



NAVAL POSTGRADUATE SCHOOL

MONTEREY, CALIFORNIA

THESIS

A SYSTEMATIC APPROACH TO LAW ENFORCEMENT SAFETY

by

Joseph W. Finch

September 2018

Co-Advisors:

Patrick E. Miller (contractor)
Erik J. Dahl

Approved for public release. Distribution is unlimited.

THIS PAGE INTENTIONALLY LEFT BLANK

REPORT DOCUMENTATION PAGE			<i>Form Approved OMB No. 0704-0188</i>	
Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instruction, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188) Washington, DC 20503.				
1. AGENCY USE ONLY (Leave blank)	2. REPORT DATE September 2018	3. REPORT TYPE AND DATES COVERED Master's thesis		
4. TITLE AND SUBTITLE A SYSTEMATIC APPROACH TO LAW ENFORCEMENT SAFETY			5. FUNDING NUMBERS	
6. AUTHOR(S) Joseph W. Finch				
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Naval Postgraduate School Monterey, CA 93943-5000			8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES) N/A			10. SPONSORING / MONITORING AGENCY REPORT NUMBER	
11. SUPPLEMENTARY NOTES The views expressed in this thesis are those of the author and do not reflect the official policy or position of the Department of Defense or the U.S. Government.				
12a. DISTRIBUTION / AVAILABILITY STATEMENT Approved for public release. Distribution is unlimited.			12b. DISTRIBUTION CODE A	
13. ABSTRACT (maximum 200 words) The Occupational Safety and Health Act of 1970 (OSHA) requires that employers provide a safe work environment for their employees. Many states have their own plans that follow federal guidelines and that are inclusive of law enforcement officers. Despite this, there are no federal—and few state—regulations that specifically apply to law enforcement. Although they are commonly found in other high-risk professions, expected practices for OSHA-consistent hazard analysis and mitigation do not exist in law enforcement. This thesis highlights the information that is necessary for policy administrators in this field to establish a systematic approach to safety. After reviewing how police departments can improve officer safety by applying OSHA standards, the thesis examines the fire service and the aviation and medical professions. Specifically, the thesis reviews how these professions have applied Dr. James Reason's principles to create advanced safety systems in high-risk environments. Using OSHA guidelines and standards from other high-risk professions, the thesis constructs a roadmap that, if followed, produces a systematic approach that can create a culture of safety in law enforcement.				
14. SUBJECT TERMS police, law enforcement, safety, OSHA, officer safety, James Reason, officer wellness, safety culture			15. NUMBER OF PAGES 131	
			16. PRICE CODE	
17. SECURITY CLASSIFICATION OF REPORT Unclassified	18. SECURITY CLASSIFICATION OF THIS PAGE Unclassified	19. SECURITY CLASSIFICATION OF ABSTRACT Unclassified	20. LIMITATION OF ABSTRACT UU	

THIS PAGE INTENTIONALLY LEFT BLANK

Approved for public release. Distribution is unlimited.

A SYSTEMATIC APPROACH TO LAW ENFORCEMENT SAFETY

Joseph W. Finch
Captain, Indianapolis Metropolitan Police Department
BS, Ball State University, 1986

Submitted in partial fulfillment of the
requirements for the degree of

**MASTER OF ARTS IN SECURITY STUDIES
(HOMELAND SECURITY AND DEFENSE)**

from the

**NAVAL POSTGRADUATE SCHOOL
September 2018**

Approved by: Patrick E. Miller
Co-Advisor

Erik J. Dahl
Co-Advisor

Erik J. Dahl
Associate Chair for Instruction,
Department of National Security Affairs

THIS PAGE INTENTIONALLY LEFT BLANK

ABSTRACT

The Occupational Safety and Health Act of 1970 (OSHA) requires that employers provide a safe work environment for their employees. Many states have their own plans that follow federal guidelines and that are inclusive of law enforcement officers. Despite this, there are no federal—and few state—regulations that specifically apply to law enforcement. Although they are commonly found in other high-risk professions, expected practices for OSHA-consistent hazard analysis and mitigation do not exist in law enforcement. This thesis highlights the information that is necessary for policy administrators in this field to establish a systematic approach to safety. After reviewing how police departments can improve officer safety by applying OSHA standards, the thesis examines the fire service and the aviation and medical professions. Specifically, the thesis reviews how these professions have applied Dr. James Reason’s principles to create advanced safety systems in high-risk environments. Using OSHA guidelines and standards from other high-risk professions, the thesis constructs a roadmap that, if followed, produces a systematic approach that can create a culture of safety in law enforcement.

THIS PAGE INTENTIONALLY LEFT BLANK

TABLE OF CONTENTS

I.	INTRODUCTION.....	1
A.	LITERATURE REVIEW	2
	1. OSHA Law.....	2
	2. Officers Killed and Injured in the Line of Duty.....	4
	3. Systematic Approaches to Safety in Other Industries and Professions	6
B.	RESEARCH DESIGN	9
	1. Object or Sample.....	9
	2. Selection	10
	3. Limits	10
	4. Data Sources	11
	5. Type and Mode of Analysis.....	11
	6. Output	12
C.	SUMMARY	13
D.	CHAPTER OVERVIEW	13
II.	OSHA AND LAW ENFORCEMENT: CURRENT PRACTICES AND ALTERNATIVES	15
A.	COMPARING OSHA STANDARDS FOR POLICE AND FIREFIGHTERS	17
	1. Fire Service	17
	2. Law Enforcement.....	18
	3. What Law Enforcement Can Do Today	19
B.	CHAPTER SUMMARY.....	21
III.	APPLYING THE OSHA JOB HAZARD ANALYSIS AND HAZARD IDENTIFICATION: PUTTING THE PIECES TOGETHER.....	23
A.	LAW ENFORCEMENT APPLICATION OF THE JOB HAZARD ANALYSIS	23
	1. Involve Your Employees	24
	2. Review Your Accident History	24
	3. Conduct a Preliminary Job Review.....	24
	4. List, Rank, and Set Priorities for Hazardous Jobs	26
	5. Outline the Steps or Task.....	26
B.	HAZARD IDENTIFICATION: IDENTIFYING THE GREATEST THREAT TO LAW ENFORCEMENT OFFICERS.....	26
C.	PREVENTING GUNSHOT DEATHS BY FOLLOWING OSHA’S SYSTEMATIC PROCESS.....	29

1.	Engineering Controls.....	30
2.	Safe Work Practices.....	33
3.	Administrative Controls.....	34
4.	PPE Hazard Assessment and Training.....	36
5.	Systems to Track Hazard Correction	42
6.	Preventive Maintenance Systems	43
7.	Emergency Preparation.....	44
8.	Medical Programs.....	46
D.	CHAPTER SUMMARY.....	47
IV.	JAMES REASON: PREVIOUS SUCCESSES AND APPLICATION TO LAW ENFORCEMENT.....	49
A.	JAMES REASON	49
B.	COMPONENTS OF A SAFETY CULTURE	50
1.	Reporting Culture.....	50
2.	Just Culture	51
3.	Flexible Culture.....	54
4.	Learning Culture	56
5.	An Informed Culture Is a Safety Culture.....	57
C.	THE AIRLINE INDUSTRY AND DR. REASON	57
1.	History of U.S. Airline Safety.....	57
2.	Human Factors and Human Error	59
3.	NASA and FAA Anonymous Safety Reporting Systems.....	64
4.	The Firefighter Near-Miss Reporting System and the National Fire Incident Reporting System	66
5.	Law Enforcement Near Miss Reporting	67
D.	THE MEDICAL INDUSTRY AND DR. REASON.....	68
E.	THE FOUR TESTS OF THE INCIDENT DECISION TREE.....	72
1.	The Deliberate Harm Test.....	72
2.	The Incapacity Test.....	73
3.	The Foresight Test	73
4.	The Substitution Test.....	74
F.	CHAPTER REVIEW	76
V.	CONCLUSION	77
A.	RECOMMENDED PATH: A ROADMAP TO IMPROVED OFFICER SAFETY THROUGH A SYSTEMATIC PROCESS	77
1.	Follow the OSHA Model	77
2.	Follow Other Professions' Examples: Implement the Principles of Dr. James Reason	78

B.	PROJECTED OUTCOMES.....	81
1.	Improve Awareness of Safety as a Systematic Process in Law Enforcement.....	82
2.	Achieve a Safety Culture in the Law Enforcement Profession.....	84
3.	Law Enforcement Will Improve Overall Professionalism	86
4.	Standards Will Be Documented and Understood	86
C.	CONFRONT THE TRADE-OFFS OF THE SUGGESTED POLICY WITH WHAT IS BEING DONE TODAY	90
1.	Cost.....	91
2.	Legality.....	92
3.	Political Acceptance	92
4.	Level of Effort	95
5.	Effectiveness	95
D.	DECIDE	96
E.	THE STORY OF LAW ENFORCEMENT WITH AN IMPLEMENTED SYSTEMATIC APPROACH TO SAFETY, AN ACHIEVED SAFETY CULTURE, AND AN EVER-IMPROVING ROADMAP	97
	LIST OF REFERENCES	99
	INITIAL DISTRIBUTION LIST	109

THIS PAGE INTENTIONALLY LEFT BLANK

LIST OF FIGURES

Figure 1.	Comparison of Officers Killed Accidentally and Feloniously between 1987 and 2011	27
Figure 2.	Officers Killed by Auto Crash, Shot, and Struck by Vehicle 2005- 2014.....	28
Figure 3.	Lenco BearCat	31
Figure 4.	Armored Truck Used by LAPD during North Hollywood Shootout.....	32
Figure 5.	James Reason’s Swiss Cheese Model of Error Defenses	64
Figure 6.	National Health Service (United Kingdom) Incident Decision Tree.....	75
Figure 7.	Model Used by Indianapolis Public Safety to Demonstrate Components of a Safety System, Based on James Reason’s Work.....	79

THIS PAGE INTENTIONALLY LEFT BLANK

LIST OF TABLES

Table 1.	States with OSHA-Approved Programs	16
Table 2.	Comparing the Person Model and the System Model of Human Error	54
Table 3.	Marx’s Matrix for Human Error, At-Risk Behavior and Reckless Behavior	71
Table 4.	Boston Fire Department Response to NFPA 1500 Review	94

THIS PAGE INTENTIONALLY LEFT BLANK

LIST OF ACRONYMS AND ABBREVIATIONS

APD	Albuquerque Police Department
ASRS	Aviation Safety Reporting System
DoJ	Department of Justice
DRMO	Defense Reutilization and Marketing Office
EMS	Emergency Medical Services
FAA	Federal Aviation Administration
IACP	International Association of “Chiefs of Police
ICS	Incident Command System
IMPD	Indianapolis Metropolitan Police Department
IOSHA	Indiana Occupational Safety and Health Administration
LAPD	Los Angeles Police Department
NFIRS	National Fire Incident Reporting System
NFPA	National Fire Prevention Association
NIOSH	National Institute of Occupational Safety and Health
NIST	National Institute of Standards and Technology
NLEOMF	National Law Enforcement Officers Memorial Fund
OSH Act	Occupational Safety and Health Act
OSHA	Occupational Safety and Health Administration
OSW	Officer Safety and Wellness
PERF	Police Executive Research Forum
PPE	Personal Protective Equipment
SMS	Safety Management System
SWAT	Special Weapons and Tactics

THIS PAGE INTENTIONALLY LEFT BLANK

EXECUTIVE SUMMARY

The concept of safety in law enforcement is subject to political pressure, poor information, and media and special interest influence. As the work for this thesis began, law enforcement suffered the aftermath of incidents in Ferguson, Missouri; Baltimore; and New York City. Public cries of police militarization exerted pressure on elected officials and agency executives, which led to restrictions on safety equipment available to officers. As the work for this thesis drew to a close, the nation had gone on to suffer the Dallas police massacre, the vehicle ramming in New York City, and the Las Vegas sniper incident, and law enforcement had been criticized for responses to several school shootings. These events and others resulted in immediate purchases for improved law enforcement safety equipment like helmets and vests. The policy of restricting safety equipment for law enforcement ended, and discussions of police militarization began to fall silent.

The first six months of 2018 saw a 24-percent increase in firearms-related officer line-of-duty deaths when compared to the same period in 2017.¹ Over the past ten years, 514 officer line-of-duty deaths have been the result of gunshots, compared to 364 deaths from traffic incidents and 325 from illness.² Despite these data and the trend they represent, the law enforcement profession does not have the systematic approach to safety commonly found in other high-risk professions, and as required by the Occupational Safety and Health Act of 1970 (OSH Act).

This thesis examines federal and state law concerning safety in the workplace. Despite a great deal of discussion inside the law enforcement profession on officer safety—along with contributions from academia, elected officials and others—there is no process or system in place today to improve officer safety. Federal law enforcement is covered by

¹ “NLEOMF: 24 Percent Increase in Firearms-Related LODDs in 2018,” PoliceOne, July 10, 2018, [https://www.policeone.com/officer-shootings/articles/477523006-NLEOMF-24-percent-increase-in-firearms-related-LODDs-in-2018/?NewsletterID=85601&utm_source=iContact&utm_medium=email&utm_content=TopNewsRelated1Title&utm_campaign=P1Member&cub_id=\[cub_id\]](https://www.policeone.com/officer-shootings/articles/477523006-NLEOMF-24-percent-increase-in-firearms-related-LODDs-in-2018/?NewsletterID=85601&utm_source=iContact&utm_medium=email&utm_content=TopNewsRelated1Title&utm_campaign=P1Member&cub_id=[cub_id]).

² Joel Shults, “What Mid-year LODD Stats Tell Us about Police Risks in 2018,” PoliceOne, July 18, 2018, <https://www.policeone.com/Officer-Safety/articles/477925006-What-mid-year-LODD-stats-tell-us-about-police-risks-in-2018/>.

the Occupational Safety and Health Administration (OSHA), and many state and local law enforcement agencies are covered by OSHA equivalents at the state level. Despite this, there are no specific standards for law enforcement at the national level, and few at the state level. This leads many people in the field to believe they are exempt from the safety standards that apply to other high-risk professions. This thesis argues, however, that the General Duty Clause in the OSH Act requires law enforcement to follow the standards of OSHA in identifying hazards, mitigating those hazards and continually assessing safety hazards in the agency and profession. These steps are the first in establishing a necessary systematic approach to safety in law enforcement.

This thesis reviews the fire service, and the aviation and medical professions—all high-risk professions that have adopted a systematic approach to safety. These professions have gone beyond the OSHA requirements and have adopted many of Dr. James Reason’s components of a safety system, which result in a culture of safety within an organization and profession. The lessons learned from OSHA requirements and other professions’ practices create a roadmap that, if followed, will allow law enforcement to make strides in improving officer safety.

Law enforcement executives and elected officials can begin taking the steps necessary to create a systematic approach to safety; if they do not take these steps to create a safety culture now, the steps will be imposed on them. Civil attorneys who represent surviving family members of officers killed in the line of duty will soon realize this opportunity. Organizations that represent police officers, such as the Fraternal Order of Police and the Police Benevolent Association, will also begin to argue for improved safety systems.

The roadmap developed in this thesis provides guidance for reducing political resistance and managing cost based on proven mitigation strategies. The roadmap also offers law enforcement the opportunity to improve professionalism by making officers safer on the job. Safer officers can make better decisions, as their actions are based on data and best practices that can be explained to a concerned public. The time to implement the roadmap is now—not when an outside entity dictates it.

ACKNOWLEDGMENTS

I want to thank the U.S. Department of Homeland Security and the Center for Homeland Defense and Security at the Naval Postgraduate School. The educational opportunity is exceptional and one I deeply appreciate. The instructional and support staff are second to none. I also want to thank the members of 1501/1502. I was humbled to be with you and respect what you brought to class and what you shared to improve the experience. You are each career professionals, and I am glad to call you a classmate and a friend.

Without the patience and steady guidance of my advisors, Dr. Erik Dahl and Chief Patrick Miller, I would never have completed this thesis. I am grateful that you did not give up, and I wish you continued success with future students.

I want to thank the Indianapolis Metropolitan Police Department. Those of you in the administration who made my participation possible, know that I am forever grateful that you saw the advantage of this terrific educational experience. To those who specifically provided the necessary encouragement and support, I cannot find the words to appropriately say thanks.

Most importantly and especially, I want to thank my family. To my wife and daughters, you knew the good, bad, and ugly of this experience. You also saw me grow as a person and professional while making lifelong friends who shared this unique experience with me. Thank you for your support from the application to the end of this thesis. I also want to thank my parents, brothers, and extended family. You always knew the right words and the perfect time for a kick or a pat.

THIS PAGE INTENTIONALLY LEFT BLANK

I. INTRODUCTION

Continuing evolutions in terrorism, technology, social dynamics, and community expectations have created an ever-changing and hazardous environment for law enforcement officers. To ensure that law enforcement professionals can protect citizens and themselves, a systematic approach must be taken to identify current and future threats to an officer's personal safety. Once a threat has been identified, risk mitigation strategies must be implemented and measured for continued effectiveness.

The Occupation Safety and Health Act requires employers to provide employees with a work environment that is free—to the extent possible—of known hazards that can cause injury and death.¹ The fire service and general industry are strictly regulated by the Occupational Safety and Health Administration (OSHA) or its state equivalent. OSHA guidance assists employers to create systematic and measurable safety practices to ensure the health and wellbeing of employees in hazardous work environments.

Law enforcement is included in many state OSHA plans but no specific guidelines or enforcement policies exist in ways commonly found in the fire service and general industry.² The state of Indiana is one of twenty-two states and territories that have OSHA-approved plans for workplace safety.³ Indiana specifically includes law enforcement as falling under its authority. For the purposes of this thesis, I use Indiana as an example to demonstrate common failures and opportunities that exist to improve law enforcement safety.

Due to the lack of legal guidance found in other professions and industries, law enforcement has no systematic approach to safety. There are no requirements to keep

¹ OSH Act of 1970, 29 U.S.C. 654 §5, https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=OSHACT&p_id=3359.

² Indiana Department of Labor, "IN Review: Indiana Occupational Safety and Health 2009" (report, Indiana Department of Labor, March 2009), 13, http://www.in.gov/dol/files/03.27.2009_Final_Version.pdf.

³ "State Plans," Occupational Safety and Health Administration (OSHA), accessed April 4, 2016, <https://www.osha.gov/dcsdp/osp/>.

meaningful records on officers' deaths and injuries.⁴ There are no state or national databases to identify trends or emerging threats.

Two questions this thesis examines are:

- Could existing state and federal OSHA guidelines that improve safety be applied to local law enforcement by utilizing a systematic approach to job hazard analysis and risk mitigation?
- What can law enforcement learn from other public safety professions and general industry to improve hazard identification and risk mitigation?

This thesis argues that it is time for law enforcement to adopt a systematic approach to safety that is robust enough to identify the hazards that exist today and anticipate those that will emerge in the future. OSHA compliance is a first step in that process.

A. LITERATURE REVIEW

This review provides a brief background on OSHA and next examines the data available on police officers killed and injured in the line of duty. It concludes by reviewing how safety is managed in two other high-risk professions: aviation and medicine.

1. OSHA Law

Federal law concerning occupational safety is codified in the Occupational Safety and Health Act of 1970.⁵ The law was created to “prevent workers from being killed or otherwise harmed at work.”⁶ This law does not cover local and state law enforcement but does encourage states to create their own laws that meet minimal federal guidelines. To date, twenty-two states and territories have OSHA-approved programs.⁷ The state of Indiana has an approved plan and was researched to highlight the responsibilities of a state and its relationship with federal OSHA.

⁴ International Association of Chiefs of Police (IACP) and Bureau of Justice Assistance, “Reducing Officer Injuries: Final Report” (report, IACP, January 2014), http://www.theiacp.org/portals/0/pdfs/IACP_ROI_Final_Report.pdf.

⁵ OSH Act of 1970.

⁶ OSHA, *Workers' Rights*, OSHA 3021-11R 2016 2014 (Washington, DC: U.S. Department of Labor), 3, <https://www.osha.gov/Publications/osha3021.pdf>.

⁷ OSHA, 5.

On September 26, 1986, the U.S. Department of Labor approved Indiana's state plan.⁸ Indiana's plan specifically states that Indiana Occupational Safety and Health Administration (IOSHA) "adopts all OSHA regulations and standards identically."⁹ Indiana specifically identifies law enforcement as being covered by the state plan and groups it in state and local government for statistical purposes.¹⁰ Logically then, OSHA law applies to state and local law enforcement in Indiana but is enforced by the state. Despite this coverage, no specific state or federal rule applies to law enforcement. The law's authors knew they could not address every occupation or specifically regulate every hazard.¹¹ To provide proper guidance, the authors created the General Duty Clause to fill gaps that may exist between specific regulations. The General Duty Clause states, "Each employer shall furnish to each of his employees employment and a place of employment which are free from recognized hazards that are causing or likely to cause death or serious physical harm to his employees."¹² Even though hazards faced by law enforcement are not specifically acknowledged, the General Duty Clause requires departments to systematically mitigate identified hazards. As explained by Cam Merritt, "The General Duty Clause, then, serves as a kind of commonsense backstop that applies in cases where no specific standards exists."¹³

As a first step to a systematic process, OSHA promotes the use of a job hazard analysis to identify hazards.

A job hazard analysis is a technique that focuses on job tasks as a way to identify hazards before they occur. It focuses on the relationship between the worker, the task, the tools, and the work environment. Ideally, when

⁸ IOSHA is the Indiana Occupational Safety and Health Administration.

⁹ "Indiana State Plan," OSHA, accessed June 26, 2015, <https://www.osha.gov/dcsp/osp/stateprogs/indiana.html>.

¹⁰ Indiana Department of Labor, "IN Review 2009," 13.

¹¹ Cam Merritt, "What Is the OSHA General Duty Clause?" Chron, accessed June 26, 2015, <http://smallbusiness.chron.com/osha-general-duty-clause-44765.html>.

¹² OSH Act of 1970, General Duty Clause, 29 U.S.C. 654 § 5(a)(1)(2).

¹³ Merritt, "General Duty Clause."

uncontrolled hazards are identified, employers will take steps to eliminate or reduce them to an acceptable level of risk.¹⁴

The International Association of Chiefs of Police (IACP) released a report in 2014 that attempted to apply the concept of the job hazard analysis to law enforcement. At the time of the writing of this thesis, the recommendations noted in the report have not been implemented to any detectable level within the profession.¹⁵ The study's researchers tracked 1,295 injuries that occurred across eighteen agencies. The report concluded that, "despite these [research] efforts, little is known about the national scope of police officer injuries outside of line of duty deaths and assaults; as a result, relatively little is known about the impact of injuries on law enforcement agencies."¹⁶

2. Officers Killed and Injured in the Line of Duty

Data on officers killed in the line of duty exist in various studies, articles, and websites, but none of these provide a comprehensive analysis on how officers are being killed and injured. A problem arises when trying to use this data as part of a job hazard analysis. For example, it is common for law enforcement experts to argue that officers are more at risk from accidents than felonious assault.¹⁷ But such arguments oversimplify the problem by identifying only two categories: "killed accidentally" and "killed feloniously." In reality, threats to officers are much more varied than this, but the available data does not show an accurate picture of what is killing and injuring police officers. Non-existent, inaccurate, and manipulated data in law enforcement were found to be common. A study by the Major Cities Chiefs Association shows a significant rise in violent crime in large cities across the country in the years 2015 and 2016.¹⁸ Despite this, Wesley Bruer wrote

¹⁴ OSHA, *Job Hazard Analysis*, OSHA 3071 2002 (Revised) (Washington, DC: U.S. Department of Labor, 2002), 1, https://www.osha.gov/Publications/osha3071.pdf?utm_source=rss&utm_medium=rss&utm_campaign=job-hazard-analysis-13.

