in a collaborative environment.

**PUBLICATIONS**

Reference Work Contributions

Professional Articles and Reports

**RESEARCH PRESENTATIONS**
- Poster, UNLV Greenspun College of Urban Affairs Research Symposium, April 15, 2013, “Police Injury Crashes and the Intersections of Policy, Technology, and Culture.”

INVITED PROFESSIONAL ACTIVITIES

PROFESSIONAL ACCOMPLISHMENTS

October 1994 – March 2001
Administrative Assistant to Chief of Police, Astoria (OR) Police Department.
- Wrote and obtained $500,000 in grants for municipal police department’s emergency communications management technology systems, education and enforcement initiatives, and police personnel.
- Led project to develop local police agency’s support services procedure manual to promote and ensure cross training and knowledge management.
- Completed Middle Management Training Course at Oregon Department of Public Safety Standards and Training, 1996; required paper was revised and resubmitted for publication in Police Chief, a publication of the International Association of Chiefs of Police, (May 1999).

August 1988 – October 1994
Grant Coordinator, Behavioral Traffic Safety Programs, Astoria (OR) Police.
- Participated in 1992 Police Executive Research Forum (PERF) joint demonstration project to combat juvenile impaired driving identifying innovative methods.
- Designed, planned and implemented a countywide DUII summit for subject-matter experts to solve problems;
- Implemented award-winning safety belt education and enforcement campaign.

ACADEMIC AND PROFESSIONAL ASSOCIATIONS
- American Society for Public Administration, student member since 2008.
- Academy of Criminal Justice Sciences, student member since 2012.
- Society for Technical Communicators, student member since 2006; NJIT STC Student Chapter Executive Board member 2006-07.
- Southwestern Social Science Association, student member, 2011.
• NJIT Graduate Student Association, alternate representative for MS-PTC program, 2006.

ACADEMIC HONORS / AWARDS

• Phi Kappa Phi Honor Society, UNLV Chapter 100, inducted in 2010.
• Alpha Epsilon Lambda, Graduate Honor Society, NJIT Chapter, inducted in 2006.
• Nominated for UNLV Outstanding Graduate Student Teaching Award, 2012-2013.
• GPSA, Conference Travel Grant, Spring 2011 and Spring 2012.
• Dean’s Associates’ Fund Conference Travel Grant, Spring 2011 and Spring 2012.
• School of Environmental and Public Affairs Travel Grant, Spring 2011, 2012.

ACADEMIC AND PROFESSIONAL SERVICE

• American Society for Public Administration (ASPA) 2012 Annual Conference, Las Vegas, NV, Volunteer.
• UNLV Graduate and Professional Student Association (GPSA), Executive Board Secretary, 2011-2012.
• UNLV GPSA Ad Hoc Government Relations, 2011-2012.
• UNLV GPSA and Lied Library Planning Space, 2011-2012.
• UNLV Graduate College New Programs and Program Revisions Committee, 2011-2012.
• UNLV GPSA Commencement Student Speaker Selection Committee, 2012.