¹⁵ IACP and Bureau of Justice Assistance, "Reducing Officer Injuries," 7-8.

¹⁶ IACP and Bureau of Justice Assistance, 16.

¹⁷ Richard Ashton, "Predictable Is Preventable," *Police Chief*, June 2015, www.policiechiefmagazine.org/magazine/index.cfm?fuseaction=display_arch&article_id=2584&issue_id=12012.

¹⁸ "Violent Crime Survey- Totals: Midyear Comparison between 2016 and 2015," Major Cities Chiefs Association, July 29, 2016, 1-2, https://www.majorcitieschiefs.com/pdf/news/mcca_violent_crime_data_midyear_20162015.pdf.

that President Obama believed that violent crime was down.¹⁹ The one statistic that is beyond reproach is that police officers are being killed at a much higher rate. In 2016, sixty-seven officers were shot and killed.²⁰ This is a significant increase from the forty-three officers shot and killed the previous year.²¹ Gunshot fatalities fell to forty-six in 2017 but are up 28 percent in the first five months of 2018.²²

The National Law Enforcement Officers Memorial Fund is perhaps the best source of data on officers killed in the line of duty. The National Law Enforcement Officers Memorial Fund maintains a website that keeps daily totals and brief descriptions of the incidents that result in an officer's line-of-duty death.²³ Of the 19,298 officers ever killed in the United States and inscribed on the National Law Enforcement Officers Memorial as of 2012: 10,787 (56 percent) were due to firearms, 5364 (28 percent) were traffic-related, and 3,147 (16 percent) were due to other causes.²⁴ Data is nearly nonexistent for officers injured in the line of duty. There is no single data source available to draw accurate conclusions on officer injuries and deaths. Dr. David Swedler of the University of Chicago has written several articles on occupational injuries and deaths, including law enforcement. In 2014, he observed that most previous studies on law enforcement line-of-duty deaths failed to include details of the incidents and circumstances that caused the officers death.²⁵ Swedler's observations followed a report in 2012 by the Officer Safety and Wellness Group of the Bureau of Justice Assistance that recommended expanding data collection on the

¹⁹ Wesley Bruer, "Violent Crime Rising in U.S. Cities, Study Finds," CNN, July 25, 2016, <http://www.cnn.com/2016/07/25/politics/violent-crime-report-us-cities-homicides-rapes/index.html>.

²⁰ "Causes of Law Enforcement Deaths over Past Decade (2008-2017)," National Law Enforcement Officers Memorial Fund (NLEOMF), updated March 15, 2018, <http://www.nleomf.org/facts/officer-fatalities-data/causes.html>.

²¹ NLEOMF.

²² "Preliminary 2018 Officer Fatalities," NLEOMF, accessed June 6, 2018, <http://www.nleomf.com/>.

²³ NLEOMF, "Causes of Law Enforcement Deaths."

²⁴ Office of Safety and Wellness (OSW) Group, "Officer Deaths and Injuries from Gunfire" (meeting summary, U.S. Department of Justice, January 2012), 4, http://www.cops.usdoj.gov/pdf/OSWG/Meeting_01-26-2012.pdf.

²⁵ David I. Swedler et al., "Occupational Homicide of Law Enforcement Officers in the US, 1996-2010," *Injury Prevention* 20, no. 1 (February 1, 2014): 35, <https://doi.org/10.1136/injuryprev-2013-040799>.

national level.²⁶ So far, there has been no additional research or implementation steps toward this effort.

According to the Police Executive Research Forum (PERF), “To date, there is very little national-level guidance on occupational health and safety responsibilities for U.S. law enforcement agencies; state and local programs often vary widely in structure and services provided.”²⁷ Lacking this guidance, law enforcement agencies are not required to track or report officer injuries or the circumstances in which officers are injured and killed. Aside from data kept on officers’ deaths, little else is available to identify hazards or mitigation strategies. At the conclusion of their report, “Reducing Officer Injuries,” the International Association of Chiefs of Police (IACP) noted that most injuries suffered by law enforcement officers are not recorded in any database that is sufficient for developing proper mitigation strategies or research. They encourage agencies to develop a culture of safety and viewed injury tracking as a positive first step.²⁸

3. Systematic Approaches to Safety in Other Industries and Professions

James Reason is a professor in the Department of Psychology at the University of Manchester, in the United Kingdom. He has written extensively on the need for high-risk organizations to adopt what he calls a “safety culture.” His primary message is that an organization’s entire safety system and culture must be addressed to improve safety.²⁹

Dr. Reason argues that humans are prone to error and that safety systems are necessary to compensate for the known limitations of people in high-risk occupations. His research indicates that employers commonly address errors using the “person approach”;

²⁶ Darrel Stephens, Mora Fiedler, and Steven Edwards, *OSW Group Annual Summary: Issues and Recommendations Discussed for Improving the Wellbeing of Police Officers* (Washington, DC: U.S. Department of Justice, 2012), 18, <http://ric-zai-inc.com/Publications/cops-w0673-pub.pdf>.

²⁷ Elizabeth Sandberg et al., *A Guide to Occupational Health and Safety for Law Enforcement Executives* (Washington, DC: Police Executive Research Forum, September 2010), 36, www.valorforblue.org/Documents/Publications/Public/A-Guide-to-Occupational-Health-and-Safety-for-Law-Enforcement-Executives.pdf.

²⁸ IACP and Bureau of Justice Assistance, “Reducing Officer Injuries,” 6.

²⁹ James Reason, *Managing the Risks of Organizational Accidents* (Burlington, VT: Ashgate, 1997), 121-22.

they name, blame, and shame the employee in the hope that the error will not reoccur.³⁰ Dr. Reason suggests that a “system approach” is necessary to fix the problem. The system approach is focused on the conditions and environment in which the employee works and how to build defenses to prevent errors.

The Federal Aviation Administration (FAA) has applied Dr. Reason’s research to create the *Operator’s Manual: Human Factors in Airport Operations*.³¹ The manual describes how errors are created and how best to prevent them using a system approach. It is consistent with the job hazard analysis suggested by OSHA and may be informative for law enforcement.

The medical community has created the Incident Decision Tree as a tool to separate human errors from system errors. The concept is to apply a systematic review process after an error has occurred. The model looks at the act itself, environmental factors, impairment, training, and policies to determine where gaps may exist in the safety system. Even though discipline and termination are possible, the focus is on training and remediation.³² This would be a significant departure from most law enforcement agencies, which are rule oriented and use negative discipline to correct errors.

The research indicates that the aviation industry and the medical profession are well ahead of law enforcement in the area of safety management. Existing research has generally pointed to the need for improvement without any collective agreement or action. By looking at the existing law and leveraging what other professions are currently doing, future research should provide direction. A system approach to safety encourages addressing the entire system and culture. Such an approach may reduce injury and death to law enforcement officers. No research is available that has specifically addressed the need

³⁰ James Reason, “Human Error: Models and Management,” *BMJ* 320, no. 7237 (2000): 768-770.

³¹ Federal Aviation Administration (FAA), *Operator’s Manual: Human Factors in Airport Operations* (Washington, DC: FAA, September 2007).

³² Sandra Meadows, Karen Baker, and Jeremy Butler, “The Incident Decision Tree: Guidelines for Action Following Patient Safety Incidents,” in *Advances in Patient Safety: Form Research to Implementation*, Vol. 4, edited by Kerm Henriksen, James B. Battles, Eric S. Marks, and David I. Lewin (Rockville, MD: Agency for Healthcare Research and Quality, 2005), 394, <http://www.ncbi.nlm.nih.gov/books/NBK20586>.

for law enforcement to be held to the same standard of safety commonly found in general industry and the fire service.

When contrasting the fire service with law enforcement, the research is clear that the fire service receives vastly more attention in the area of personal safety. Most of the OSHA standards that pertain to firefighting can be found in 29 CFR section 1910 in the OSHA standards of general industry. This section covers such things as fire prevention, detection systems, personal protective equipment, and extinguishers. A quick internet search returns multiple replies offering training to firefighters to ensure they are OSHA compliant.

In addition to OSHA, most fire departments follow standards established by the U.S. Fire Administration and the National Fire Protection Association (NFPA).³³ An example of the emphasis placed on personal safety in the fire service can be found in the after-action reports generated after the Sofa Super Store fire in South Carolina that occurred on June 18, 2007.³⁴ Nine Charleston firefighters lost their lives in this single event. A large furniture store was engulfed in flames, and several firefighters became trapped inside. Captain Chris Villarreal was on scene and said that a “significant number of his fellow firefighters either retired or left the department in the aftermath of this horrific event.”³⁵ The National Institute for Standards and Technology (NIST) published a massive two-volume review of the fire with a specific interest on safety and lessons learned from the incident.³⁶ A second review was conducted by the National Institute of Occupational Safety and Health (NIOSH). This review recommended improvement in things like written standard operating procedures, use and enforcement of the Incident Command System

³³ The U.S. Fire Administration is a FEMA agency.

³⁴ Richard Gasaway, “Charleston Sofa Super Store: An Unfiltered Perspective,” Fire Engineering, November 23, 2009, <http://www.fireengineering.com/articles/2009/11/charleston-sofa-super.html>.

³⁵ Gasaway

³⁶ “NIST Manuscript Publication Search,” National Institute of Standards and Technology, March 14, 2011, http://www.nist.gov/manuscript-publication-search.cfm?pub_id=908200.

(ICS), communications, and resource accountability, to name just a few.³⁷ No comparable published effort could be found for law enforcement with a singular focus on safety.

B. RESEARCH DESIGN

Research for this thesis focused on high-risk professions and organizations that discuss safety as a major component of their daily operations. Laws, policies, and best practices were reviewed to determine their application and ease of implementation in law enforcement.

1. Object or Sample

My research included two areas of effort. The first identified law enforcement agencies, other public safety agencies, and general industries that utilize a systematic approach to safety. Some of this research included analyzing existing case studies to identify entire professions or industries that have an extended history of using safety systems to reduce deaths and injuries that occur in relation to their occupation. A primary focus included the fire service, the airline industry, and the medical profession.

The second area of effort was a policy review to determine what doctrines currently exists in law enforcement that supports a systematic approach to safety. The state of Indiana was specifically highlighted as an example of what currently exists in law, policy and practice. Other state and federal laws, policies, and practices were also reviewed to identify what is working and what needs to be improved. The federal government does not regulate safety beyond the federal level, and each state determines its own safety standards. This further necessitates focus on one state when compiling lessons learned and recommendations for improvement.

³⁷ “Death in the Line of Duty...A Summary of NIOSH Fire Fighter Fatality Investigation,” Centers for Disease Control and Prevention, February 11, 2009, <http://www.cdc.gov/niosh/fire/reports/face200718.html>.

2. Selection

The first phase of research involved identifying the safety systems that currently exist in public safety and general industry.³⁸ I included in this effort a review of the issues that existed prior to the systematic approach that necessitated a change in the status quo. I also followed the implementation steps and noted the challenges that existed during this process. Finally, I reviewed the overall performance of the system today.

The second phase of research focused on existing laws, policies, and practices that support or hinder a systematic approach to safety for law enforcement. I began at the federal level and reviewed how regulators, policy makers, and practitioners interpret the same laws and policies. I identified documented differences that exist between other public safety professions and general industry when measured against what is found in law enforcement.

The third phase of research focused on previously published recommendations concerning systematic approaches to law enforcement safety. I have included a review of why these recommendations were suggested, their current status of implementation, and what resistance or challenges they have experienced.

3. Limits

This research focused on identifying safety systems in use by public safety and general industry. Why law enforcement is not held to the same standard as other professions is specifically excluded beyond identifying potential implementation challenges. Such a discussion would be based on opinion, politics, and public relations. Specific tactics and equipment reviews were also excluded. Though some safety equipment examples are included, they exist to identify policy and practice inconsistencies or legal voids.

³⁸ “General industry” is a term used by OSHA to identify private-sector, or non-government, occupations that are covered by safety laws. These may include construction, manufacturing, and mining as examples.

Some of this research necessarily included social issues that exist concerning law enforcement. Arguments on issues such as police militarization or general use of force are excluded from this research in terms of conclusions or recommendations. General social issues of note are included when necessary.

4. Data Sources

The research for this thesis was necessarily broad in its scope. Academic works, laws and codes, written policies, and published post-incident reports all provide the background and framework necessary to determine the current existence and success of systematic safety programs. Since law enforcement is social in nature, some of this research may include opinion, political position, and various perceptions of law enforcement in general.

Request for information were made to organizations and subject matter experts to obtain existing policies and data related to organizational safety. Agency officials and experts provided existing policy statements, processes, and reporting requirements that promote safety.

5. Type and Mode of Analysis

I conducted policy modeling for my thesis using much of the Bardach approach to policy analysis.³⁹ When appropriate, I included forms of case studies and agency reviews in my research. Published case studies, legal reviews, and policy research were used to gain an understanding of the current environment or perceived social context of law enforcement safety systems.

Based upon Bardach's process, I used the following steps:

1. Define the problem
2. Assemble some evidence
3. Review alternatives and what exists today

³⁹ Eugene Bardach, *A Practical Guide for Policy Analysis: The Eightfold Path to More Effective Problem Solving*, 4th ed. (Washington, DC: CQ Press, 2012).

4. Project a recommended path to improved safety through a systematic process
5. Project the outcomes of implementing the suggested policy or process
6. Confront the trade-offs of the suggested policy or process with what is being done today
7. Decide: based on all available evidence, is the recommended solution achievable, desirable and an improvement to the existing environment?
8. Tell the story of law enforcement safety in the future.⁴⁰

The metrics I used when comparing my recommendations and the status quo included cost, legality, political acceptance, level of effort, and effectiveness. These areas are common at the center of any government decision-making process and law enforcement is not an exception. The final recommended solution must achieve an acceptable balance among these factors to be realistic and applicable to the law enforcement profession in general.

The thesis concludes with a workable and defensible recommendation based on proven safety systems in use today and their nexus to law enforcement. The research and implementation of works completed by Dr. James Reason is specifically highlighted. Along with OSHA standards, Reason's work demonstrates the success of other high-risk professions in creating safety systems and safety cultures.

6. Output

The finished product of my analysis includes a policy modeling of the recommended approach to reduce law enforcement deaths and injuries by implementing a systematic approach to safety. The reader is left with defensible justifications for implementing the recommended changes to the existing status quo. The reader is also provided with an implementation roadmap that considers successes and challenges that have been identified in other public safety organizations and general industry as they have migrated to the use of safety systems. The reader will understand that safety is a process

⁴⁰ Bardach.

that is best managed by a system instead of on- time solutions or passionate reactions to tragedy.

C. SUMMARY

This review intends to provide a frame of reference to the concept of safety. Law enforcement lacks most of the protections found in the fire service, medical, and airline industries and most other high-risk occupations. This thesis attempts to draw lessons from these other industries and occupations. What emerges is a step-by-step plan for law enforcement to follow to improve officers' safety, ensure adaptability to the changing threats of homeland security, and create a system that is sustainable and accountable.

D. CHAPTER OVERVIEW

Chapter II is a review of how OSHA law could be applied to law enforcement. The chapter includes a projection of how law enforcement would benefit if it were held to the same systematic standards as the fire service and other hazardous professions. Chapter III explores how law enforcement should implement the job hazard analysis as detailed by OSHA. The step-by-step systematic process could immediately improve officer safety if implemented. The approaches of Dr. James Reason are explored for their applicability to law enforcement in Chapter IV. Chapter IV reviews how the fire service, aviation, and the medical profession have successfully applied Reason's concepts and move beyond basic OSHA compliance. Chapter V creates a vision of the future of law enforcement if the system is implemented. A roadmap is detailed for elected officials, agency executives, and academics to follow to improve safety. A comparison of doing nothing and the impact of the systematic approach is included. The assessment includes cost, legality, political acceptance, level of effort, and effectiveness.

THIS PAGE INTENTIONALLY LEFT BLANK

II. OSHA AND LAW ENFORCEMENT: CURRENT PRACTICES AND ALTERNATIVES

The most significant challenge when arguing that the Occupational Safety and Health Administration (OSHA) guidelines apply to law enforcement is the complete lack of knowledge by police administrators.⁴¹ I will use the state of Indiana as an example to further the discussion of OSHA and law enforcement safety.

The Occupational Safety and Health Act of 1970 was created:

To assure safe and healthful working conditions for working men and women; by assisting and encouraging the States in their efforts to assure safe and healthful working conditions; by providing for research, information, education, and training in the field of occupational safety and health.⁴²

The OSHA *Workers' Rights* publication of 2014 goes on to say:

Worker Protection is the Law of the Land

You have the right to a safe workplace. The Occupational Safety and Health Act of 1970 (OSH Act) was passed to prevent workers from being killed or otherwise harmed at work. The law requires employers to provide their employees with working conditions that are free of known dangers.⁴³

The discussion of OSHA state or non-OSHA state takes shape later in the same document:

State and Local Government Workers

Employees who work for state and local governments are not covered by Federal OSHA, but have OSH Act protections if they work in those states that have an OSHA-approved state plan. The following 22 states [see Table 1] or territories have OSHA-approved programs.⁴⁴

⁴¹ Rarely does an OSHA reference, or other recognized safety standards, appear in police literature or police statements.

⁴² OSHA, *Workers' Rights*.

⁴³ OSHA, 3.

⁴⁴ OSHA, 6.

Table 1. States with OSHA-Approved Programs⁴⁵

Alaska	Arizona	California	Hawaii	Indiana
Iowa	Kentucky	Maryland	Michigan	Minnesota
Nevada	New Mexico	North Carolina	Oregon	South Carolina
Tennessee	Utah	Vermont	Virginia	Washington
Wyoming	Puerto Rico			

The U.S. Department of Labor gave final approval to the Indiana Occupational Safety and Health Administration (IOSHA) plan on September 26, 1986. Under the unique plan standards, Indiana declares that, “IOSHA adopts all OSHA regulations and standards identically.”⁴⁶ To determine what standards apply to Indiana, it becomes necessary to once again refer to the OSHA requirements. Indiana groups local law enforcement in the state and local government category for reporting and statistical purposes. This includes police, firefighters, healthcare workers, educators, and elected officials.⁴⁷ The same publication describes the uniqueness of police, firefighters, and emergency medical technicians/paramedics by stating,

individuals that work in these occupations work to maintain order, enforce laws and protect lives in some of the most dangerous situations. Because the work of emergency responders is inherently dangerous, managing their safety can be more accurately described as managing their level of risk.⁴⁸

Despite this level of concern, there are no specific standards that address police officer safety. This lack of specific standards leads many police administrators to believe that OSHA does not apply to law enforcement. In states like Indiana, they could not be more wrong.

⁴⁵ Source: OSHA, 6.

⁴⁶ OSHA, “Indiana State Plan.”

⁴⁷ Indiana Department of Labor, “IN Review 2009,” 13.

⁴⁸ Indiana Department of Labor, 14.

The General Duty Clause applies to every employer and employee covered by the law.⁴⁹

For all the standards that OSHA has issued over the years, the agency acknowledges that there is no way it could ever identify and regulate every single hazard in every workplace. The General Duty Clause, then, serves as a kind of commonsense backstop that applies in cases where no specific standard exists. To give an obviously absurd example, imagine that you owned a warehouse and that your janitors swabbed down the floors with vegetable oil every morning, leaving them extremely slick. There's no OSHA regulation that specifically identifies this practice as dangerous. But you could still wind up fined for maintaining an unsafe workplace because a floor coated in oil is an obvious hazard.⁵⁰

Using this quote as an example, the mitigation strategy is to stop putting vegetable oil on the floor. This could be easily accomplished since the warehouse manager controls the environment and the policy that guides the janitor's actions. For law enforcement, this is where the challenge begins. The law enforcement administrator does not control the environment in which the officer works. As a result, there is no safety policy that can prevent officers from being shot by those who would do them harm. For many police administrators, this is where the discussion normally stops. In reality, this is where it should begin. For guidance, the police administrator should turn to the fire service.

A. COMPARING OSHA STANDARDS FOR POLICE AND FIREFIGHTERS

1. Fire Service

Since OSHA was established, it has been noticeably silent on specific public safety agencies. This may be due to the fact that OSHA does not cover local government employees as mentioned earlier. If this is true, then the states that follow OSHA guidelines should develop their own standards since they are lacking at the national level. Even with this lack of attention, just a small amount of time researching the issue will reveal that the fire service is far better protected, and more comfortable, with the OSHA standards in place. Most of the standards pertaining to firefighting can be found in 29 CFR 1910 of the

⁴⁹ OSHA Act, General Duty Clause, 5(a)(1)(2).

⁵⁰ Merritt, "What Is the OSHA General Duty Clause."

OSHA standards of General Industry. This section covers everything from evacuation routes, fire prevention, detection systems, extinguishers, and personal protective equipment. A quick internet search reveals multiple training opportunities designed to ensure that a fire department is compliant with OSHA standards.

Beyond OSHA, most fire departments follow standards set by the U.S. Fire Administration, the National Fire Academy, and the National Fire Protection Association (NFPA).⁵¹ An example of firefighting standards and the review process is illustrated in the after-action reports generated after the Sofa Super Store fire in South Carolina that occurred on June 18, 2007.⁵² This single event resulted in the deaths of nine firefighters and stands as a benchmark event in the profession. Both NIST and NIOSH conducted reviews. Both reports were extensive by most standards and included building codes, sprinkler systems, water pressure, incident command, ventilation, and fuel to name just a few.⁵³

2. Law Enforcement

An exhaustive search of OSHA standards that apply specifically to law enforcement reveals that there are none. However, this is not to say that OSHA does not apply to law enforcement. The fact is that standards that apply to the police are more of a two- or three-step process to make the connection. For example, the biggest OSHA discussion in law enforcement in recent years concerned the wearing of a reflective vest while working in the roadway, such as directing traffic at a crash scene. The original intent of this standard was geared toward construction worker safety and it is there that the greatest impact was felt. Almost as an afterthought, so it seemed, someone asked the question if the standard applied to law enforcement. The answer was yes.⁵⁴ Another example of law enforcement being required to follow OSHA standards can be found when officers wear an air-purifying

⁵¹ The U.S. Fire Administration is a FEMA agency.

⁵² Gasaway, "Charleston Sofa Super Store."

⁵³ Centers for Disease Control and Prevention, "Death in the Line of Duty."

⁵⁴ Jeffry Carter and Julie Alexander, "Reflective Vest Interpretation Letter" (letter, Indiana Department of Labor, December 2008), 3, http://www.in.gov/dol/files/Reflective_Vests_interpretation_letter_12_12_08.pdf.

respirator, often referred to incorrectly as a gas mask.⁵⁵ These are commonly seen during disturbances that involve the use of riot control agents, exposures to hazardous materials, and weapons of mass destruction.

So why are there so few safety regulations to protect law enforcement when compared to the fire service? The disparity appears to be because fire is based on science, while law enforcement is not. A simple review of the Sofa Super Store incident in Charleston, South Carolina, after action reports referenced earlier gives even the layperson an appreciation of fire science and the ability of investigators to re-create a fire in the laboratory. Given the right information, this makes a fire predictable and even mathematical. It is not having all of the information during the incident that makes fires extremely dangerous and deadly. In fact, since it is impossible to know everything at the scene, some are beginning to argue that the fire service should refrain from working inside of a structure during a fire except in extreme circumstances.⁵⁶

3. What Law Enforcement Can Do Today

So, what can law enforcement learn from the fire service? Most professional police agencies do after action reports following major incident and events. Exceptionally well-prepared reports are hard to find, however. The best reports only seem to emerge after a significant loss of life or an incident that generates exceptional public interest. An example of this would be the May Day report done by the Los Angeles Police Department (LAPD) in 2007.⁵⁷ This report stands out because LAPD identified errors in command, communication, training, and use of force and produced a publicly available report. This allows other agencies to learn from their experience.

⁵⁵ OSHA Act, 29 C.F.R. 1910.134.

⁵⁶ “OSHA Instituting Regulations to Stop Firefighter from Making Interior Attacks,” Call the Cops, April 17, 2014, <http://www.callthecops.net/osha-instituting-regulations-stop-firefighter-making-interior-attacks/>.

⁵⁷ Michael Hillmann and Gerald Chaleff, “Los Angeles Police Department Report to the Board of Police Commissioners: An Examination of May Day 2007” (report, Los Angeles Police Department, October 2007), http://assets.lapdonline.org/assets/pdf/Final_Report.pdf.

Recently, the Department of Justice (DoJ) has stepped in to conduct several high-profile civil rights investigations of individual officers and their departments after incidents that generated public interest.⁵⁸ Even though these reports can be informative and guide other agencies on supposed best practices, they fall far short of the science found in the fire reports. Most of these reports focus on things such as racism, community policing, mental health, and general community complaints.⁵⁹ There is little or no discussion of personal protective equipment (PPE), tactics, staffing levels, or response plans. Though many try to stretch DoJ findings to best practices, they fall short if they do not address safety concerns of the officer and the citizens they are trying to protect. The DoJ report released after the Ferguson incident in March of 2015 made thirteen recommendations to improve policing in the city of Ferguson, Missouri.⁶⁰ Of those, none suggested how to improve the safety of the officers. The final report of the President's Task Force on 21st Century Policing, released in May 2015, does mention the safety of officers. Pillar Six is dedicated to officer wellness and safety.⁶¹ Many of their recommendations are consistent with arguments made or supported in this thesis. However, no mention of OSHA, legal requirements, or mandates are included in their recommendations. Without an acknowledgment that agency administrators are required to act by law or mandate, progress will be slow or absent.

The fact is that the science of policing is not mathematical. Law enforcement deals with human behavior. This is also why discussions of police militarization are harmful to

⁵⁸ This is not a new concept. However, the DoJ is now far more public in its review and receives extensive media coverage. Many now look to the DoJ as the regulator of local law enforcement.

⁵⁹ United States Department of Justice Civil Rights Division, "Investigation of the Ferguson Police Department" (report, DoJ, March 2015), https://www.justice.gov/sites/default/files/opa/press-releases/attachments/2015/03/04/ferguson_police_department_report.pdf; Jocelyn Samuels and Damon Martinez, "Department of Justice Investigation of the Albuquerque Police Department," U.S. Department of Justice, April 10, 2014, 1, www.justice.gov/sites/default/files/crt/legacy/2014/04/10/apd_findings_4-10-14.pdf; United States Department of Justice Civil Rights Division, "Investigation of the New Orleans Police Department" (report, DoJ, March 2011), https://www.justice.gov/sites/default/files/crt/legacy/2011/03/17/nopd_report.pdf.

⁶⁰ United States Department of Justice Civil Rights Division, "Ferguson," 90-96.

⁶¹ President's Task Force on 21st Century Policing, "Final Report of the President's Task Force on 21st Century Policing" (report, DoJ, 2015), 61-68, http://www.cops.usdoj.gov/pdf/taskforce/TaskForce_FinalReport.pdf.

the public and law enforcement without an understanding of safety and the hazards found in the police officer's work environment.⁶²

B. CHAPTER SUMMARY

With the OSH Act of 1970, the U.S. federal government took a significant step forward to improve the safety of workers. Individual states were encouraged to create their own safety guidelines that were at least as restrictive as the federal guidelines. Industries such as construction, manufacturing, firefighting, aviation, and medicine have made significant improvements in safety because of this guidance.

This chapter highlights the fact that, despite the success of the OSH Act in other professions, law enforcement has been left behind. Since law enforcement is often thought of as a social endeavor, improving safety has mostly focused on the actions of the officer and the relationship an agency has with a given community. Though necessary in the larger discussion of policing, such discussion do little to promote real safety. This chapter highlights the need for law enforcement to develop and implement a systematic approach to safety. This approach should be based on the proven success of professions using the principles of the OSH Act.

⁶² There is no formal definition of police militarization. It most commonly refers to how officers dress, the equipment they use and tactics that some argue can undermine police-community relationships.

THIS PAGE INTENTIONALLY LEFT BLANK

III. APPLYING THE OSHA JOB HAZARD ANALYSIS AND HAZARD IDENTIFICATION: PUTTING THE PIECES TOGETHER

Any discussion of keeping police officers safe should begin with the OSHA job hazard analysis.

A job hazard analysis is a technique that focuses on job tasks as a way to identify hazards before they occur. It focuses on the relationship between the worker, the task, the tools, and the work environment. Ideally, after you identify uncontrolled hazards, you will take steps to eliminate or reduce them to an acceptable risk level.⁶³

Most professional police agencies have job descriptions that explain the expected role and activities to be performed for every position in the department. This may be a good place to start, but it is far short of a job hazard analysis. Even though most departments expect all officers to be able to function as an officer on patrol, the fact is the hazards faced by dissimilar assignments are very different. The street patrol officer faces hazards that the crime analyst does not. The bomb technician needs additional procedures, training, and protective equipment that the bicycle officer does not.

This chapter explores OSHA's five-step job hazard analysis and how it can be applied to law enforcement. The chapter continues with an example of using the hazard analysis to identify a significant threat to law enforcement officer's safety. The chapter concludes by systematically mitigating the identified hazard. This process provides the foundation of a roadmap law enforcement can follow to create a systematic approach to safety and a safety culture in the profession.

A. LAW ENFORCEMENT APPLICATION OF THE JOB HAZARD ANALYSIS

So where does a police administrator begin to conduct a job hazard analysis? OSHA provides guidance in Publication 3071, *Job Hazard Analysis*, which suggests a five-step process to begin the job hazard analysis.⁶⁴

⁶³ OSHA, *Job Hazard Analysis*, 1.

⁶⁴ OSHA, 4-5.

1. Involve Your Employees

It seems everyone these days thinks they know what the job of a police officer entails. Sadly, too many people get their information from Hollywood and the media. In most cases, it is only the officer doing the job and the officer's immediate supervisor who understand the hazards faced by officers today. Many older veteran administrators recall their own days on the street years ago to identify hazards, and that is completely misguided. To understand the current hazards, the job hazard analysis must include input and acceptance from the officers doing the task.

2. Review Your Accident History

Professional police agencies are nearly fanatical about keeping statistics. They often report crime statistics and trends, such as, "Homicides are down and robberies up. Overall, crime is down." These statements are designed to make the community feel safe and portend that things are improving. What is rarely, if ever, reported is the injury and mortality rate of the officers performing the job. Most law enforcement agencies do a decent job of documenting duty-related injuries. Few, however, use that information to identify trends and make adjustments in policy, training, and tactics. For large departments, it would not be uncommon for 5 percent to 10 percent of the force to be off duty or assigned to limited duty due to injury and illness. Additionally, law enforcement is generally far behind the fire service in documenting exposures to hazardous situations. This would include hazardous materials, criminals in possession of firearms, and, vehicle operations to name a few. Most of these incidents are documented as a whole but do not include the specific information to mitigate the hazard in the future.⁶⁵ It also makes it nearly impossible for an officer to identify the cause of an illness or injury that presents itself years after an event.

3. Conduct a Preliminary Job Review

Statistics are a great source to identify trends and the measurable impact that hazards cause on a department's workforce. However, the best information is only received

⁶⁵ IACP and Bureau of Justice Assistance, "Reducing Officer Injuries," 19-34.

from the employees doing the work. The employees will know all of the bumps and bruises that go unreported. They will also be able to discuss the near misses that did not result in injury or death but very well could have.⁶⁶ The employees may share workarounds to policy or trained tactics that do not work or impair productivity or safety. In the police world, this is best symbolized by the veteran officer telling the rookie, “Forget all of that stuff you learned in the academy. This is how we do it on the street.” Nothing should concern a police administrator more than to find out that their training, policies, and expectations are not being transferred to actual performance on the street. Such a situation does not necessarily indicate that officer has gone rogue. It is possible that an officer’s actions are an attempt to improve safety and is actually ahead of policy and training. This would indicate that policies need to be rewritten and training updated.

The authors of the OSHA Job Hazard Analysis emphasize one point during the job review. **“If any hazards exist that pose an immediate danger to an employee’s life or health, take immediate action to protect the worker.”**⁶⁷ This, in some instances, would take a monumental effort by agency executives. Training cycles and budgets generally run annually. To purchase protective equipment in bulk or conduct immediate training would be costly and time consuming for a large agency. This was most evident in Dallas, Texas, in 2017 when five Dallas police officers were killed by a suspect with a rifle on July 7.⁶⁸ Governor Greg Abbott of Texas scrambled to find \$1 million to outfit police officers with helmets and vests that would protect against rifle fire. Governor Abbott said, “What the attack in Dallas last year showed is that more needs to be done to protect the brave men and women who run into danger and not away from it.”⁶⁹ It was further estimated that to equip each of the 77,000 police officers in Texas with a rifle-resistant vest, costing \$500

⁶⁶ Reason, *Managing Risks*, 118-19.

⁶⁷ OSHA, Job Hazard Analysis, 4.

⁶⁸ Jennifer Emily and Tasha Tsiaperas, “Dallas Police Shooter Killed 4 Officers on the Street, 1 through a Second-Floor Window,” Dallas News, July 14, 2016, https://www.dallasnews.com/news/dallas-ambush/2016/07/14/dallas-police-shooter-killed-4-officers-street-1-second-floor-window?_ga=2.211645141.1370971398.1521055924-1853008464.1521055904.

⁶⁹ “Dallas Police Get \$1 Million Grant for New Helmets, Bullet Proof Vests,” Fox 4 News, January 26, 2017, <http://www.fox4news.com/news/231979136-story>.

apiece, would cost \$38,500,000.⁷⁰ Despite this cost, the protection of the employee is paramount and required by law.

4. List, Rank, and Set Priorities for Hazardous Jobs

Not all hazards pose the same risk for employees and not all identified issues can be solved at once. Those hazards that are likely to result in serious injury or death should be addressed first. Those hazards that frequently reoccur should also be prioritized. As mentioned earlier, law enforcement is a hazardous profession. The intent is to eliminate unacceptable risks and mitigate hazards to the best of our ability.

5. Outline the Steps or Task

The OSHA documentation suggests that most jobs can be broken down into job tasks or steps. While this is true with most things in law enforcement, it is not as simple as completing a checklist of things to do to avoid risk. The dynamic nature of high-risk situations makes it very challenging to create a specific process for each type of incident or event. This is due to the human element that does not perform like a mathematical process. Despite this, there are proven procedures, tactics, and equipment that afford officers the safest environment possible to perform their tasks. Through the job hazard analysis, all parts of the safety system can be identified and improved.

B. HAZARD IDENTIFICATION: IDENTIFYING THE GREATEST THREAT TO LAW ENFORCEMENT OFFICERS

Using the principles that dictate identifying and mitigating the most significant hazards first, the systematic process turns to identifying the causes of police officer fatalities. For years, law enforcement believed that more officers are killed in accidents than by felonious assault. The graph in Figure 1 shows how this trend has changed in recent years.

⁷⁰ James Barragán, “For Police, the Push for Funding Vests Capable of Stopping Rifle Rounds Is Personal,” Dallas News, March 13, 2017, <https://www.dallasnews.com/news/texas-politics/2017/03/13/police-push-funding-bulletproof-vests-personal>.

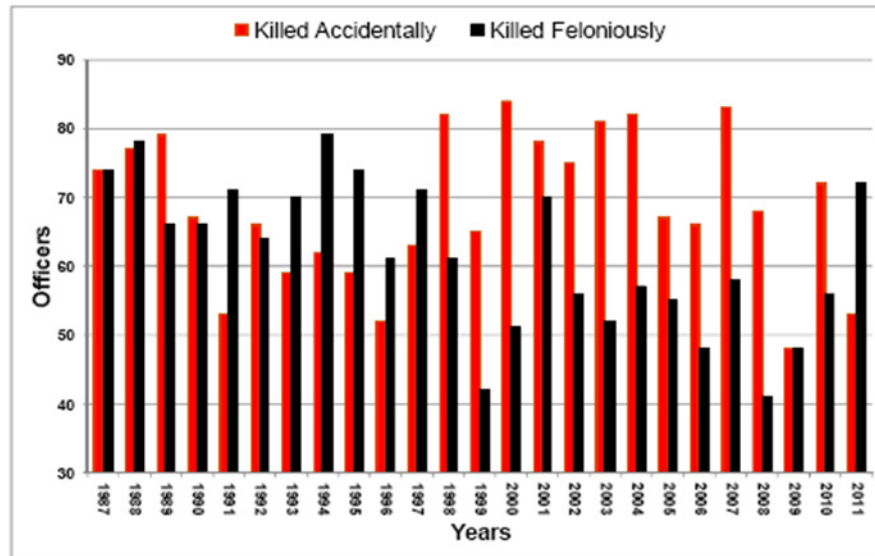


Figure 1. Comparison of Officers Killed Accidentally and Feloniously between 1987 and 2011⁷¹

Two things are apparent when looking at the data in the graph. The first is that more officers are killed accidentally than feloniously; according to this sample data, 64 percent of the officers killed accidentally died in auto and motorcycle crashes.⁷² This is where most of law enforcement's energy has been placed in recent years. Statistics such as these are cited to encourage officers to reduce their speed and wear seatbelts. Second, for the first time in the years studied, more officers died feloniously than by accident in 2011. When reviewing statistics, academic research, or professional journals, it is rare to find data being used to mitigate felonious deaths for police officers. It is more often used to highlight a concern or trend but rarely to point to a specific mitigation strategy. Using data to mitigate accidental deaths of officers is more common. When applying this to felonious deaths, a completely different picture emerges.

By using the principle of identifying and mitigating the most serious hazards first, I have changed the data set from the broad categories of accidental and felonious deaths to

⁷¹ Source: Richard Ashton, "FBI's *LEOKA* Offers Insight into Officer Deaths," *Police Chief* LXXX, no. 2 (February 2013): 64, <http://www.policechiefmagazine.org/wp-content/uploads/PoliceChief-February2013.pdf>.

⁷² Ashton.

only the highest two categories as recorded by the National Law Enforcement Officers Memorial Fund website, as shown in Figure 2.⁷³ I have also included officers who were struck by vehicles in the same time period.⁷⁴

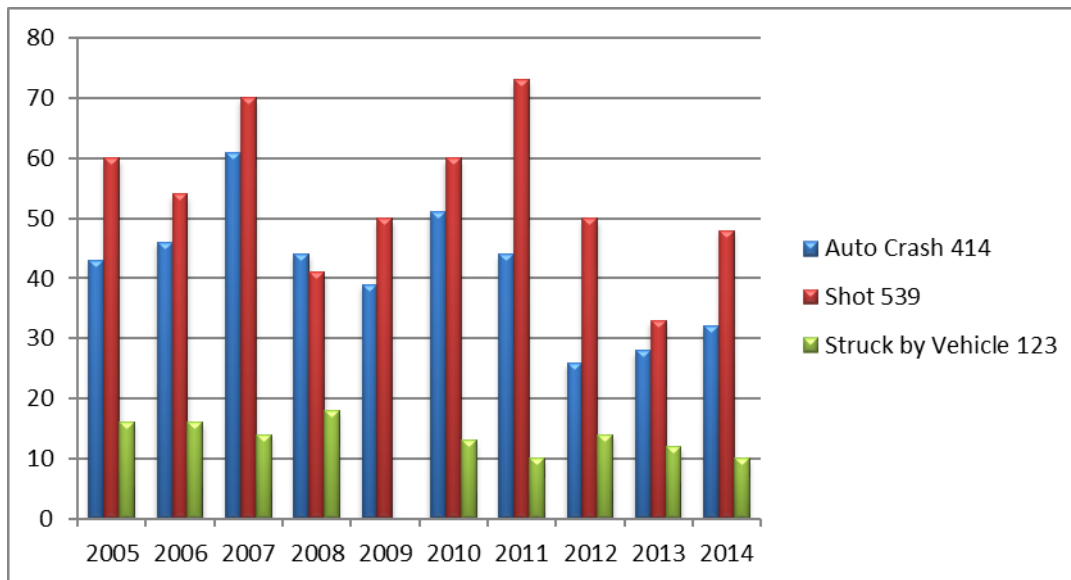


Figure 2. Officers Killed by Auto Crash, Shot, and Struck by Vehicle 2005-2014⁷⁵

When viewing the data in this format, it becomes clear that in the ten years reviewed, more officers were killed by being shot than in auto accidents.⁷⁶ In fact, of the 19,298 officers on the National Law Enforcement Memorial in 2012: 10,787 (56 percent) were due to firearms, 5364 (28 percent) were traffic-related, and 3147 (16 percent) were due to other causes.⁷⁷

⁷³ NLEOMF, “Causes of Law Enforcement Deaths.”

⁷⁴ The two charts have different data points because they come from different sources. This inconsistent reporting also poses a problem for identification and mitigation.

⁷⁵ Adapted from NLEOMF, “Causes of Law Enforcement Deaths.”

⁷⁶ Auto accidents include only automobiles.

⁷⁷ OSW Group, “Officer Deaths and Injuries from Gunfire,” 4.

Despite this, very few police administrators or academics invest the time or funding to systematically review this data and attempt to mitigate officers being shot as compared to auto crashes.⁷⁸ Officers being struck by vehicles is another major topic of discussion in law enforcement circles. The data clearly show that this is not nearly the threat to officer's lives when compared to being shot. In fact, of the 123 officers struck by a vehicle, many of them were feloniously struck, meaning they were intentionally hit. One data set indicates that possibly two-thirds of those listed by the National Law Enforcement Officers Memorial Fund may have been struck on purpose.⁷⁹ For example in 2014, fifteen officers who died in the line of duty were struck by a vehicle. Ten of those officer deaths were classified as "vehicle assaults," meaning they were struck on purpose.

All of this should tell law enforcement administrators and other interested parties that we need more and better safety systems that are driven by accurate data. By following the accepted principles established by OSHA, the law enforcement administrator will find that this is a manageable process.

C. PREVENTING GUNSHOT DEATHS BY FOLLOWING OSHA'S SYSTEMATIC PROCESS

Since the data identified being shot as a significant hazard for police officers, OSHA requires that the hazard should be "prevented, corrected or controlled."⁸⁰ It is here that we can also expand our thinking. As mentioned earlier, law enforcement is not a mathematical or scientific endeavor. Science does apply to ballistics, however. In the simplest terms, a bullet that has been fired is a projectile that has velocity and mass. Rifle ammunition normally has more velocity than handgun ammunition and will require more consideration in our mitigation strategy. As part of our analysis we should also consider

⁷⁸ In addition to being shot, the National Law Enforcement Memorial website includes six other categories that would be included in the "killed feloniously" statistics in Figure 1. I have narrowed the criteria down to just being shot to identify specific mitigation strategies that may not apply to being stabbed or run over by a car, for example.

⁷⁹ "Officer Down Memorial Page (ODMP)," accessed June 29, 2015, <https://www.odmp.org/>.

⁸⁰ "Safety and Health Management Systems eTool: Module 2—Overview of System Components: Hazard Prevention and Control," OSHA, accessed June 26, 2015, <https://www.osha.gov/SLTC/etools/safetyhealth/comp3.html>.

other projectiles such as rocks, bottles, and falling objects. These generally would have less velocity than a fired bullet, but they have more mass and, just as a bullet, can injure or even kill.

OSHA has identified eight systems to be considered during hazard mitigation. They are: engineering controls, safe work practices, administrative controls, personal protective equipment, systems to track hazard correction, preventative maintenance, emergency preparation, and medical programs.⁸¹ The next section examines how each of these mitigation systems can be applied to law enforcement safety.

1. Engineering Controls

OSHA describes engineering controls as, “the first and best strategy to control the hazard at its source.”⁸² OSHA goes on to say that “to the extent feasible, the environment and the job itself should be designed to eliminate hazards or reduce exposure to hazards.”⁸³ The nature of law enforcement gives police administrators few options here. A lot can be done to foster police community relationships, but the individual who chooses to shoot or throw an object at the police will not necessarily be mitigated by such strategies.

One option that is available is to create a barrier between the attacker and the officer.⁸⁴ In high-risk situations, that barrier is often an armored vehicle. The intent of having an armored vehicle is to protect the occupants from the same hazards just described. Most agencies emphasize the armored vehicle’s primary role is to rescue officers and civilians from an insecure and hostile environment. The vehicle is also used by special weapons and tactics (SWAT) officers during operations to safely get eyes on a location and safely communicate with individuals inside of a structure. The vehicle is often used in a standby capacity during events or high-risk incidents that may require a tactical rescue or intervention.

⁸¹OSHA, “eToolModule 2.”

⁸²OSHA.

⁸³OSHA.

⁸⁴Indiana Department of Labor, “INReview: Indiana Occupational Safety and Health 2014” (report, Indiana Department of Labor, 2014), 5, http://www.in.gov/dol/files/IN_Review_2014.pdf.

Perhaps the most popular armored vehicle on the market today is the Lenco BearCat, shown in Figure 3. To look at the vehicle, it is not much different than an armored car that carries money on the streets of America every day. Of course, it is not the appearance of the vehicle that causes police departments to spend \$200,000 to \$400,000; . it is the safety afforded to the occupants by the armor plating. Every police department in a major city has many stories of using, or wishing they had available, an armored vehicle to rescue an officer or civilian from harm during a deadly incident. Perhaps the most famous example of this is the 1997 North Hollywood bank robbery incident where six civilians and ten officers were wounded by two bank robbers with automatic rifles and body armor.⁸⁵ Having no armored vehicle available at the scene, officers commandeered bank armored cars, shown in Figure 4, to rescue wounded officers and civilians. Many of the wounded officers and citizens were clinging to life and needed immediate medical care.



Figure 3. Lenco BearCat⁸⁶

⁸⁵“North Hollywood Bank Heist Erupts in Gunbattle; 6 Civilians, 10 Officers Injured; 2 Robbers Killed: March 1, 1997,” *Los Angeles Daily News*, September 24, 2010, <http://www.dailynews.com/20100924/north-hollywood-bank-heist-erupts-in-gunbattle-6-civilians-10-officers-injured-2-robbers-killed-march-1-1997>.

⁸⁶ Source: “BearCat,” Lenco Armored Vehicles, accessed June 2015, <http://www.lencoarmor.com/law-enforcement/>.



Figure 4. Armored Truck Used by LAPD during North Hollywood Shootout⁸⁷

Even though an armored vehicle is not the traditional shielding envisioned when considering OSHA guidelines, it is one that police administrators must consider. It is perhaps the only technology available to shield officers from flying projectiles, such as bullets, when addressing engineering controls. Lt. Dan Marcou, writing for PoliceOne.com, identified thirteen instances in which armored vehicles have saved police officer and civilian lives from 2006 to 2014.⁸⁸ Such vehicles remain controversial, but the analysis clearly shows they may be required to meet mitigation standards. Agencies would have to perform their own analyses and determine to what extent an armored vehicle should be used or even if one needs to be available.

⁸⁷ Source: “Ford F700 Armored Truck (Civilian),” flickr, August 20, 2011, <https://www.flickr.com/photos/mr38/6086918377/>.

⁸⁸ Dan Marcou, “Why Cops Need Armored Vehicles: 13 Times BearCats Saved Lives,” PoliceOne, December 8, 2015, <https://www.policeone.com/police-products/vehicles/specialty/articles/51458006-Why-cops-need-armored-vehicles-13-times-BearCats-saved-lives/>.

2. Safe Work Practices

OSHA describes safe work practices as the “general workplace rules and operation specific rules.”⁸⁹ It is in this area that law enforcement invests most of its energy to keep officers safe. Written policies and procedures are extensive in many agencies and may be so numerous they cannot easily be remembered. In addition to the written rules, law enforcement training emphasizes best practices that are developed by experienced officers and trainers. It is important for law enforcement to document the expectations of safe conduct by their officers and correct unsafe behavior early and modify training and policy when necessary.

In addition to traditional police safe work practices, some OSHA-specific guidelines may also be required. The Kentucky Department of Criminal Justice has posted on its website the OSHA for Law Enforcement Summary.⁹⁰ It outlines thirty-one specific OSHA and Kentucky regulations that apply to law enforcement.⁹¹

Another example of the safe work practices system can be found in the required use of the Incident Command System (ICS). Most law enforcement agencies follow the National Incident Management System (NIMS) direction on using the ICS during large or hazardous events and incidents. OSHA has included guidance in the use of the ICS on its website including the expectations of the Safety Officer. Among other duties, the Safety Officer will “develop and recommend measures for assuring personal safety, and to monitor and/or anticipate hazardous and unsafe conditions.”⁹² ICS Form 215A requires that the Safety Officer identify known hazards and articulate mitigation strategies.⁹³ If a hazard cannot be sufficiently mitigated, the operational plan may have to change.

⁸⁹ OSHA, “eToolModule 2.”

⁹⁰ Kentucky Department of Criminal Justice Training, accessed June 27, 2015, <https://docjt.ky.gov/>.

⁹¹ “OSHA for Law Enforcement: Summary,” Kentucky Department of Criminal Justice, accessed September 15, 2018, <https://docjt.ky.gov/legal/documents/TheOccupationalSafetyandhealthAdministration.pdf>.

⁹² “Incident Command System (ICS): Safety Officer,” OSHA, accessed June 27, 2015, www.osha.gov/SLTC/etools/ics/safe_off.html.

⁹³ “ICS Forms,” FEMA, accessed June 27, 2015, <https://training.fema.gov/emiweb/is/icsresource/icsforms.htm>.

3. Administrative Controls

OSHA describes administrative controls as measures that “include additional relief workers, exercise breaks and the rotation of workers.”⁹⁴ This is an area where many law enforcement agencies could improve. With the 2008 economic downturn, many law enforcement agencies slowed or stopped hiring new officers. The economy seems to be improving and agencies are hiring again, but the effects of the downturn will be long lasting and take years to recover. In 2011, it was estimated that 12,000 officers had lost their jobs and 30,000 positions in county and municipal departments would go unfilled.⁹⁵ To adjust, many agencies pay overtime, causing officers to have less time to decompress and spend with their families. Additionally, many officers work part time to supplement their income. As a result, officers experience fatigue and burnout, which can lead to safety issues for the officer and the agency. According to the National Institute of Justice, stress and fatigue for law enforcement officers can be amplified by any combination of the following:

Work-related factors:

- Poor management
- Inadequate or broken equipment
- Excessive overtime
- Frequent rotating shifts
- Regular changes in duties—for example, spending one day filling out paperwork and the next intervening in a violent domestic dispute.

Individual factors:

- Family problems
- Financial problems
- Health problems

⁹⁴ OSHA, “eTool Module 2.”

⁹⁵ Kevin Johnson and David Jackson, “Economic Woes Wear on U.S. Police Departments,” *USA Today*, October 24, 2011, <http://usatoday30.usatoday.com/news/washington/story/2011-10-23/jobs-lost-economic-woes-hit-police-budgets/50885474/1>.

- Taking second jobs to make extra income⁹⁶

It is incumbent on the law enforcement administrator to recognize these factors during the job hazard analysis and develop strategies to mitigate them. Failing to do so can lead to what the National Institute of Justice report calls chronic fatigue syndrome.⁹⁷ The report states:

Law enforcement officers commonly work extended hours in ever-changing environments that can cause great mental and physical stress. Enduring fatigue for a long period of time may lead to chronic fatigue syndrome, a health problem characterized by extreme fatigue that does not improve with bed rest and continues to worsen with physical and mental activity.

Fatigue can:

- Impair an officer's mental and physical ability.
- Create a cycle of fatigue.
- Limit job performance.
- Damage an officer's health.⁹⁸

Returning to our example of preventing officer deaths from gunshots, it is clear that more must be included in our hazard mitigation plan than policy and equipment. An officer suffering from chronic fatigue syndrome may fail to recognize a dangerous situation that could result in them being shot. Additionally, once an officer is fired upon, their response may be slow or ineffective to survive the encounter.

⁹⁶ "Causes of Officer Stress and Fatigue," National Institute of Justice, last modified January 24, 2012, <http://nij.gov/topics/law-enforcement/officer-safety/stress-fatigue/pages/causes.aspx>.

⁹⁷ "Officer Work Hours, Stress and Fatigue," National Institute of Justice, last modified August 13, 2012, <https://www.nij.gov/topics/law-enforcement/officer-safety/stress-fatigue/pages/welcome.aspx>.

⁹⁸ National Institute of Justice.

4. PPE Hazard Assessment and Training

Personal protective equipment (PPE) is a new term for law enforcement. It normally causes one to think of a Level C hazardous materials suit.⁹⁹ This type of PPE is used by law enforcement to prevent exposure to bodily fluids and other contaminants. In the post-9-11 era, these suits and respirators have been upgraded to protect against a wide range of chemical, biological, and radioactive hazards.

The use of PPE must expand beyond this traditional thinking to keep officers safe. The Kentucky guidance to law enforcement cited earlier includes this illuminating section:

**Personal Protective Equipment (PPE) (29 CFR §1910 Subpart I) /
Bloodborne Pathogens (29 CFR §1910.1030)**

This standard covers the need for the employer to assess the need for PPE for employees, based upon the types of risk the employee might face during their workday and to provide it. In a law enforcement context, within a station, officers might be subject to blood and other body substances as the result of an injury, for example and need gloves and appropriate cleaning supplies. Another form of PPE that some agencies may be called upon to provide is a personal flotation device (PFD), should an officer be required to work in the vicinity of a waterway. ***OSHA has not, at this point, ruled upon the issue of bullet-resistant vests.*** This standard also discusses the process to be following in case of a known or possible exposure to bloodborne pathogens.¹⁰⁰

It is time that police administrators and state and federal OSHA authorities begin to look at police hazards and PPE as they do every other hazardous profession. Diane Stein, the Safety and Health Coordinator for City Employee Union Local 237 (New York), asked OSHA if the “Personal Protective Equipment (PPE) standard, specifically 29 CF 191 0.132(a) apply to body armor (such as, but not limited to, bullet or stab resistant vests)?”¹⁰¹

⁹⁹ OSHA, *General Description and Discussion of the Levels of Protection and Protective Gear*, Standard 1910.120 App B (standard, OSHA, 1994), https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=9767.

¹⁰⁰ Kentucky Department of Criminal Justice, “OSHA for Law Enforcement,” 4, emphasis added.

¹⁰¹ Thomas Galassi, “Guidance Regarding Body Armor,” OSHA, August 6, 2013, www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=INTERPRETATIONS&p_id=29003.

The question was answered by Thomas Galassi of the OSHA Directorate of Enforcement Programs:

If an employer chooses bullet proof vests and body armor to protect its employees on the job from gunshot wounds and knife stab wounds, the employer must select equipment that is adequate to protect against these hazards and must provide it at no cost to its employee. OSHA considers equipment or clothing such as body armor, a bullet proof vest or a stab-resistant vest, to be personal protective equipment that may be required by 1910.132(a)[1](#) and would not be ordinary clothing or everyday clothing for purposes of the exceptions for payment at 1910.132(h)(4)(ii)[2](#) or (iii)[3](#).

It is important to note that *Section 18 of the Occupational Safety and Health Act of 1970* encourages states to develop and operate their own safety and health programs that may have different standards from OSHA's standards, but are determined to be at least as effective. Currently there are 22 states and U.S. territories that operate State Plans which cover both the private sector and state and local government employees, and five State Plans which cover public employees only.¹⁰²

The first line of the response contributes to why law enforcement struggles in the area of safety and particularly with PPE. It states that agencies have a choice as to issuing bullet resistant vests to its officers and that if they do, the agency must pay for them. Given the data, it seems clear that bullets are a real hazard to police officers and it seems that the law would require a mitigation strategy be implemented. Perhaps what is missing is the Job Hazard Analysis described earlier. Once the agency determines that their officers are at risks from bullets and other projectiles, would they then be required to²⁵ provide the proper PPE? It is worth repeating that OSHA law directs employers, **“If any hazards exist that pose an immediate danger to an employee’s life or health, take immediate action to protect the worker.”**¹⁰³

Another key point made by Galassi is that “Section 18 of the Occupational Safety and Health Act of 1970 encourages states to develop and operate their own safety and health programs that may have different standards from OSHA’s standards, but are

¹⁰² Galassi.

¹⁰³ OSHA, Job Hazard Analysis, 4..

determined to be at least as effective.”¹⁰⁴ It appears we may be in a cycle where federal OSHA will not create specific law enforcement standards because most police officers work for local jurisdictions and are not covered by federal OSHA law. This does not explain why they fail to establish specific standards for federal law enforcement agencies like the U.S. Marshalls and the Federal Bureau of Investigation (FBI), whom they do have a duty to protect. Such regulations would immediately transfer to states like Indiana by virtue of Indiana following all federal guidelines. Federal OSHA encourages the states to fill the void but none have accepted this challenge. IOSHA describes emergency responders as follows:

People’s lives often depend on the quick reaction and competent care of police officers, firefighters, medical technicians (EMTs) and paramedics. Individuals that work in these occupations work to maintain order, enforce laws and protect lives in some of the most dangerous situations. Because the work of emergency responders is inherently dangerous, managing their safety can be more accurately described as managing their level of risk.¹⁰⁵

Indiana supports this notion even further by, when addressing traffic vests, it correctly asserts that:

In order to avoid a citation for a public safety official directing traffic who is without reflective gear, the employer must be able to demonstrate that a hazard assessment was performed and that, based upon that analysis, no protective clothing is required. A hazard assessment does not necessarily have to be site or incident specific and could be part of a department’s Standard Operating Procedure.¹⁰⁶

The question is: why is the same logic not applied to the ballistic vest and helmet?¹⁰⁷ The data clearly indicate we could save more officers lives by enforcing Indiana’s guidance on all types of hazards and PPE, particularly those concerning officers

¹⁰⁴ Galassi.

¹⁰⁵ Indiana Department of Labor, “IN Review 2009,” 14.

¹⁰⁶ Carter and Alexander, “Reflective Vest,” 3.

¹⁰⁷ In phone conversations with representatives from OSHA and IOSHA, neither could explain why this logic did not apply or argue against it. Both described a “line” that separates law enforcement from traditional safety considerations without being able to explain why it exists.

being shot. It appears that federal OSHA cannot act locally and will not act federally. The states will not act even though they seem to be expected to by federal OSHA.

So, what is a ballistic vest and the science that makes it the best choice for PPE against bullets and other projectiles? Stephanie Kwolek, a DuPont chemist, invented the technology behind Kevlar in the mid-1960s. Kevlar, and its modern cousins, are the material that makes a ballistic vest. Also known as soft body armor, these vests have saved over 3,000 police officers' lives since 1972 by stopping bullets that normally would have killed them.¹⁰⁸ Notice it is not a bullet-proof vest. When a bullet strikes the material, the kinetic energy is spread over the entire area of the vest. By doing so, hopefully, the bullet is trapped in one of the layers of material before striking the wearer. Even in the best-case scenario, the wearer is still absorbing an enormous amount of energy. Lacerations, contusions, muscle damage, bone fractures, and organ damage are all still possible as a result of the trauma.¹⁰⁹

By the late 1970s, soft body armor had become fairly commonplace for local law enforcement.¹¹⁰ Despite the increased safety offered by the vest, many in law enforcement chose not to wear it because it was hot and uncomfortable.¹¹¹ Vest manufacturers have long known that they must find a balance between ballistic protection (safety) and wearability (comfort).¹¹² Until 2011, most agencies allowed officers the option to wear the vest or not.¹¹³ This changed after the federal government altered its grant program to

¹⁰⁸ “National Institute of Justice Body Armor Challenge: How Long Does Body Armor Really Last?” National Institute of Justice,” accessed June 27, 2015, <http://www.nij.gov/funding/Pages/fy12-body-armor-challenge.aspx>.

¹⁰⁹ M. Jo McMullen and C.J. Williams, “Injuries to Law Enforcement Officers Shot Wearing Personal Body Armor: A 30-Year Review,” *Police Chief* LXXV, no. 8 (August 2008), www.policechiefmagazine.org/magazine/index.cfm?fuseaction=display_arch&article_id=1571&issue_id=82008.

¹¹⁰ In 2014, 32 percent of all officers who died in the line of duty were not wearing a ballistic vest. In 2013, 50 percent of all officers who died in the line of duty were not wearing a ballistic vest.

¹¹¹ National Institute of Justice, “Causes of Law Enforcement Deaths.”

¹¹² “Wearability” is a term common among law enforcement trainers and those who provide equipment to officers. The term can also refer to the ease with which equipment can be carried on the belt and if it encumbers the officer in any way while performing assigned duties.

¹¹³ The Bulletproof Vest Partnership Grant Act of 1998 allows state and local law enforcement agencies to receive grant funding to purchase ballistic vests. Since fiscal year 2011, participation in this program requires the applying agency to certify that it has a written mandatory wear policy in effect.

purchase body armor and required departments participating in the program to have a policy requiring officer to wear them.¹¹⁴

In the late 1980s, tactical vests became prevalent for law enforcement SWAT teams. The tactical vest is worn over the officer's uniform and provides even more layers of ballistic material, which increases safety. The next technology jump came by adding ceramic plates to the tactical vest, increasing safety even more. Soft body armor is designed to stop most handgun ammunition, but the ceramic plate can stop some rifle ammunition. These added layers of Kevlar and the weight of the ceramic plates significantly reduce wearability, though. As a result, the tactical vest is only worn when a significant ballistic threat (someone may shoot you) is imminent or anticipated and normally only by SWAT team members.

Now that this chapter has highlighted the need for officers to be issued a ballistic vest and be required to wear it as part of their identified PPE for hazard mitigation, there is still more to the analysis. From 1980 to 2010, 46 percent of officers who died from being shot were shot in the head.¹¹⁵ Another study looked at occupational homicides of 796 officers killed from 1996 to 2010 and found that 92 percent (739) of them had been shot.¹¹⁶ Of those who had been shot, 55 percent (439) were shot in the head or neck. Only 29 percent (228) were shot in the upper torso. These data clearly indicate that our mitigation strategy must include some type of PPE for the officer's head. The only technology available to law enforcement is the ballistic helmet.

Like ballistic vests, the ballistic helmet is made of Kevlar that is hardened and shaped. Though it may not appear the same since it does not have the flexibility of soft body armor, the layers of Kevlar can be seen by cutting or breaking the outer shell to reveal the material. Like the vest, the helmet is not bullet proof. It absorbs kinetic energy just as the vest does and the wearer is subject to the same added injuries from an impact. The

¹¹⁴ "OJP Bulletproof Vest Partnership and the Body Armor Safety Initiative," Office of Justice Programs, accessed June 9, 2015, <http://ojp.gov/bvpbasi/>.

¹¹⁵ OSW Group, "Officer Deaths and Injuries from Gunfire," 7.

¹¹⁶ Swedler et al., "Occupational Homicide," 37.

helmet is not rated to stop rifle fire.¹¹⁷ However, there are documented cases of rifle rounds striking the helmet and being directed around the wearer. If a rifle bullet has stuck another material prior to striking the helmet, the bullet may have deformed and/or slowed enough that its remaining energy can be safely absorbed by the helmet. The primary role of the helmet is to protect the head against injury from a variety of threats, which include gunshot wounds and blunt force trauma.¹¹⁸

The Kevlar helmet began entering police service in the mid-1990s through the Department of Defense 1033 program.¹¹⁹ Law enforcement viewed this new technology as an answer to address many hazards faced by its officers. Law enforcement identified three specific threats that this one piece of technology could address: high-velocity projectiles such as bullets and fragmentation; low-velocity projectiles such as rocks and bottles; and falling debris, which is common after a structural collapse.¹²⁰ No other technology on the market today can mitigate all three of these hazards.

So why do officers not wear the helmet all of the time? Just like the vest, it comes down to wearability. The helmet is heavy and cumbersome. Like the tactical vest, it is only worn when there is an immediate or anticipated threat. Many officers, even though it is available, will not wear the helmet because of perception. Like the early days of the vest, they do not want to be the first to put it on. To my knowledge, no agency has a policy requiring the use of the helmet like most do now for the vest. Again, it is a balance between safety and wearability.

This is where the police administrator must step in. Not only should the helmet be purchased and provided to the officers, policy must be written to guide the officer on when

¹¹⁷ The National Institute of Justice (NIJ) sets body armor standards. The most current standard was published in July 2008 and referenced under NIJ Standard-0101.06

¹¹⁸ Duncan Wallace and Stephen Rayner, "Combat Helmets and Blast Traumatic Brain Injury," *Journal of Military and Veterans' Health* 20, no. 1 (January 2012): 10, <http://jmvh.org/article/combat-helmets-and-blast-traumatic-brain-injury/>.

¹¹⁹ This program allows state and local law enforcement agencies to receive equipment from the U.S. military that has been retired or expired, or is no longer serviceable to military standards.

¹²⁰ The term "high velocity" is not used here in the traditional armorer's definition of sonic and sub-sonic ammunition. Instead it differentiates between those things that are thrown or launched at officers and bullets or shrapnel.

to wear it. By using our hazard analysis, we can identify some situations when the helmet would be a mandatory piece of the necessary PPE for an incident. There will also be times when a Safety Officer has identified a specific hazard during the course of an event or incident that requires the use of the helmet to mitigate the danger and protect the officer. Finally, the officer should be encouraged to wear the helmet when they recognize a potential hazard that could be mitigated by the helmet.

5. Systems to Track Hazard Correction

Documentation is the key to an effective safety and health management system. Hazards must be identified and recorded. Mitigation strategies must be implemented, recorded and tracked for effectiveness. Hazards that develop despite established mitigation strategies must also be documented and corrected. The research indicates that law enforcement does none of this. At the conclusion of the Police Executive Research Forum's (PERF) report on Reducing Officer Injuries, the International Association of Chiefs of Police (IACP) noted that,

overall findings showed that the majority of injuries were those that would not be collected by traditional collection mechanisms, such as the Federal Bureau of Investigation's Law Enforcement Officers Killed and Assaulted program or the Uniform Crime Report data.

They went on to say,

it is the IACP's position that no injury or death to a law enforcement officer is acceptable. Therefore, it is vitally important that all agencies instill a strong culture of safety. Tracking injuries is one important first step toward creating this culture of safety. Through injury tracking, agencies will be better informed as to what types of injuries are occurring and will be able to mitigate the risks for those injuries by targeting resources and instituting policies and procedures.¹²¹

The Officer Safety and Wellness (OSW) Group was established by the DoJ in 2011 to improve officer safety and wellness. Among its recommendations are:

¹²¹ IACP and Bureau of Justice Assistance, "Reducing Officer Injuries," 14.

- Ensure officers have the equipment needed to operate safely (e.g., gun lights, ballistic shields, vests, rescue vehicles, and thermal imaging).
- Investigate gunfire deaths and injuries through an independent party, similar to the processes the fire service uses or those of the National Transportation Safety Board.
- Increase research on all aspects of officer safety and wellness.
- Enhance education and training. All of the groups focused particularly on the need to conduct threat assessments, more situational firearms training, mental preparedness, and use of technology.
- Create a clearinghouse for data and information on officer deaths and injuries, and develop relationships with the medical community for research.
- Clarify vest policies and explore types of vests. Some departments are looking into external vest carriers as an option.
- Create a culture of safety in policing—one in which safety is a way of doing business and officers reinforce sound safety practices with peers.¹²²

The formation of the OSW Group and the IACP study are encouraging, but police administrators should not wait to improve safety in their own agencies. Much of what is being recommended is already available in OSHA guidance concerning hazard documentation, mitigation, and tracking. The national database will be an added asset but may be years in the making.

6. Preventive Maintenance Systems

This generally refers to maintenance on equipment and tracking issues that are identified. Law enforcement must ensure that all of its equipment is functioning in good working order. The timely replacement of PPE, to include the ballistic vest, should be a regular part of an agency's safety system.

Another, perhaps nontraditional, area to be considered is the maintenance of the officers themselves. The physical health, mental health, and general well-being of officers are critical to their safety and the safety of their fellow officers. Some agencies have

¹²² Stephens, Fiedler, and Edwards, *OSW Group Annual Summary*, 5.

wellness programs and fitness programs to promote good health. Emotional well-being is also being discussed and supported to a greater extent than it had previously. The Indianapolis Metropolitan Police Department (IMPD) has established the Office of Professional Development and Police Wellness in an attempt to intervene when officers may be nearing a crisis. Captain Brian Nanavaty of IMPD identified five core areas where most officers fail, “as defined by three years of research and over 300 officer interventions by IMPD are addictive issues, behavioral health, physical health, personality issues and family-relationship.”¹²³ The IMPD program uses self, peer, and supervisor referrals to identify officers and assigns mentors to support officers needing assistance. Performance documentation is emphasized along with early intervention to identify and assist officers before a crisis arises.

7. Emergency Preparation

In defining this area, OSHA states, “During emergencies, hazards appear that normally are not found in the workplace. These may be the result of natural causes (floods, tornadoes, etc.), events caused by humans but beyond control (train or plane accidents, terrorist activities, etc.) or within a firm’s own systems due to unforeseen circumstances or events.”¹²⁴ Definitions such as these do little to assist law enforcement to improve safety since the basic function of a police officer is to respond to emergencies that, more often than not, are caused by humans. OSHA, academics, and police administrators need to work together to create definitions and regulations to assist law enforcement in improving safety.

That said, one thing professional police agencies do well is plan for emergencies. With the acceptance of Incident Command, threat analysis and planning have improved considerably. Officers are encouraged to identify at-risk businesses, such as banks, and devise their own response plans. During major events, plans are made for weather emergencies, evacuations, and even suspicious devices or explosion responses. Two areas

¹²³ Brian Nanavaty, “Why Officers and Agencies Fail: A Case for Resiliency in Policing Part II,” Legal & Liability Risk Management Institute, January 22, 2014, http://llrmi.com/articles/legal_update/2014_nanavaty_officers_agencies_fail_pt2.

¹²⁴ OSHA, “eTool Module 2.”

suggested by OSHA that may be of concern for law enforcement are employee information and training as well as emergency drills or practical exercises. Even though law enforcement has improved its planning processes, the time devoted to training and exercises remains limited.

In our specific example of an officer being shot, law enforcement needs to ensure that it is prepared to respond. This would certainly be an emergency that falls within the OSHA description at the beginning of this section. Every agency should have plans and conduct training on the various issues associated with an officer being shot. The OSW Group report “Officer Deaths and Injuries from Gunfire” makes these recommendations:

The following are examples of policies that a department should not only currently have but also review for ongoing updates and have internally audited to ensure they are being implemented properly:

- Incident command
- Officer deaths (e.g., notifications, a family liaison, and funeral planning)
- Critical incident stress debriefing
- Safety equipment (e.g., vests and seatbelts)
- Clear use of force and reporting directives
- Communications (external and internal)
- Memorandums of understanding (MOUs) with neighboring jurisdictions¹²⁵

The OSW Group also recommends that “policy development and updates should include a review of the research and understanding of best practices.”¹²⁶ As mentioned earlier, however, the OSW Group has also noted that current research is seriously lacking. This should not discourage the police administrator from creating their own data and working with others to improve officer safety now and to make changes as more and better data becomes available.

¹²⁵ OSW Group, “Officer Deaths and Injuries,” 13.

¹²⁶ OSW Group, 13.

8. Medical Programs

OSHA expects a medical program to “deliver services that prevent hazards that can cause illness and injury, recognize and treat illness and injury, and limit the severity of work-related injury and illness.”¹²⁷ IMPD’s Office of Professional Development and Officer Wellness Program would certainly fall in this category. Hopefully, more law enforcement agencies will see the benefit of such a program and establish it for their own officers. Many agencies also have programs that provide annual physicals, reduced-cost health clinics, and fitness programs to assist officers in preventing injury and illness.

Officers also count on immediate and qualified medical care with they are injured in the line of duty. Most large agencies that work in urban areas have an excellent relationship with fire and emergency medical services (EMS) medical responders. Some agencies, such as IMPD, have begun to issue gunshot kits to all of their officers. The kits are paid for with private donations from the community and did not impact the agency’s budget or compete against other safety equipment.¹²⁸ The kit generally includes a tourniquet, scissors, a compression bandage, and a pair of non-latex gloves. The military actions in Iraq and Afghanistan have taught us that surviving a gunshot wound may be determined by if, or how well, first responders are able to stop the bleeding. Recent studies have shown that

exsanguination from extremity wounds was the leading cause of death among American casualties in Vietnam and accounted for 7.8 percent of preventable deaths in the first five years of the conflicts in Iraq and Afghanistan.¹²⁹

The gunshot kit is compact and designed specifically to stop bleeding. IMPD requires just a few hours of training, which is received at the time the kit is issued. An added benefit is the fact that the kits have been used most often by officers trying to save the life of a citizen who has been hit by gunfire. In an emergency, an officer left alone,

¹²⁷ OSHA, “eTool Module 2.”

¹²⁸ Jack Rinehart, “Emergency Gunshot Trauma Kits Can Save Lives,” The Indy Channel, March 11, 2014, <http://www.theindychannel.com/news/local-news/emergency-gunshot-trauma-kits-can-save-lives>.

¹²⁹ JF Kragh, “The Return of Tourniquets,” Mayo Clinic, 2008, <http://www.mayoclinic.org/medical-professionals/clinical-updates/trauma/combat-tested-tourniquets-save-lives-limbs>.

such as those pinned down in the North Hollywood shootout, may be able to treat themselves until help arrives.

This example is geared toward surviving the identified hazard of being shot. The different steps of categories should be applied to all identified hazards faced by law enforcement officers so they can be properly mitigated.

D. CHAPTER SUMMARY

Any systematic process requires steps or established protocols to be followed. A systematic approach to safety begins this process by implementing the OSHA concepts of the job hazard analysis, hazard identification, and hazard mitigation. As demonstrated in this chapter, these concepts and the resulting systematic processes are adaptable to law enforcement. The example of identifying being shot as the most significant hazard in law enforcement demonstrates the use of the job hazard analysis and hazard identification. The use of body armor, trauma kits, armored vehicles, and ballistic helmets are examples of hazard mitigation strategies.

To achieve this systematic process will require law enforcement to improve how deaths and injuries are currently documented and reported. Once hazards have been identified and mitigated, ongoing monitoring must inform administrators of the success or need for improvement in mitigating the identified hazard.

THIS PAGE INTENTIONALLY LEFT BLANK

IV. JAMES REASON: PREVIOUS SUCCESSES AND APPLICATION TO LAW ENFORCEMENT

This chapter explores the work of Dr. James Reason with a focus on the airline industry and the medical profession. Reason's safety culture theory is discussed as well how each of the four components can be applied to law enforcement. The airline industry is reviewed with an emphasis on its use of a near-miss reporting system and how other professions have adapted it to their use. Additionally, the airline industry's use of Reason's human error model is analyzed and outlines how law enforcement would benefit by adopting the system model of review. The chapter concludes with a discussion of the medical profession and its use of Reason's approach to safety. The Incident Decision Tree is discussed in detail.

A. JAMES REASON

Dr. James Reason is a professor at the University of Manchester. He has done extensive work in identifying organization processes and human error.¹³⁰ These concepts are applied to the promotion of safety in many industries, including the airline and medical fields. Dr. Reason has published several books and articles related to safety. Additionally, his principles and conclusions have formed the basis for safety policy, documentation, training, and promotion throughout multiple fields. Dr. Rob Lee of the Bureau of Air Safety Investigation in Australia described Dr. Reason as

Fundamental to the Bureau and the international aviation community's contemporary safety philosophy is the work of Professor James Reason, of the University of Manchester, UK, and his colleagues. Reason and his team have developed a conceptual and theoretical approach to the safety of large, complex socio-technical systems, of which aviation is an excellent example. As part of the development of his model Reason analyzed major accidents in aviation, shipping, rail, nuclear power, aerospace and so on. These case studies represented catastrophic failures of such systems.¹³¹

¹³⁰ Rob Lee, "New Directions in Air Safety," *Australian Journal of Forensic Sciences* 29, no. 1 (1997): 9.

¹³¹ Lee, 9.

Dr. Reason has divided his safety culture theory into four main elements: the Reporting Culture, the Just Culture, the Flexible Culture, and the Learning Culture.¹³² Dr. Reason states that, “Together they interact to create an informed culture which, for our purposes, equates with the term ‘safety culture.’”¹³³ This thesis argues that this is the basis of a systematic approach to safety that law enforcement can employ as a next step to applying OSHA standards.

This chapter explores each element of Dr. Reason’s safety culture and its usefulness for law enforcement. The chapter continues by exploring the airline industry and its adoption of the Reason model to promote safety. The human error model is discussed and shown to be useful to law enforcement. A review of the medical industry follows, as this industry has also adopted the Reason model to reduce errors and promote safety. The Incident Decision Tree is specifically highlighted to demonstrate how to review errors once they have been committed. The conclusion takes all this information and makes the case that law enforcement can apply many of these theories and tools to its benefit.

B. COMPONENTS OF A SAFETY CULTURE

1. Reporting Culture

Dr. Reason found that to promote a reporting culture, an organization must listen to people most familiar with the dangers of the job. He wrote, “To achieve this, it is necessary to engineer a reporting culture—an organizational climate in which people are prepared to report their errors and near misses.”¹³⁴ This would seem to be a stretch for a law enforcement agency. By reporting errors and near misses, an agency may open itself up to civil liability. Additionally, officers may be punished if they self-report an error that had previously been unnoticed. There is no question that organizations that have successfully established a reporting culture had the same concerns. And yet, organizations exist who have done so. The Civil Aviation Safety Authority of the Australian Government

¹³² Reason, *Managing Risks*, 195.

¹³³ Reason, 196.

¹³⁴ Reason, 195.

includes as a key component of a safety system; the objective of “creating a non-punitive work environment which encourages hazard and error reporting.”¹³⁵

This concept is gaining some attention in law enforcement circles. Recommendation 6.7 in the 21st Century Policing study asked that Congress “enact legislation similar to the Healthcare Quality Improvement Act of 1986 that would support the development of an effective peer review error management system for law enforcement similar to what exists for medicine.”¹³⁶ Such a program would encourage the reporting of errors and near misses while protecting officers and agencies by preventing the information from legal discovery.¹³⁷ This legislation would be helpful, but agencies should not wait for its implementation to begin their own safety reporting.

2. Just Culture

Law enforcement is a rule-based profession. Agencies are created by laws. They enforce ordinances and laws. Officers are held accountable by laws, ordinances, rules, regulations, general orders, and standard operating procedures, to name a few. When an error occurs, officers who are found accountable can be given a written reprimand, suspended without pay, demoted, terminated, and in some cases charged criminally or civilly. On its surface, this would not be a good place to implement Dr. Reason’s “just culture.” He says what is needed is “an atmosphere of trust in which people are encouraged, even rewarded, for providing essential safety-related information—but in which they are also clear about where the line must be drawn between acceptable and unacceptable behavior.”¹³⁸

This atmosphere of trust is not easily found in law enforcement organizations due to their reliance on rules and their sole remediation being to punish. The Police Foundation

¹³⁵ Civil Aviation Safety Authority, *SMSI: Safety Management System Basics*, second edition (Canberra, Australian Government, December 2014), 8, www.casa.gov.au/sites/g/files/net351/f/_assets/main/sms/download/2014-sms-book1-safety-management-system-basics.pdf.

¹³⁶ President’s Task Force, “Final Report,” 67.

¹³⁷ President’s Task Force, 68.

¹³⁸ Reason, *Managing Risks*, 195.

is attempting to get around this and create a resource for officers to report near misses without fear of punishment. The Police Foundation defines a near miss as “a close call and/or unsafe occurrence or condition that could have resulted in a serious injury or fatality if not for a fortunate break in the chain of events.”¹³⁹ The Police Foundation has established an on-line reporting system that does not require attribution.¹⁴⁰ In applying the lessons of Dr. Reason, the Police Foundation is using near-miss reporting to improve safety. They acknowledge that near-miss reporting has proven successful in other high-risk industries like aviation, military operations, healthcare, and fire and EMS services.¹⁴¹ As suggested by Dr. Reason’s safety culture and this thesis’s recommendation of a systematic approach, the Police Foundation uses the near-miss reporting to “improve training, equipment, policies, procedures, and tactics in order to reduce risk, improve officer safety, and save lives.”¹⁴² By acknowledging that error reporting and investigating should focus on improving safety and not punishment, the Police Foundation is doing what others have successfully accomplished. No one argues that punishment is not warranted in some situations; however, it should not be the primary focus. All of the gains suggested by the near-miss reporting rest entirely with an organization. An officer alone cannot change policy, for example, but can be punished for a violation. This is the challenge that exists to create a just culture in law enforcement today.

When the GAIN Working Group E set out to improve aviation safety by publishing the “Roadmap to a Just Culture,” they understood that they needed an organizational shift. They said that to achieve a constructive just culture, an organization had to move away from a traditional blame culture.¹⁴³ They went on to say that two concepts must exist in a just culture:

¹³⁹ “5 Things You Need to Know about LEO Near Miss,” Police Foundation, accessed September 20, 2017, https://www.policefoundation.org/wp-content/uploads/2017/07/5ThingsLEOnearmiss_Final.pdf.

¹⁴⁰ “LEO Near Miss,” Police Foundation, accessed September 20, 2017, www.policefoundation.org/projects/leo-near-miss/.

¹⁴¹ Police Foundation, “5 Things.”

¹⁴² Police Foundation, “LEO Near Miss.”

¹⁴³ GAIN Working Group E, “A Roadmap to a Just Culture: Enhancing the Safety Environment” (report, Global Aviation Network, September 2004), 14, https://flightsafety.org/files/just_culture.pdf.

1. Human error is inevitable and the system needs to be continually monitored and improved to accommodate those errors
2. Individuals are accountable for their actions if they knowingly violate safety procedures or policies.¹⁴⁴

Law enforcement's traditional view of human error is not that it is inevitable. In fact, law enforcement and others who follow the traditional line of thinking believe that a human makes a conscience choice to error. Not a single police manual researched mentioned allowing for human error as part of a larger system that needs to be maintained and improved. Blame and punishment are the common and most expedient responses to human error.

Dr. Reason argues that there are two approaches organizations can take when addressing human error: the Person Model and the System Model. He defines each as:

- The person approach focuses on the errors of individuals: forgetfulness, inattention, or moral weakness
- The system approach concentrates on the conditions under which people work and tries to build defenses to avert errors or mitigate their effects.¹⁴⁵

Like previous organizations or professions that have transformed the way they manage safety, law enforcement too shall change. To have a just culture, employees on the line must trust management to care for their well-being and create an environment where risks are managed. The person approach does neither of these things.

Working from Dr. Reason's research, Ron Hanks and Joe Bates presented a concise tool for outlining the differences between the Person Model and the System Model, shown in Table 2.

¹⁴⁴ GAIN Working Group, 14.

¹⁴⁵ Reason, "Human Error," 8.

Table 2. Comparing the Person Model and the System Model of Human Error¹⁴⁶

Person Model	System Model
Name	Remedial attention focused on the task and the workplace
Blame	
Shame	Organization
Retrain	Supervision
Write another procedure	Managing the manageable
Fire the perpetrator	
We Ask Who?	We Ask Why?

It is important to reassert that nothing in the system model absolves employees of their behavior. In the following sections, a detailed discussion of human error explains the complexity of evaluating a person's actions. A plan to manage that process is shared as well.

3. Flexible Culture

Of the necessary cultures described by Dr. Reason as necessary to achieve a safety culture, the flexible culture is most suited to law enforcement. He defines it as “shifting from the conventional hierarchical mode to a flatter professional structure, where control passes to task experts on the spot, and then reverts back to the traditional bureaucratic mode once the emergency has passed.”¹⁴⁷ Law enforcement is highly bureaucratic and hierarchical. Most tasks are administrative in nature and questions can be answered by

¹⁴⁶ Adapted from Ron Hanks and Joe Bates, “Safety...the Proactive Way. Safety Management Systems (SMS)” (PowerPoint, March 2010), 16, <https://www.wildfirelessons.net/HigherLogic/System/DownloadDocumentFile.ashx?DocumentFileKey=6f5c7447-a1f6-4b2b-a8cc-6cf2afb6db69>.

¹⁴⁷ Reason, *Managing Risks*, 196.

consulting a myriad of policies, procedures, and general orders. Decisions can be passed up the chain of command where it will take weeks, months, or eternity to receive an answer. Occasionally, there is an incident that poses a severe risk to life and safety. A SWAT incident, a riot, an active shooter and a perimeter with suspects inside are all examples of occasions where law enforcement adeptly shifts from the bureaucratic mode to the task experts on the scene. Occasionally, there are examples of where this transition failed to take place with disastrous results.

One example is the Los Angeles Police Department response to May Day in 2007. During this event, a group of protesters interrupted a large group of people who had peacefully gathered in a park. The protesters began to behave in a threatening manner and became intermixed with the peaceful group in the park. Officers used crowd control tactics, including less-lethal munitions, to disperse everyone in the park. At a critical point in the incident, upper command chose to insert itself in the decision-making process in place of task experts who were predesignated as incident commanders and operational personnel.¹⁴⁸ This occurrence is not significant because it occurred. Such incidents are common in law enforcement though not desirable. What is unique is that LAPD documented their challenges, lessons learned and a remediation plan for the rest of us to learn from. Such after action reporting is not common despite its many advantages.

The hierarchical structure is very centralized. Relying on task experts on the line is decentralized. To achieve a flexible culture, organizations need both. It is culture that makes the difference in an emergency over policy and procedure. Karl Weick explains culture as creating a

homogeneous set of assumptions and decision premises which, when they are invoked on a local and decentralized basis, preserve coordination and centralization. Most important, when centralization occurs via decision premises and assumptions, compliance occurs without surveillance. This is in sharp contrast to centralization by rules and regulations or centralization

¹⁴⁸ Hillmann and Chaleff, "May Day 2007," 8.

by standardization and hierarchy, both of which require high surveillance.¹⁴⁹

It is a given that law enforcement operates in both the centralized and decentralized structure. How the profession responds to errors and shares lessons learned is what can be improved by changing the culture. Darrel Stephens, director of the Major Cities Chiefs Association, notes that how we respond can impact our relationship with those we serve. He states, “Police officers are human beings engaged in sorting out complex and emotionally charged situations—they are bound to make mistakes. It is how the department responds to them that will determine whether or not trust will be won or lost.”¹⁵⁰

4. Learning Culture

Despite all of the training required for law enforcement officers to maintain their certifications, the profession and individual agencies have difficulty learning. If they do learn, they often fail to implement the recommended remediation no matter how obvious it may be.

Despite giving us this element of the safety culture, Dr. Reason does little to explain it. He does note that the elements of the learning culture are easy to identify: observing, reflecting, creating, and acting.¹⁵¹ It is the acting, or required remediation, that organizations find challenging. This can be due to budget cycles, financial shortages, lack of consensus on solutions, election cycles, and management changes to list a few. What challenges law enforcement more than other organizations is that it does not readily collect safety information. Since most do not conform to OSHA standards in any way, and we have previously discussed the absence of documentation, law enforcement is not even observing in a meaningful way, let alone acting. The near-miss reporting mentioned earlier exists because of this shortfall.

¹⁴⁹ Karl Weick, “Organizational Culture as a Source of High Reliability,” *California Management Review* XXIX, no. 2 (Winter 1987): 124.

¹⁵⁰ Darrel Stephens, “Police Errors Are Opportunities to Build Trust,” Police Foundation, accessed September 21, 2017, <https://www.policefoundation.org/police-errors-are-opportunities-to-build-trust/>.

¹⁵¹ Reason, *Managing Risks*, 218.

5. An Informed Culture Is a Safety Culture

Now that we have reviewed the components of an informed culture, have we achieved a safety culture? Dr. Reason asserts that the safety culture is more than the sum of its parts.¹⁵² Law enforcement agencies document numerous incidents, including when officers are injured. Peers and supervisors informally discuss tactics and which are safer than others. Trainers constantly invoke officer safety as a reason for their instruction and methods. Does all of this equal an informed culture and a safety culture? The research would indicate not nearly so. Simply doing things like writing reports and attending training does not create the culture necessary. Policy and procedures do not create a systematic approach that is necessary to be informed and make intelligent changes to promote safety.

The attitude of U.S. law enforcement in regard to safety is not unique. Other countries have expressed the same desire to improve safety and mitigate risks. Even Australia, which averages one officer murder per year, is applying new strategies.¹⁵³ The Australian Institute of Criminology asserts that risks will only be reduced by identifying risk factors and establishing effective mitigation strategies.¹⁵⁴ All of the research is pointing law enforcement in the same direction. As Dr. Reason said, what we lack is action.

C. THE AIRLINE INDUSTRY AND DR. REASON

1. History of U.S. Airline Safety

The issue of safety has always been a part of aircraft and airline development. One of the original uses for aircraft was to deliver the U.S. mail. As a result, the federal government had an interest to ensure the aircraft arrived safely at the destination. In 1926, Congress passed the Air Commerce Act, which established the Aeronautics Branch in the

¹⁵² Reason, 218.

¹⁵³ Claire Mayhew, *Protecting the Occupational Health and Safety of Police Officers* (Canberra: Australian Institute of Criminology, 2001), 2.

¹⁵⁴ Mayhew, 5.

Department of Commerce.¹⁵⁵ The Aeronautics Branch was responsible for “licensing and ensuring the airworthiness of all aircraft engaged in interstate commerce, certifying airmen similarly engaged, and developing and enforcing air traffic rules.”¹⁵⁶ Beginning in 1930, this was accomplished by certifying pilots, mechanics, and air field workers.¹⁵⁷ The Civil Aeronautics Act was passed in 1938 and created the Air Safety Board to investigate accidents.¹⁵⁸ In the years following, the status of airline safety made gains and at times suffered setbacks. They faced budget shortfalls common in government organizations, which caused safety to deteriorate at times.

In 1959, the Federal Aviation Agency was established and took over “safety rulemaking activities.”¹⁵⁹ Standards and inspections continued to improve over the years and flight safety progressed as well. In 1966, Congress passed legislation creating the Department of Transportation, which absorbed the FAA, now known as the Federal Aviation Administration.¹⁶⁰ A continued focus on safety created the systems approach in use today.

System safety approaches to regulation include the allocation of resources on the basis of risk, the need for air carriers to operate their own safety management systems that identify and mitigate hazards and risks, and the promotion of a safety culture in which each member of the organization strives for quality and safety.¹⁶¹

In various forms, the airline industry has maintained an organized approach to safety for nearly 100 years. The current philosophy is focused on safety systems. No system will be effective, however, unless there is a real culture in the organization to promote and maintain safety. That culture will not exist without a strong emphasis by senior

¹⁵⁵ Mark Hansen, Carolyn McAndrews, and Emily Berkeley, *The Advent of Aviation Safety Oversight*, DOT/FAA/AR-08/39 (Washington, DC: U.S. Department of Transportation, July 2008), 2, <http://www.tc.faa.gov/its/worldpac/techrpt/ar0839.pdf>.

¹⁵⁶ Hansen, McAndrews, and Berkeley, 2.

¹⁵⁷ Hansen, McAndrews, and Berkeley, 4.

¹⁵⁸ Hansen, McAndrews, and Berkeley, 5.

¹⁵⁹ Hansen, McAndrews, and Berkeley, 13.

¹⁶⁰ Hansen, McAndrews, and Berkeley, 19.

¹⁶¹ Hansen, McAndrews, and Berkeley, 27.

management to create a safety management system.¹⁶² A first step by senior management should be to create a safety policy. Such policies are rare or nonexistent in law enforcement. According to the Australian Civil Aviation Safety Authority, a good place to start would be a policy that includes:

- The overall safety objectives of the organization
- The commitment of senior management to provide the resources necessary for effective safety management
- A statement about responsibility and accountability for safety at all levels of the organization
- Management's explicit support of a "positive safety culture," as part of the overall safety culture of the organization.¹⁶³

Most law enforcement agencies today would not be comfortable creating such a policy statement. As identified earlier, law enforcement is more comfortable blaming individuals instead of fixing organizational conditions that create unsafe practices and conditions. This is consistent with the airline industry, among others, that have evolved into organizations and professions that have advanced safety cultures that can be emulated by law enforcement.

2. Human Factors and Human Error

The term "human factors" is a recognition of the role humans play in safety systems. The Civil Aviation Safety Authority of Australia devotes an entire section of training to human factors. It states, "Human factors refers to the wide range of issues that affect how people perform tasks in the work and non-work environments."¹⁶⁴ FAA training in human factors includes topics such as human error, environmental considerations, planning, communication, and teamwork.¹⁶⁵ The role of the human in any

¹⁶² Civil Aviation Safety Authority, *SMS 1*, 5.

¹⁶³ Civil Aviation Safety Authority, 8.

¹⁶⁴ Civil Aviation Safety Authority, *SMS 6: Human Factors*, second edition (Canberra: Australian Government, December 2014), 1, www.casa.gov.au/sites/g/files/net351/f/_assets/main/sms/download/2014-sms-book6-human-factors.pdf.

¹⁶⁵ FAA, *Operator's Manual*, 11.

complex system must be understood when working to identify hazards, mitigate identified hazards, and improve overall safety. Though part of human factors, human error stands out. Understanding what causes human error in a particular system is critical to improving safety. With that acknowledgement, however, it is wrong to simply assume the human is the problem.

a. *Active Failures and Latent Conditions*

When trying to improve law enforcement safety, the human involvement in the equation is most apparent. In most cases, injuries and deaths are caused by the actions of the officer, as in a one-car crash, or the actions of another human. Perhaps this is why law enforcement is quick to blame officers for errors, write new policies, retrain, and then move on. This does not meet the requirements of an effective safety system. Reasons states that humans contribute to errors in two ways.

Most obviously, it is by errors and violations committed at the “sharp end” of the system—by pilots, air traffic controllers, police officers, insurance brokers, financial traders, ships’ crews, control room operators, maintenance personnel and the like. Such unsafe acts are likely to have a direct impact on the safety of the system and, because of the immediacy of their adverse effects, these acts are termed *active failures*.¹⁶⁶

An officer involved in a one-car crash during a rainstorm while trying to get to an in-progress felony crime will soon have investigators asking if he/she was driving too fast for conditions. Any indication of an accelerated speed would end the investigation. The officer may face discipline and the matter will be forgotten. The challenge is that such crashes occur regularly in perfect weather and when not responding to serious calls for assistance while operating at a normal rate of speed. A recent review of law enforcement deaths found that “a large number of the crashes investigated were not related to either a call for service or a case of self-initiated activity.”¹⁶⁷ Those like Reason, who promote safety systems, ask the question: If you hire good people who can competently perform the

¹⁶⁶ Reason, *Managing Risks*, 10.

¹⁶⁷ Nick Beul and Mike Keith, “Deadly Calls and Fatal Encounters” (report, National Law Enforcement Officers Memorial Fund, 2016), 77, <http://www.nleomf.org/assets/pdfs/officer-safety/Primary-Research-Final-8-2-16.pdf>.

tasks required, why do they keep failing in the same manner? Most police officers receive numerous hours of driving instruction during their initial training phase followed by observed driving proficiency during actual patrol conditions during Field Training. Those unable to perform to expected standards are retrained and terminated if necessary. Under such scrutiny, it is inconceivable that accidents considered preventable by the officer are so common. Beyond the human involved, something else is involved in the error or accident.

Reason looks to *latent conditions* to explain those things beyond the immediate actions of those at the sharp end exposed to active failures. Reason's concept of latent conditions is explained by Lee as

decisions or actions, the damaging consequences of which may lie dormant for a long time, only becoming evident when they combine with local triggering factors (such as, active failures, technical faults, atypical environmental conditions, and so on) to breach the system's defenses. Their defining feature is that they were present within the system well before the onset of a recognizable accident sequence. They are most likely to be generated by people whose activities are removed in both time and space from the direct human-machine interface: designers, high-level decisionmakers, regulators, line managers.¹⁶⁸

To continue our example in a one-car crash, it is appropriate to look at speed, weather conditions, and other traditional factors. To look for latent conditions, however, we also need to assess distractions that have more recently entered the patrol vehicle. In-car computers, cell phones, tactical radios, license plate readers and video/audio recorders are just a few things that may not be accounted for in training or follow-on investigations. Current discussions on distracted driving normally involve teens and cell phones, and rightfully so. According to the National Highway Traffic Safety Administration (NHTSA), 3477 people were killed and 391,000 were injured in 2015 due to distracted driving.¹⁶⁹ How many more distractions are there for the police officer? To look for latent conditions, the investigator should determine if training is accounting for distracted driving.

¹⁶⁸ Lee, "New Directions in Air Safety," 10.

¹⁶⁹ "Distracted Driving," NHTSA, September 8, 2016, <https://www.nhtsa.gov/risky-driving/distracted-driving>.

Additionally, they should determine if current policies promote safety by clearly saying that distractions should be eliminated to the extent possible. Perhaps technology could assist by putting the computer screen in blackout mode if the vehicle is in motion. This is the extent, and more, that law enforcement should endeavor to standardize a systematic process to improve officer safety. It will require a progression away from the person model of discipline and a significant move to the system model of review.

b. Human Factors in Law Enforcement

Given the nature of law enforcement, nearly every work activity includes a majority of human factors. Rarely, though, are concerns identified in the airline industry specifically considered in law enforcement safety. An officer's environment is often measured by community relations instead of an honest assessment of the hazards found in a particular work environment. The effectiveness of the officer's team or overall teamwork is a measure of productivity instead of considered part of the safety system that can be reviewed and improved. A review of communications may be limited to radio, data, and reporting systems. Just as in the airline industry, agencies should consider how well policy is updated, distributed, and understood. As an example, when policy violations occur, such incidents should include a review of the effectiveness of the communication system. If law enforcement would adopt an understanding of human factors and conduct appropriate training, the profession would take a significant step toward implementing a safety system.

c. Human Error in Law Enforcement

To find what most think is human error in law enforcement, one would not need to look past the nightly news, recent DoJ investigations into whole agencies, or the prosecution and termination of officers who are thought to have erred. None of these reviews, however, considers the safety of the officers. Even though many of these inquiries attempt to establish best practices, the effort is in vain if it does not also improve the safety of the officers and the profession as a whole. The recently published report from the President's Task Force on 21st Century Policing does identify as its sixth of six pillars,

“officer wellness and safety.”¹⁷⁰ It does include the expansion of data collection and issuing gunshot kits already included in this thesis. What the report, and other such reports, fails to do is establish a system of safety commonly found in other professions and industries. Most of these systems are required by law and supported by all levels of the organization. Any study of human error in law enforcement must include the same system review commonly found outside of law enforcement.

Like other professions, law enforcement should acknowledge that human errors do occur and set about trying to create and improve a safety system, including countermeasures, to reduce them when possible. Reason states, “countermeasures are based on the assumption that although we cannot change the human condition, we can change the conditions under which humans work. A central idea is that of system defenses.”¹⁷¹

Reason describes these barriers as slices of Swiss cheese acting as safety barriers to consequences of unsafe acts or conditions. The barriers, or slices of cheese, have holes or flaws in each layer of protection. Collectively, however, they prevent most serious outcomes to safety violations. This model acknowledges that errors exist. These errors include human errors. It goes on to suggest errors in training, policy, supervision, environment, and many others. This layered defensive model, illustrated in Figure 5, is what gives rise to the safety system.

¹⁷⁰ President’s Task Force, “Final Report,” 61.

¹⁷¹ Reason, “Human Error,” 768.

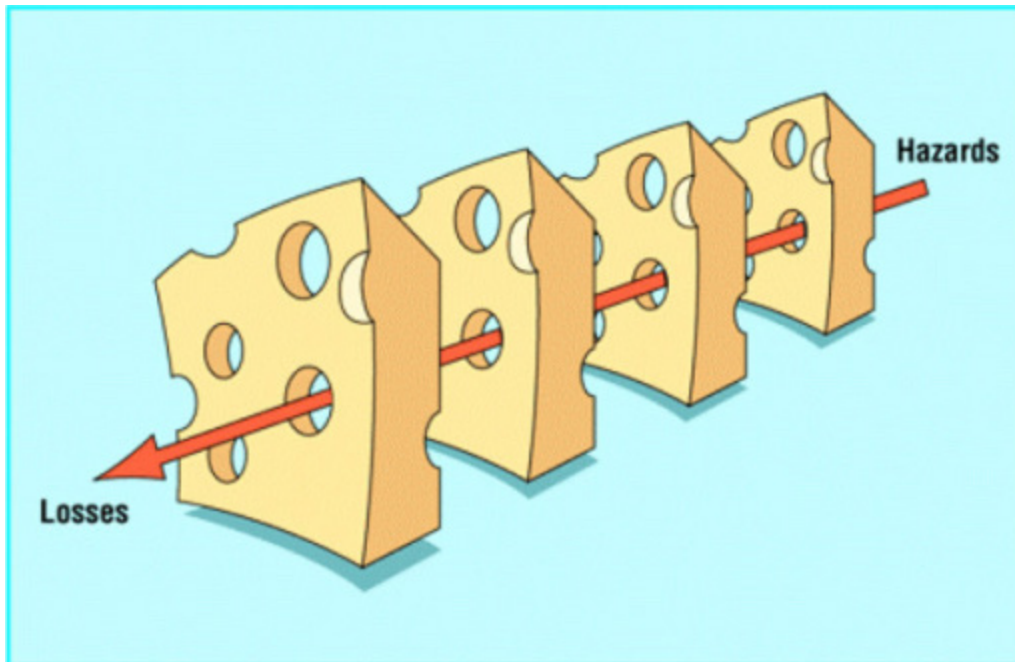


Figure 5. James Reason's Swiss Cheese Model of Error Defenses¹⁷²

3. NASA and FAA Anonymous Safety Reporting Systems

In the current climate of DoJ investigations and criminal prosecutions of police officers, it is necessary now, more than ever, to continue to pursue improved officer safety. As noted in the Swiss cheese model, most safety violations do not result in major consequences for the officer or the agency. These are termed “near misses” by many in the safety field. Personnel involved in a near miss may be reluctant to share their experience for fear of litigation, discipline, or peer scorn. By sharing this information, deficiencies in the safety system, or holes in the Swiss cheese, could be identified and corrected. The airline industry found that “safety investigators and researchers have been generally effective in determining the *what* of the event, but they are not as effective in addressing the ‘why’ of the event. The why of an event very often involves the human factors associated with that mishap.”¹⁷³ In an attempt to capture this near-miss information, the

¹⁷² Source: Reason, 769.

¹⁷³ William Reynard, “The Acquisition and Use of Incident Data: Investigating Accidents before They Happen,” NASA, accessed September 15, 2018, 1, https://asrs.arc.nasa.gov/docs/rs/51_Acquisition_and_Use_of_Incident_Data.pdf.

FAA created an anonymous reporting system that encouraged those in the airline industry to report specific incidents or concerns that affect industry safety. Knowing that employees would be hesitant to admit violations for fear of discipline, the FAA turned to NASA to develop and administer the program.

In recognition of the need for more and better information concerning operational and human problems in the United State's [sic] National Aviation System, the Federal Aviation Administration in May, 1975, implemented an Aviation Safety Reporting Program (ASRP), whose purpose was to improve the flow of information of possible significance to air safety investigations and research. To encourage the submission of reports, the agency officered a limited waiver of disciplinary action to those who provided timely information concerning incident, and to others involved in those incidents, unless the occurrences involved a criminal offense, an aircraft accident, reckless operation, willful misconduct or gross negligence.¹⁷⁴

The concept of this reporting system addresses the need to identify why an incident occurred. It is focused on the system model of correcting errors in a safety system. In its current state, it would seem impossible to imagine that law enforcement could ever make use of such a system. That thought was evident in the airline industry as well. Despite this concern, after forty years of anonymous reporting, the Automated Reporting System (ASRS) recorded 1.4 million reports in 2016.¹⁷⁵

Soon after the implementation of ASRS, other countries recognized the value of such a system. Countries like the United Kingdom, Canada, and Australia started their own confidential reporting systems to improve aviation safety.¹⁷⁶ The medical community realized the value of an anonymous reporting system to improve their patient care. In 1997, the Veterans Administration reached out to NASA and asked for assistance in implementing a reporting system for them.¹⁷⁷ That has now spread to the entire medical

¹⁷⁴ Reynard, 2.

¹⁷⁵ "40 Years of Safer Aviation through Reporting," NASA, September 29, 2016, <https://phys.org/news/2016-09-years-safer-aviation.html>.

¹⁷⁶ Linda J. Connell, "Cross Industry Applications of a Confidential Reporting Model," NASA, accessed September 15, 2018, 2, https://asrs.arc.nasa.gov/docs/rs/62_Cross_Industry_Applications_of_Reporting_Model.pdf.

¹⁷⁷ Connell, 5.

community, which incorporated the aspects of anonymous reporting and immunity from discipline in most situations. Researchers found that:

the ASRS as a proven, effective system for confidential reporting is an exemplary model for application across industries interested in safety improvements. This model, where the “devil is in the details,” can be replicated, adapted, and evolved to be an intuitive, productive information collection mechanism for safety improvement in any system.¹⁷⁸

4. The Firefighter Near-Miss Reporting System and the National Fire Incident Reporting System

In recent years, public safety organizations have also taken note of anonymous reporting systems. The fire service implemented its own near-miss system in 2005. Known as the National Firefighter Near-Miss Reporting System (NMRS), the system is “voluntary, confidential, non-punitive and secure reporting system with the goal of improving fire fighter safety.”¹⁷⁹ The program established three goals at its implementation:

1. To give firefighters the opportunity to learn from each other through real life-life experiences.
2. To help formulate strategies to reduce the frequency of firefighter injuries and fatalities.
3. To enhance the safety culture of the fire and emergency service.¹⁸⁰

In addition to the Firefighter Near Miss Reporting System, the fire service also makes use of the National Fire Incident Reporting System (NFIRS) maintained by the U.S. Fire Administration. Established in 2005, the NFIRS is used by all fifty states and the District of Columbia. In the first ten years of its use, over 216 million reports were entered in to the NFIRS’ system.¹⁸¹ This reporting system allows the fire service to document its

¹⁷⁸ Connell, 12.

¹⁷⁹ Christopher J. Naum, “National Firefighter Near-Miss Reporting System; Untapped Resource,” Firehouse, July 1, 2011, www.firehouse.com/operations-training/blog/10459459/national-firefighter-nearmiss-reporting-system-untapped-resource.

¹⁸⁰ Naum.

¹⁸¹ Marion A. Long, “Three Reasons Why the National Fire Incident Reporting System Is Important,” Firehouse, February 3, 2017, www.firehouse.com/prevention-investigation/article/12301715/importance-of-the-national-fire-incident-reporting-system-firefighter-training.

activity using a common language in a common system. It is also available at no cost to the agency. The NIFRS system allows agencies to understand “what” they and other agencies are doing. The NFIRS system tells the agency and profession *how* they are performing in terms of safety. Together, the profession has the necessary data and information to perform an in-depth hazard analysis and make appropriate changes to promote safety and a culture of safety.

5. Law Enforcement Near Miss Reporting

Trying to build on the success of the NASA system for airlines and the Firefighter Near Miss system, law enforcement implemented its own near-miss reporting system in 2014.¹⁸² Funded by the DoJ’s Office of Community Oriented Policing Services, the Law Enforcement Near Miss Reporting System was developed and maintained by the Police Foundation.¹⁸³ The Police Foundation identified the overall goal of the near-miss system is to “improve officer safety nationwide by helping law enforcement personnel share near miss information and providing analysis of the events and information that can be used to avoid future near misses and critical incidents.”¹⁸⁴ Despite having many of the same features as the model systems of the airline industry and fire service, such as anonymity and expanding general knowledge of safety, the law enforcement near-miss system is not enjoying the success of other such programs. A simple count of the reports available on the website shows that seventy reports have been entered since October of 2014.¹⁸⁵ Comparing this to the Firefighter Near Miss Reporting System , the 2016 annual report shows that more than 5,000 reports have been entered in the first ten years of use.¹⁸⁶ No annual report could be found for the law enforcement near-miss system. There may be many reasons why the law enforcement system seems to be unsuccessful. It is new and

¹⁸² Police Foundation, “5 Things.”

¹⁸³ Police Foundation.

¹⁸⁴ Police Foundation.

¹⁸⁵ “Reports,” LEO Near Miss, accessed April 24, 2018, <https://www.leonearmiss.org/reports/>.

¹⁸⁶ National Fire Fighter Near Miss Reporting System, “Firefighter Near Miss: 2016 Annual Report” (report, International Association of Fire Chiefs, 2016), <http://firereports.nationalnearmiss.org/Portals/2/EasyDNNNewsDocuments/Annual%20Reports/2016%20Firefighter%20Near%20Miss%20Annual%20Report.pdf>.

may not be as publicized as the other programs or officers may still be suspicious of the system and their ability to remain anonymous. Most probably, it is less successful because law enforcement as a profession does not have a safety culture nor a systematic approach to safety. Despite trying to implement systems like other professions that have proven successful, law enforcement lacks all the underlying systems to promote safety. There is no common incident reporting system like the fire service. There is no support from OSHA or state safety organizations. Most importantly, there are no investigative authorities or consequences to improper or nonexistent law enforcement safety programs. In the model programs of the airline industry and the fire service, there are numerous investigative authorities and consequences to non-compliance of accepted standards.

D. THE MEDICAL INDUSTRY AND DR. REASON

Like other professions, the medical industry did not rapidly embrace the concept of a safety system. The concepts of Reason are now pervasive and well documented, but that took time. Dr. Lucian Leape noted in 1994 that

the most important reason physicians and nurses have not developed more effective methods of error prevention is that they have a great deal of difficulty in dealing with human error when it does occur. The reasons are to be found in the culture of medical practice.¹⁸⁷

This same attitude can be attributed to law enforcement today. It is even more important for law enforcement to get it right. In 1999, Dr. Leape estimated that one million people a year are injured by errors committed by hospital personnel and 120,000 patients die from those mistakes.¹⁸⁸ In the same year, 294 persons were justifiably killed by law enforcement.¹⁸⁹ Despite the numbers, the medical community faces little scrutiny while law enforcement is continually scrutinized at a high level and very publicly.

¹⁸⁷ Lucian L. Leape, "Error in Medicine," *JAMA* 272, no. 23 (December 21, 1994): 1851-57, <https://doi.org/10.1001/jama.1994.03520230061039>.

¹⁸⁸ David Marx, "Patient Safety and the 'Just Culture': A Primer for Health Care Executives" (report, Columbia University, April 2001), 4.

¹⁸⁹ "Crime in the United States 1999," FBI, accessed May 15, 2018, <https://ucr.fbi.gov/crime-in-the-u.s/1999/crime-in-the-united-states-1999>.

When asked what the greatest impediment to the medical community reducing errors is, Dr. Leape replied, “we punish people for making mistakes.”¹⁹⁰ Again, Dr. Leape could be speaking of law enforcement today.

In the field of criminal justice, the concept of punishment to fit the crime has been changed to the concept of treatment to fit the individual offender. This change should also be applied to the disciplining of policemen. The police supervisor should have a wide range of possible alternatives so that action can be made to fit the individual officer and the circumstances. The first step in arriving at a solution of a disciplinary problem is to get all of the facts, including the officer’s past history, and the underlying causes of the misconduct.¹⁹¹

The above was written by Douglas Gourley in 1950. The case he makes is very similar to the one made by Reason and others concerning human error and correction. Despite the progress made in other professions, law enforcement is actually going the other direction. Many agencies across the United States have adopted disciplinary matrixes. These matrixes allow little flexibility in correcting human error and emphasize punishment as the only solution. For example, the Madison Wisconsin Police Department has implemented a matrix system. They explain it as,

The matrix lists both code of conduct violations and Standard Operating Procedural (SOP) violations. it then provides sanction categories **A** through **E**. The least punitive sanctions are category **A**, with sanctions becoming more severe as the categories progress to category **E**.¹⁹²

Supporters of the matrix will argue that it promotes fairness and allows for flexibility. They miss the main point that all the research indicates most human errors are caused by the system. Nothing in the matrix addresses that system or environment that produced the error.

When speaking of the medical profession, Don Norman could have also been addressing law enforcement when he said,

¹⁹⁰ Marx, “Patient Safety.”

¹⁹¹ G. Douglas Gourley, “Police Discipline,” *Journal of Criminal Law and Criminology* 41, no. 1 (1950): 17.

¹⁹² “Professional Standards and Internal Affairs Disciplinary Matrix,” City of Madison Police Department, accessed March 22, 2018, 1, www.cityofmadison.com/police/documents/sop/PSIAdiscMatrix.pdf.

People make errors, which lead to accidents. Accidents lead to deaths. The standard solution is to blame the people involved. If we find out who made the errors and punish them, we solve the problem, right? Wrong. The problem is seldom the fault of an individual; it is the fault of the system. Change the people without changing the system and the problems will continue.¹⁹³

Gourley also pointed to a non-punitive self-reporting system in 1950 when he said, “Even where there is a clear case of neglect, it is better to have the officer voluntarily tell about it.”¹⁹⁴ Despite so many professions moving toward and adopting the safety systems and safety culture envisioned by Reason and others, law enforcement remains rooted in traditional thinking that has been proven ineffective. In fact, leading writers and thinkers like those at the Harvard Kennedy School and the National Institute of Justice as recently as 2011 described police discipline as:

The purpose of police discipline is to help employees serve the public while staying within the framework of law, policy, procedures. Training and organizational expectations for their behavior. Effective discipline requires that employees understand these boundaries and expectations. When officers stray, measured consequences are consistently and fairly applied to hold them accountable and to change their behavior.¹⁹⁵

Clearly, the profession of law enforcement, and those who hope to have influence over it, are still advocating what Reason calls the person model of correcting human error. In fact, Stephen’s article recognizes and endorses the use of disciplinary matrixes. Until this overall philosophy changes, little can be accomplished to instill a safety culture in the law enforcement profession.

We have already noted that the medical profession has adopted many or all the safety culture pieces identified by Reason. They have gone a step further by creating a matrix to identify why a human error occurred. Thus, they are considering the system and environment of the error instead of simply blaming the human.

¹⁹³ Marx, “Patient Safety,” 6.

¹⁹⁴ Gourley, “Police Discipline,” 96.

¹⁹⁵ Darrel Stephens, “Police Discipline: A Case for Change,” *New Perspectives in Policing*, June 2011, 22, <https://www.ncjrs.gov/pdffiles1/nij/234052.pdf>.

Two models were explored for their adaptability for law enforcement. The first (Table 3) is simplistic and useful to explain the concept. It focuses on when different remedial actions are appropriate.

Table 3. Marx's Matrix for Human Error, At-Risk Behavior and Reckless Behavior¹⁹⁶

Accountability for Our Behaviors		
Human Error	At-Risk Behavior	Reckless Behavior
Inadvertent action: slip, lapse, mistake	A choice: risk not recognized or believed justified	Conscious disregard of unreasonable risk
Manage through changes in: - Processes - Procedures - Training - Design - Environment	Manage through: - Remove incentives for at-risk behaviors - Create incentives for healthy behaviors - Increase situational awareness	Manage through: - Remedial action - Punitive action
Console	Coach	Discipline/Sanction

If we look at the first row as a question, it allows us to categorize the nature of the human behavior. Once that has been determined, the supervisor or organization can apply the appropriate form of remedial action. The problem with the model is that it is again solely focused on the errors made by humans. Nowhere does it consider the system or environment the human is operating in when the error is made. As a result, this model is only of little more value than the disciplinary matrix.

¹⁹⁶ Source: Marx, "Patient Safety," 17.

Thankfully, the medical profession has given us another model that is readily adaptable to law enforcement. The Incident Decision Tree was developed by the National Patient Safety Agency in the United Kingdom with the acknowledged assistance of Dr. Reason.¹⁹⁷ The supervisor or organization uses the tool by answering a series of guided questions about the individual's actions, motives, and behavior at the time of the incident.¹⁹⁸ The tool moves the user from deliberate harm to substitution. At one end is an intentional act accomplishing expected outcomes, and the other may involve human error that was brought about by latent errors in the system or organization. It is the only tool reviewed that took in to account the system and the environment when analyzing human error. Additionally, remediation involved far more than disciplining the human.

E. THE FOUR TESTS OF THE INCIDENT DECISION TREE

It has already been discussed and well documented that determining the reason for errors in high-risk organizations can be a complicated task. Few organizations devote the proper time, money, or personnel to effectively improve safety through reporting, documentation, research, and remediation. It is far more expedient to blame and shame. The Incident Decision Tree, as it appears in Figure 6, forces the user to slow the process down and make appropriate decision at each step in the tree. There are four distinct tests that provide the user with the most likely cause of the error. Once the cause of the error is properly identified, it can be properly addressed.

1. The Deliberate Harm Test

The Deliberate Harm Test is there to eliminate the very rare cases when an individual intentionally deviates from acceptable behavior and achieves a desired outcome that is unwanted and unacceptable. This type of conduct does nothing to further the goals of the organization or the profession. Thankfully, with proper hiring, training, and policy development, very few violations should be identified in this area. This is also why a focus on the person model of remediation, resulting in blaming and discipline, does little to fix

¹⁹⁷ Meadows, Baker, and Butler, "Incident Decision Tree," 399.

¹⁹⁸ Meadows, Baker, and Butler, 392.

the problem in most cases. However, errors identified as Deliberate Harm are the most appropriate to receive immediate corrective action to include discipline or termination.

2. The Incapacity Test

The Incapacity Test determines if substance abuse or ill health caused or contributed to the incident. This test would also look at self-medication that could impact physical performance or decision-making. Though not specifically mentioned in the literature, it may also be appropriate to look at issues such as sleep deprivation. The results of a study conducted on 5000 police officers in the United States concluded, “the data showed that just over 40 percent of police officers screened positive for sleep disorders—almost double the 15 to 20 percent estimated rate of sleep disorders in the general population.”¹⁹⁹ Such discoveries do not absolve the employee of the error. Instead, it guides the supervisor or user of the tool closer to identifying possible root causes.

3. The Foresight Test

The Foresight Test is the next step in the process if the employee’s actions were not intentional and it is determined the employee was not incapacitated. The research indicates that this step can be the most informative for the organization and identify root causes of errors. It is here that policies, procedures, and protocols are reviewed. The reviewer will determine if proper protocols exist and if they do, were they followed. If they exist and were ignored, the reviewer will determine if the employee had a reason for deviating from the accepted practice. Where this deviates from the discipline matrix is it allows for an analysis beyond determining if a violation of policy occurred. It could be possible that the policy is outdated or no longer valid. This thought process is what allows the “system” review that is crucial to improving performance and enhancing safety.

The term “unacceptable risk” is defined as an unreasonable risk by the employee in terms of the Decision Tree. The creators of the tool realized that the profession involves

¹⁹⁹ “Sleep Disorders and Law Enforcement Officers,” National Institute of Justice, accessed September 20, 2018, <https://nij.gov:443/topics/law-enforcement/officer-safety/stress-fatigue/Pages/sleep-disorders.aspx>.

risk. During the Foresight Test, the supervisor attempts to discern if the actions taken by the employee were unreasonable given the circumstances, environment, and motivation for taking the action. They do not focus on the potential consequences of the action to determine if it was proper. If that were true, any bad outcome could result in the action being unreasonable simple because the result was not as intended. Again, this concept transfers nicely to law enforcement and the Reasonable Test that resulted in the Supreme Court decision in *Graham v. Connor*. The Court ruled that

the Fourth Amendment “reasonableness” inquiry is whether the officers’ actions are “objectively reasonable” in light of the facts and circumstances confronting them, without regard to their underlying intent or motivation. The “reasonableness” of a particular use of force must be judged from the perspective of a reasonable officer on the scene, and its calculus must embody an allowance for the fact that police officers are often forced to make split-second decisions about the amount of force necessary in a particular situation.²⁰⁰

The creators of the Decision Tree, like the justices of the Supreme Court, understood the need to review employee actions in the context of the moment and apply a reasonableness test and not just call balls and strikes on potential policy violations.

4. The Substitution Test

The Substitution Test is the final step in the process and is used if the previous three did not properly complete the review of the incident. In this phase, the employee is substituted for someone else with a similar background, training, and experience. The supervisor tries to determine if this substitute person would have acted similarly. Dr. Reason describes the Substitution Test as:

Substitute the individual concerned, for someone else coming from the same domain of activity and possessing comparable qualifications and experience. Then ask the question “In the light of how events unfolded and were perceived by those involved in real time, is it likely that this new individual would have behaved any differently?”²⁰¹

²⁰⁰ “Fourth Amendment,” Legal Information Institute, February 5, 2010, https://www.law.cornell.edu/constitution/fourth_amendment.

²⁰¹ Meadows, Baker, and Butler, “Incident Decision Tree,” 394.

This concept should be familiar to law enforcement. As noted, it is like the ruling in *Graham v. Connor*.

During the Substitution Test, the organization can review deficiencies in supervision, policy, training, and team effectiveness. None of these are commonly found during law enforcement disciplinary reviews. Again, the disciplinary matrix does not provide a formal method for these deficiencies to enter the record. The medical community has found, like the airline industry, that systems must be improved for humans to succeed in today's high-risk, fast-paced, and technology-intensive work environments. Law enforcement should commit to this same mindset.

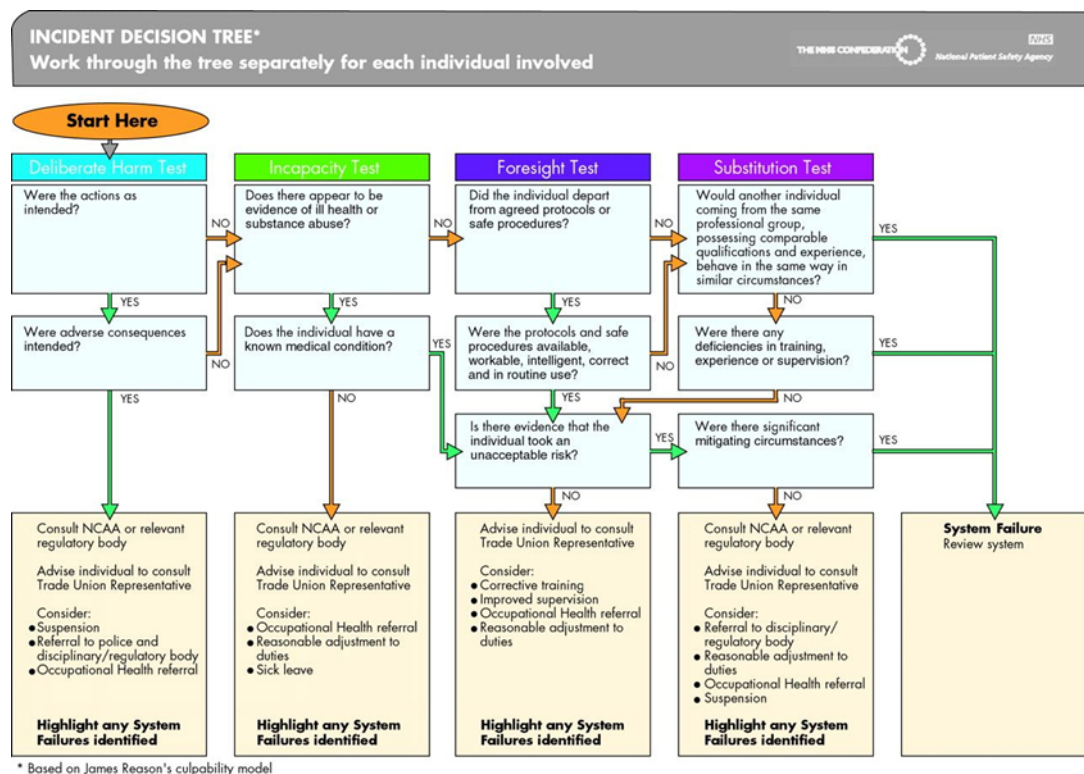


Figure 6. National Health Service (United Kingdom) Incident Decision Tree²⁰²

²⁰² Source: Meadows, Baker, and Butler, 391.

F. CHAPTER REVIEW

Professions in the United States and across the world have improved their safety systems beyond the concepts found in the OSH Act. They have changed the philosophy of their work environment to foster what Dr. Reason calls a safety culture. Dr. Reason's work is highly regarded in the aviation and medical communities. They have taken his concepts and created very successful systematic processes to foster a culture of safety within the individual organization and profession. Dr. Reason's work is now being used in the fire service. Given this success, it is apparent that law enforcement can learn from these professions and adapt its own safety culture.

By using tools like the Incident Decision Tree, law enforcement can discern the root causes of errors. Administrators can see the value of evaluating errors using the system model instead of the traditional person model. They will also understand and apply the concepts of human factors and human errors when trying to identify hazards and mitigate them successfully. By following Dr. Reason's components of a safety culture, law enforcement can reverse the current escalating trend of officer deaths and injuries.

V. CONCLUSION

This thesis concludes by projecting a recommended path forward. This roadmap provides agency executives, elected officials, and academics a path to follow to improve law enforcement safety through a systematic process. This chapter explores the outcomes of following the roadmap and comparing the suggested roadmap to the status quo today. This comparison is based on cost, legality, political acceptance, level of effort, and effectiveness. Then, the chapter recommends a solution based on all the evidence available. Finally, the thesis concludes by telling the story of law enforcement safety in the future.

A. RECOMMENDED PATH: A ROADMAP TO IMPROVED OFFICER SAFETY THROUGH A SYSTEMATIC PROCESS

The roadmap suggested here includes two phases that can overlap and potentially run concurrent with each other. The first, following the OSHA model, must be well established before implementing the lessons applied by Dr. Reason. The roadmap is new to the law enforcement profession but well-traveled by others. Their experiences helped to shape the proposed path for law enforcement.

1. Follow the OSHA Model

The first step to improving law enforcement safety through a systematic process is to follow the OSHA model. Federal OSHA and state equivalents need to educate law enforcement executives and agencies in the processes of hazard identification, mitigation, and evaluation. These same organizations then need to evaluate the effectiveness of agencies implementing these required processes and take appropriate action when deficiencies are identified. This will require that federal and state safety organization hire subject matter experts in the area of law enforcement just as they have in the areas of fire safety, construction, and other high-risk professions.

To facilitate hazard identification, the Congress needs to enact legislation requiring accurate data collection and dissemination as required in air traffic safety and the medical profession. A national system of law enforcement safety information is often written about

but has failed to become reality. It is time it has the weight of law and be enforced like other professions.

Organizations like National Institute for Standards and Technology (NIST) and National Institute of Occupational Safety and Health (NIOSH) should conduct investigations into law enforcement line-of-duty deaths like those conducted after firefighter deaths. Again, this will require these organizations to hire subject matter experts from the area of law enforcement and conduct reviews based on policy, command and control, communications, proper use of safety equipment, and all the similar areas to those reviewed after the Sofa Sleeper fire mentioned earlier.

Lacking action by Congress or interest by safety organizations, law enforcement executives should still take steps to implement the OSHA standards required by law under the General Duty Clause of the OSH Act. This thesis argues that, ultimately, it may be lawyers who compel the law enforcement profession to improve through civil litigation after a line-of-duty death. Law enforcement executives and elected officials would be wise to begin such processes now and demonstrate a systematic approach to improve safety.

2. Follow Other Professions' Examples: Implement the Principles of Dr. James Reason

Once the profession and individual agencies have laid the foundation required by OSHA standards and processes, they should follow the lead of other professions to implement the principles of Dr. Reason. Some of this could be done concurrently with the OSHA compliance but must build on that groundwork being established.

Dr. Reason has impacted several professions with his work on establishing entire systems of safety and the components that are necessary for success. If done correctly, as demonstrated by other professions, the result will be an entire safety culture for the profession and individual agencies.

An example of the components identified by public safety agencies in Indianapolis, Indiana, in 2014, as adapted from Reason's examples, Figure 7 was used during training to express the systematic approach to safety and the creation of an effective safety culture.



Figure 7. Model Used by Indianapolis Public Safety to Demonstrate Components of a Safety System, Based on James Reason's Work²⁰³

The best example found during research for this thesis to express the application of this concept was found in published works by the Australian Civil Aviation Authority. In implementing Reason's systematic approach to safety and development of a safety culture, they published eight safety management system (SMS) printed resources for education and implementation. They are:

- SMS 1: Safety Management Basics²⁰⁴

²⁰³ Source: Joseph Finch, James King, and Willie Thompson, "Creating a Safety Culture" (PowerPoint, Indianapolis Metropolitan Police Department, November 2014).

²⁰⁴ Civil Aviation Safety Authority, *SMS 1*.

- SMS 2: Safety Policy and Objectives²⁰⁵
- SMS 3: Safety Risk Management²⁰⁶
- SMS 4: Safety Assurance²⁰⁷
- SMS 5: Safety Promotion²⁰⁸
- SMS 6: Human Factors²⁰⁹
- SMS 7: SMS for Small, Non-Complex Organizations²¹⁰
- SMS 8: Resource Kit Workbook²¹¹

The law enforcement profession should create a similar education series to assist agency heads, elected officials, and training officers when implementing a system of safety and the resulting safety culture. Agencies should also change from the person form of review, which focuses on blame, and move to the system model. The system model is more focused on fixing the problem by asking why things occur. Law enforcement could adapt the Decision Tree developed by the medical community to assist in finding the root cause of accidents and performance issues.

²⁰⁵ Civil Aviation Safety Authority, *SMS 2: Safety Policy and Objectives*, second edition (Canberra: Australian Government, December 2014), https://www.casa.gov.au/sites/g/files/net351/f/_assets/main/sms/download/2014-sms-book2-safety-policy-objectives.pdf.

²⁰⁶ Civil Aviation Safety Authority, *SMS 3: Safety Risk Management*, second edition (Canberra: Australian Government, December 2014), www.casa.gov.au/sites/g/files/net351/f/_assets/main/sms/download/2014-sms-book3-safety-risk-management.pdf.

²⁰⁷ Civil Aviation Safety Authority, *SMS 4: Safety Assurance*, second edition (Canberra: Australian Government, December 2014), www.casa.gov.au/sites/g/files/net351/f/_assets/main/sms/download/2014-sms-book4-safety-assurance.pdf.

²⁰⁸ Civil Aviation Safety Authority, *SMS 5: Safety Promotion*, second edition (Canberra: Australian Government, December 2014), www.casa.gov.au/sites/g/files/net351/f/_assets/main/sms/download/2014-sms-book5-safety-promotion.pdf.

²⁰⁹ Civil Aviation Safety Authority, *SMS6*.

²¹⁰ Civil Aviation Safety Authority, *SMS 7: SMS for Small, Non-complex Organizations*, second edition (Canberra: Australian Government, December 2014), www.casa.gov.au/sites/g/files/net351/f/_assets/main/sms/download/2014-sms-book7-sms-small-non-complex-organisations.pdf.

²¹¹ Civil Aviation Safety Authority, *SMS 8: Resource Kit Workbook*, second edition (Canberra: Australian Government, December 2014), www.casa.gov.au/sites/g/files/net351/f/_assets/main/sms/download/2014-sms-book8-workbook.pdf.

The airline industry and the fire service have advanced near-miss reporting systems that should be modeled for law enforcement. Again, federal law would be helpful in establishing confidentiality and disciplinary limitations. A standardized national reporting system, like that of the fire service would also be beneficial for law enforcement. Rather than require compliance in systems like the Uniform Crime Reports or the National Incident-Based Reporting System, the FBI should develop a national system that agencies can access online. Agencies could customize any additional data collection by using relational databases that would be seamless to the user. Such a system would also collect safety information that is desperately lacking now. Even though much of this should be the work of the federal government, agency heads and elected officials should begin the effort now at the state and local levels.

Reason's work in the area of human error should be of particular interest to law enforcement. Concepts such as tunnel vision, auditory exclusion, reaction time, and the need for rest periods are just now beginning to be understood in a meaningful way. Work done by Dr. Bill Lewinski and his staff at the Force Science Institute are using a scientific process to explain the actual perceptions and abilities of an officer in critical situations. When identifying hazards and mitigation strategies, such insight will prove invaluable. Much like the work of Reason in exploring the total environment in which an error occurred, Force Science is an applicable tool for law enforcement to do the same. The previous example of officers involved in vehicle crashes is one example of the rapidly changing environment in which law enforcement officers work on a regular basis.

B. PROJECTED OUTCOMES

The projected outcomes presented here are based firmly on the research, documentation, and observed success achieved by other industries and professions. It was not necessary in this thesis to provide a list of the numerous entities currently benefiting from a systematic approach to safety. That was previously accomplished by Maggie

DeBoard in her thesis in December 2015.²¹² Instead, the outcomes projected here are reasonable and obtainable as long as the desire exists to improve law enforcement safety.

1. Improve Awareness of Safety as a Systematic Process in Law Enforcement

As previously argued here, and documented by others, law enforcement has no semblance of a systematic approach to safety or a safety culture. Should the law enforcement profession, or a single agency, choose to follow the roadmap, the outcomes below will be achieved.

a. Documented Safety Information

As required by OSHA and proven by Reason, documentation is the heart of hazard identification and mitigation. Like other professions and industries, law enforcement may find it necessary to create safety units that create, manage, and disseminate safety information. The focused individuals will be in the best position to identify trends often overlooked with latent conditions and go beyond active failures.

b. Identified Hazards

One of the most significant achievable projections is true hazard identification. By moving beyond blaming and shaming the person and looking at the entire system, real hazards can be identified and documented. Several examples have been provided throughout this thesis. The most informative example for the profession is that, despite what many reports, articles, and academics have said for years, the single greatest threat to a law enforcement officer is being impacted by a high-velocity projectile. This projectile is most often a bullet, and the technology exists to mitigate this hazard. It is important to remember that “mitigate” and “eliminate” are not synonymous. In the first six months of 2018, officer fatalities are up 7 percent from the same period in 2017.²¹³ Firearm-related

²¹² Maggie A. DeBoard, “Applying Systems Thinking to Law Enforcement Safety: Recommendation for a Comprehensive Safety Management Framework” (master’s thesis, Naval Postgraduate School, 2015), <http://calhoun.nps.edu/handle/10945/47932>.

²¹³ PoliceOne, “NLEOMF.”

incidents are the leading cause of death, and they are up 24 percent from the previous year.²¹⁴ Such an accurate accounting of incidents is necessary to identify hazards and is easily obtainable by following the roadmap.

c. Structured Mitigation Strategies

W. Edwards Deming observed that, “Without data you’re just another person with an opinion.”²¹⁵ Advocates of a systematic approach to safety would wholeheartedly agree. By properly documenting safety information related to incidents and using that information to accurately identify hazards, created structured mitigation strategies become the next achievable outcome of following the roadmap. As noted earlier, law enforcement often spends money on safety equipment with no clearly defined hazard and no policy on the wear and maintenance of the safety equipment. The systematic approach will facilitate the law enforcement profession in mitigation specific hazards and improving the overall safety culture of an organization.

d. Measurable Results

Once mitigation strategies have been properly implemented, measuring their effectiveness becomes the next projected outcome. Law Enforcement agencies often invest money in training and equipment that is thought to improve some observed safety or performance issue. Rarely are these strategies continually evaluated for their effectiveness in meeting the original objective.

By following the roadmap, agencies will make intelligent decisions on mitigation strategies and continually monitor their effectiveness. This is achieved through data collection, articulable observations, and modification when necessary.

²¹⁴ PoliceOne.

²¹⁵ Milo Jones and Philippe Silberzahn, “Without an Opinion, You’re Just Another Person with Data,” *Forbes*, March 15, 2016, <https://www.forbes.com/sites/silberzahnjones/2016/03/15/without-an-opinion-youre-just-another-person-with-data/>.

e. Lessons-Learned Data Available to the Entire Law Enforcement Profession

By implementing the roadmap and following the steps outlined earlier, the law enforcement profession will be able to share lessons learned data and information as other industries and professions have done for years. The systematic process will allow a common language and understanding when reviewing reporting information and the data that results from them. Published accounts of mitigation strategies and their measured results will encourage improved safety systems to protect officers. Traditional best-practice fads will give way to tested and proven mitigation strategies that resulted from proper review, identification, and implementation. The recommended national repository will make this information available to all agencies. When an incident is reviewed at the local, state, or national level, this information will be part of the assessment on which to base conclusions.

2. Achieve a Safety Culture in the Law Enforcement Profession

Like other high-risk profession and industries, law enforcement does not naturally possess a culture of safety. Too often, the risk becomes part of the persona of the profession, and hazard mitigation suffers for it. The research is clear, however, that a safety culture can be, and has been, successfully implemented, nurtured, and maintained in numerous high-risk industries and professions. Law enforcement should be no exception. Project outcomes of creating this culture will include the following, just to highlight a few.

a. Policy Decisions Will Include a Discussion of Safety Concerns

Elected officials and police administrators have always balanced officer safety and the perception the public has of an agency and the profession as a whole. Shortly after the Ferguson, Missouri, riots, calls against police militarization resulted in President Obama making it more difficult for police departments to obtain some safety equipment from military surplus programs. Hot-button issues continued to resonate from organizations like

the American Civil Liberties Union calling on police agencies to not use, or limit the use of, helmets and plated vests or have access to armored vehicles.²¹⁶

After the murder of five Dallas police officers, calls limiting safety equipment to law enforcement have mostly gone silent. Agencies rushed to purchase ballistic helmets and vests. On the local level, this issue remains a concern. The Bloomington, Indiana, Police Department recently decided to purchase an armored vehicle for the safety of its officers and citizens. The local Black Lives Matter group argued that the “BearCat could be used to stop peaceful protests and harm people of color.”²¹⁷ The Bloomington mayor argued that the BearCat was “designed to protect police during high-risk situations involving firearms.”²¹⁸ This contradiction in understanding can be overcome by implementing the roadmap.

By conducting proper research and hazard identification, mitigation strategies like the BearCat can be properly explained and the public educated. Proper policy formation is critical to the success of any profession with a healthy safety culture. The formation process of agency policy must include an analysis of risk factors associated with the policy decision. To purchase a BearCat or to not purchase patrol rifles must be based on the risk assessment and not the political cloud that forms around a decision. Without such courage by elected officials and agency heads, a safety culture in law enforcement will remain unattainable.

b. Budgets Factor in Safety Training and Protective Equipment

By following the roadmap, agencies will be able to anticipate the funding requirements of establishing and maintaining a safety culture. As noted after the Dallas murder of five officers, emergency spending often follows a tragedy. The problem with

²¹⁶ American Civil Liberties Union, *War Comes Home: The Excessive Militarization of American Policing* (Washington, DC: ACLU Foundation, June 2014), 22, www.aclu.org/sites/default/files/field_document/jus14-warcomeshome-text-rell.pdf.

²¹⁷ Lauren Bavis, “BearCat Armored Vehicle Coming to Bloomington,” *Herald Times Online*, March 29, 2018, https://www.heraldtimesonline.com/htonow/bearcat-armored-vehicle-coming-to-bloomington/article_664c7122-336a-11e8-8246-23de64198fc4.html.

²¹⁸ Bavis.

this often-repeated process is that no systematic process exists to create policy, maintain the equipment, or purchase future equipment. It serves only to satisfy the immediate need to give the impression of doing something after a tragedy.

When safety is promoted through a systematic process and a culture of safety results, the need to create emergency funding streams should be illuminated. The process of budgeting for safety becomes a realistic projected outcome of following the roadmap.

c. Incident Reviews Include Asking Why

As noted repeatedly by Reason, an agency or profession hoping to achieve a safety culture must move away from the person model to the system model of review. Instead of asking “who” and finding an individual to blame, the system model asks “why” an incident or accident happened at all. The result is real review, insightful documentation, proper mitigation, and an improved safety environment for all employees. By following the roadmap, the law enforcement profession and individual agencies can have a positive impact on the lives of individual officers and create the needed culture of safety.

3. Law Enforcement Will Improve Overall Professionalism

Since at least the 1970s, a significant effort has been made to increase the education level of police officers. Some agencies required two or four-year degrees to apply. The goal of such requirements was to make law enforcement more professional. Many agencies who adopted such policies have reversed their decision to increase their applicant pool and encourage the many military veterans to contribute to law enforcement. The goal of increased professionalism still exists. By following the roadmap, the profession and individual agencies will see the benefit of continued knowledge growth, improved decision making, adaptability, and compliance to improved standards. Increased professionalism and creating a culture of safety are mutually supportive.

4. Standards Will Be Documented and Understood

By including a systematic approach to safety in policy, training, and equipment acquisition, best practices will begin to emerge based on valid documentation and research and proven mitigation strategies. This process will cause standards to be developed,

modified, and reviewed utilizing the new information and higher-level expectations. Since the underlying research will already exist, it will be self-evident to include safety considerations in to standards of expectation. As noted previously, the review of the Sofa Sleeper fire included many instances of established standards not being followed. Such a practice in law enforcement would be revolutionary and improve professionalism more profoundly than many of the previous attempts.

The roadmap is clear that the initial formation of standards must begin with OSHA and the state equivalents. The fire service and every other high-risk profession are required to follow numerous standards to keep their employee's safe. It is time for law enforcement to be included among this group. By implementing Reason's principles, law enforcement will continue to grow and improve based on documented evidence and not the political temperament of the day. Once agencies and individual officers understand they will be held accountable for established standards, they will work to improve and create the desired safety culture.

a. Deficiencies Will Be Identified and Corrected

The observation was made previously that researchers traditionally track law enforcement deaths and injuries in two broad categories: traffic accidents and felonious assaults. Most programs designed to improve officer safety focus on these categories and develop strategies to improve safety. An example of this is the recent Below 100 initiative. This program was created by some of the best thinkers and trainers associated with law enforcement. Its stated mission is to "influence law enforcement culture by providing innovating training and awareness through presentations, social media, and webinars on identifying the leading causes and current trends in preventable line-of-duty deaths and injuries."²¹⁹

The goal is to reduce line-of-duty deaths to below 100 per year, which has not occurred since 1943.²²⁰ The content of this program is excellent. It is accurate in its

²¹⁹ Below 100, accessed July 19, 2016, <http://below100.org/>.

²²⁰ Below 100.

presentation and adaptable to evolve over time as threats change. The program has five principle ideas to improve safety.

- Wear Your (Seat) Belt
- Wear Your Vest
- Watch Your Speed
- WIN—What’s Important Now?
- Remember: Complacency Kills!²²¹

The program focuses on peer pressure from supervisors and fellow officers to encourage the proper and safe behavior by officers. This is an excellent program and one consistent with safety thinking in law enforcement. The culture they want to influence is the police culture. They are not attempting to create a culture of safety within law enforcement to the standard that would be acceptable in other professions. OSHA does not have oversight of this social program and it would qualify only as an initial step in Reason’s safety culture.

By following the roadmap, law enforcement can move beyond social pressure. Deficiencies, or hazards, that have been identified must be mitigated. Documentation is crucial to identifying trends and suggesting mitigation strategies. It is only the first step. Strategies must be implemented with authority. By following the roadmap, such authority exists in the policies and expectations that are established over time, beginning with single agencies and evolving to the profession as a whole. The Below 100 project demonstrates that the entire profession can be engaged and learn from one another. A national system rooted in OSHA standards begins that foundation. From that foundation, efforts can progress to Reason’s safety culture and beyond the peer pressure of Below 100.

²²¹ Below 100.

b. Once Corrected, Performance Will Be Monitored and Measured for Compliance

On April 10, 2014, the Albuquerque Police Department (APD) entered in to an agreement with the DoJ to reform the way it provided police services. The report focused on using deadly force too often, using less lethal force too often, systemic deficiencies in oversight, training and policy, to name a few.²²² In the forty-one-page report, officer safety was mentioned once. The single reference was to highlight the background of law enforcement experts.

On November 2, 2017, the federal monitor of the APD released their sixth report. Officer safety is mentioned eleven times in 439 pages. Eight of these occurrences are identical sentences stating, “To maintain high-level, quality service; to ensure officer safety and accountability; and promote constitutional, effective policing, APD agrees to...”²²³ The other three uses of officer safety in 439 pages are also nearly identical and refer to an instructor presentation of material.

As noted earlier, as part of the roadmap, officer safety must be considered in all aspects of policy, budget, training, and review. Like other department reviews conducted by the DoJ, the Albuquerque report and follow-on Monitor’s report provide an excellent example of how deficiencies, including safety, can be documented, remediated, and monitored for continued compliance. In fact, the initial report actually uses this same terminology when talking about what APD must do to comply with the agreement. Such documentation, remediation, and review are what Reason requires to create the safety culture. What is lacking is the vision or willingness of law enforcement to recognize this necessity.

Many of the discussions surrounding the numerous DoJ investigations included talk of improving professionalism in policing. By conducting thorough investigations like those done by the DoJ, with the addition of safety concerns, law enforcement will reinforce the

²²² Samuels and Martinez, “Albuquerque Police Department,” 1.

²²³ James Ginger, “Compliance Levels of the Albuquerque Police Department and the City of Albuquerque with Requirements of the Court-Approved Settlement Agreement” (report, U.S. Department of Justice, November 2017), 217, <https://www.justice.gov/usao-nm/page/file/1007876/download>.

desire of everyone to improve the profession. Nothing new need be created to accomplish this projected outcome. The profession just needs to do it.

c. Common Best Practices Will Be Validated and Shared beyond Academic Thought and Budget Cycles

It has been noted several times previously that law enforcement lacks sufficient data to design knowledge-based solutions or mitigation strategies to hazards to improve officer safety. Per Deming, this allows everyone to have an opinion as to what programs, strategies, research, or investigations should be conducted. By following the roadmap, for the first time, law enforcement would have all of the necessary elements to create and apply a systematic process to safety in law enforcement. The pinnacle of this effort would be the creation of a safety culture.

To create the safety culture, of even a systematic process, law enforcement will have to break the cycle of disorganized academic research and grant programs that are not measured for success or designed to build on successive programs. By collecting data as suggesting in the roadmap, safety will be a systematic and consistent effort. Professionalism will improve across law enforcement by sharing safety data and validated mitigation strategies, and sharing that information nationally.

Systems like the Near-Miss Reporting System and safety reporting data required by OSHA or future legislation by Congress will further data collection and acquired knowledge. With this information and data, academics can now move beyond having opinions and work for solutions that may evolve over time. Continual assessment and evaluation will allow continued growth and improvement. At this point, increased professionalism and a culture of safety should result as a projected outcome.

C. CONFRONT THE TRADE-OFFS OF THE SUGGESTED POLICY WITH WHAT IS BEING DONE TODAY

In all organizations, particularly government, policy decisions always include trade-offs. Most of these trade-offs involve some balancing of cost, legality, political acceptance, level of effort, and effectiveness. These areas will be evaluated in terms of the recommended roadmap.

1. Cost

Even a quick evaluation of cost reveals that there will be no initial cost savings when implementing the roadmap. Existing safety equipment and training will need to be maintained or upgraded. A standard ballistic vest worn daily by officers can cost upward of \$750 for III A protection. A vest with rifle-resistant plates can cost over \$500. A ballistic helmet is upward of \$200. An armored vehicle like the BearCat costs \$200,000 to \$400,000. These are just a few examples of equipment costs that may be necessary to mitigate identified hazards.

Additional cost will be incurred to pay for significant training in the area of OSHA and other safety standards. As noted previously, the fire service receives significant annual safety training including policy, standards, and law. Law enforcement should be expected to be as proficient as the fire service and other hazardous professions and industries.

Potential saving will eventually be realized in a reduction of civil litigation costs. Since law enforcement has few policies concerning safety, they must explain their actions on a case-by-case basis. As evident in the DoJ reviews, many agencies did not even have a system of review to determine if their actions were in line with their own policies. As a result, trends that should have been identified went unnoticed until it was too late. The cost in loss of confidence by the community and a damaged reputation is also a cost that is difficult to calculate but real nonetheless.

If law enforcement does not follow the roadmap and maintains the status quo, their cost may appear to stay the same for a time. Sooner or later, events will overtake the elected officials and agency heads. Much like the shooting in Dallas caused emergency spending by agencies across the country to purchase rifle-resistant protective equipment, threats will continue to emerge and purchases will continue to be made.

The greatest cost may be realized by surviving family members of officers killed in the line of duty. Eventually, attorneys will recognize that law enforcement is not compliant with expected safety standards. The benchmark of this practice is established in the fire service already. Surviving family members have often sued individuals and agencies for failing to follow safety practices, including OSHA standards and the requirements of

Incident Command. Such occurrences bring the same loss of confidence and damaged reputation as a negative report by the DoJ. It is potentially costlier as well.

2. Legality

A major premise of this thesis is that federal law enforcement agencies and many state and local police departments are subject to OSHA law and standards. Even though specific standards are nonexistent for law enforcement, the General Duty Clause required law enforcement to conduct risk assessments and mitigate identified hazards. It is in this area that civil attorneys will apply the law representing surviving family members of officers killed in the line of duty. Elected officials and agency leaders should recognize this now and begin to follow the roadmap. A systematic approach to safety and the resulting safety culture will be the only defense to the civil litigation that will surely come.

The General Duty Clause already established a legal foundation for agencies to act. The proposed action by the Congress to create a national reporting system and strengthen the Near-Miss system is still necessary to advance safety in law enforcement. As mentioned earlier, it is always easier for governments to maintain the status quo. Reason's research clearly shows the common challenges of implementing changes to how professions and industry think about safety. Law enforcement will have a lengthy journey in the best of circumstances, and it should start sooner rather than later.

3. Political Acceptance

After the recent Dallas police shootings and other ambush-style attacks on law enforcement officers across the country, the social and political attitude has lately changed in a positive direction. Previously, alleged misconduct officers in Ferguson, Baltimore, and New York City, to name a few, had created an environment where safety equipment such as helmets, vests, and armored vehicles were being denied for law enforcement agencies. Fear of police militarization echoed from the American Civil Liberties Union to the highest levels of government. President Obama restricted safety equipment available to law enforcement for years by limiting what could be obtained through the Defense Reutilization and Marketing Office (DRMO) program.

In more recent years the militarization attitude has softened and given way to change. President Trump reversed the previous decision and again made safety equipment available through the DRMO program. After the ambush attacks, most notably in Dallas, agencies across the country purchased and issued helmets and vests rated to mitigate rifle fire. It is this recognition and momentum that must be seized upon now to begin implementing the roadmap.

A single instance of alleged misconduct, like what happened in Ferguson, Missouri, could set law enforcement safety back years. For this reason, it is imperative that safety concerns be removed from the volatile political environment that law enforcement is subjected to today. Safety standards based on law, best practice, policy, and acquired safety data must be developed.

A model example of best practice standards based on law, policy, and safety data can be found in the fire service. The National Fire Prevention Association (NFPA) Standard 1500 outlines specific safety standards that should be followed by all fire agencies and personnel. The International Association of Fire Fighters explains the NPFA 1500 standard:

The NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, was developed to provide a consensus standard for an occupational safety and health program for the fire service. The intent of this standard is to provide the framework for a safety and health program for a fire department or any type of organization providing similar services.²²⁴

When the Boston Fire Department reviewed its compliance with this standard, it was provided an extensive review of each component by Facets Consulting. Each standard was evaluated on current compliance, specific areas in need of attention, cost, effort, time, relative priority, and existing best practices (see Table 4).²²⁵

²²⁴ “NFPA 1500,” International Association of Fire Fighters, accessed July 18, 2018, www.iaff.org/hs/resi/infdi/NFPA_1500.htm.

²²⁵ Facets Consulting, “Boston Fire Department Health and Safety Program Review: Summary of Recommendations and Best Practices” (report, Boston Fire Department, July 2010), 5, https://www.cityofboston.gov/images_documents/Boston%20Fire%20Department%20Summary%20of%20Recommendations%20and%20Best%20Practices_tcm3-21425.pdf.

Table 4. Boston Fire Department Response to NFPA 1500 Review²²⁸

NFPA 1500 Chapter/ Section	Current Compliance	Specific Areas in Need of Attention	Cost	Effort	Time	Relative Priority	Best Practices
Chapter 4—Fire Department Administration							
4.1 Fire Department Organization Statement	Partial	There is no single written document that meets the requirements for a fire department organizational statement	Low	Medium	Medium	Low	Phoenix4-1
4.2 Risk Management Plan	No	The BFD does not have a written risk management plan	Low	Medium	High	High	Phoenix4-4

²²⁸ Adapted from Facets Consulting, 5. The table is not duplicated exactly but is an accurate representation.

The review of Boston Fire is a 542-page document and includes sixty separate categories based on NFPA 1500. Each was rated as the example in Table 4. Not only does the agency receive a compliance rating, they are given examples of best practices based on other agencies' policies. Those policies are created with data collected locally and available nationally through the required reporting systems in the fire service. This type of thinking and approach to safety is what law enforcement needs: a culture that produces such systems and reviews itself considering established standards can remove politics from discussions concerning employee safety. As with many of the recommendations of the roadmap, the heavy lifting of creating a systematic approach to safety can be found in other high-risk professions and industries. In this case, the fire service is well advanced of law enforcement. Elected officials, agency heads and academia, just need to apply what already exists to law enforcement.

4. Level of Effort

A significant level of effort will be necessary to implement the roadmap to establish a systematic approach to safety and create a safety culture. Effort will be required by elected officials, agency executives, academia, agency supervisors, and line officers. The development and implementation effort will need to be sustained for years. Once implemented, effort will continue in daily required duties and tasks to make the system work. Continuous evaluation of the system, along with necessary changes, will require ongoing effort. If the Boston NFPA 1500 assessment is a guide to effort, the sixty categories identified for evaluation clearly show the involvement and effort required to develop and maintain a safety system for high-risk professions, including law enforcement.

5. Effectiveness

If the roadmap is implemented, it will be very effective in reducing the rate and occurrence of death and injury in law enforcement. Recent upward trends and near-record setting statistics indicate what we are doing now is not working without the existence of a systematic, profession-wide approach to safety. As well-documented here, other professions and industries have successfully implemented safety systems and created true safety cultures. The effectiveness of such systems can be found in the fire service, heavy

industry, construction, aviation, and the medical community, to name a few. To implement the roadmap will not be easy and will require a sustained effort, lasting years to just initiate. All available data indicate that, if the investment is made, the roadmap will prove effective.

D. DECIDE

Based on all the research, case studies, law, and policy, with consideration of cost, political acceptance, and accepting the necessary tradeoffs, law enforcement must develop and implement a systematic approach to safety. Such an approach will eventually lead to the goal of establishing a safety culture. If the law enforcement profession continues to resist or slowly proceed, the decision will be made for them. As previously documented, all of the research and recommendations coming from organizations like PERF or the Presidential Task Force are encouraging a systematic approach to law enforcement safety. It is time to follow the roadmap and make it mandatory.

This thesis has given a great deal of credit to other professions and industries that have adopted a systematic approach to safety. The fire service has been noted repeatedly as having systems in place that could be easily adapted and adopted by law enforcement. The safety of each police officer and the profession will benefit considerably by learning from the experience of the fire service. Law enforcement would also save considerable time and effort by having a model to follow. The fire service continues to implement its systematic process and strives to achieve a safety culture. In the early 2000s, a high-ranking member of the Chicago Fire Department was heard to say that the fire service was “200 years of tradition unimpeded by progress.”²²⁹ The Chicago Fire Department was in the process of upgrading much of its safety equipment at great expense in time and dollars. The fire administrator was frustrated that the resistance to change was even greater than the appreciation of the improved equipment. Law enforcement will have the same challenges but must no longer impede progress in terms of safety.

As recently as July 2018, ideas of hazard identification, mitigation, and documentation continue to enter the law enforcement community. When discussing school

²²⁹ Quoted from a personal conversation.

safety, the U.S. Secret Service recently advised schools and law enforcement agencies to follow their recommended plan.

The plan includes forming a multidisciplinary threat assessment team, establishing central reporting mechanisms, identifying behaviors of concern, defining the threshold for law enforcement intervention, identifying risk management strategies, promoting safe school climates, and providing training to stakeholders. It can also help schools mitigate threats from a variety of individuals, including students, employees, or parents.²³⁰

The context is focused on the nation's schools but the methodology is directly consistent with OSHA methodology and Reason's direction to consider the entire environment when trying to improve safety. Though not stated as an objective, the guide creates an opportunity for an actual safety culture to develop. This is just another of many examples where law enforcement is being required to think in terms of hazard identification, mitigation, documentation, and review. The suggested multidisciplinary threat-assessment team closely resembles the intent of standards found in the NFPA. It is time for law enforcement to join the process that is already well on its way to being required and no longer just suggested.

E. THE STORY OF LAW ENFORCEMENT WITH AN IMPLEMENTED SYSTEMATIC APPROACH TO SAFETY, AN ACHIEVED SAFETY CULTURE, AND AN EVER-IMPROVING ROADMAP

Law enforcement will always be a high-risk profession. Both the risk and the profession can be impacted positively by implementing a systematic approach to safety. Professions such as the fire service and industries like medicine and aviation have proven the benefits of improving the safety environment of its employees by creating a safety culture. Law enforcement will be no exception. It is conceivable that when officers are better protected by safety systems, the need for even proper uses of force will diminish. Those threats that remain, and there will be many, will be understood and mitigated to the best of the system's ability at the time. Improved safety gives officers time to think and

²³⁰ U.S. Secret Service National Threat Assessment Center, "Enhancing School Safety Using a Threat Assessment Model: An Operational Guide for Preventing Targeted School Violence" (report, Secret Service, July 2018), 2, www.secretservice.gov/data/protection/ntac/USSS_NTAC_Enhancing_School_Safety_Guide_7.11.18.pdf.

react in critical situations. Standards, documentation, and training allow best practices to be validated, repeated, and shared to benefit the entire profession.

For law enforcement safety, the future is now. Elected officials, agency heads, academics, and line officers must not be impeded by traditions and traditional thinking that continue to impact officer safety. Agency heads can choose to follow the roadmap now or wait until civil attorneys and others leave them no choice. It will be a long road in the best of circumstances, and law enforcement never operates in the best of circumstances. A systematic approach to safety and the implementation of a safety culture is the right thing at the right time. The time is now.

LIST OF REFERENCES

- American Civil Liberties Union. *War Comes Home: The Excessive Militarization of American Policing*. Washington, DC: ACLU Foundation, June 2014.
https://www.aclu.org/sites/default/files/field_document/jus14-warcomeshome-text-rell.pdf.
- Ashton, Richard. "FBI's *LEOKA* Offers Insight into Officer Deaths." *Police Chief* LXXX, no. 2 (February 2013): 64-66. <http://www.policechiefmagazine.org/wp-content/uploads/PoliceChief-February2013.pdf>.
- . "Predictable Is Preventable." *Police Chief*, June 2015.
http://www.policechiefmagazine.org/magazine/index.cfm?fuseaction=display_arch&article_id=2584&issue_id=12012.
- Bardach, Eugene. *A Practical Guide for Policy Analysis: The Eightfold Path to More Effective Problem Solving*, 4th ed. Washington, DC: CQ Press, 2012.
- Barragán, James. "For Police, the Push for Funding Vests Capable of Stopping Rifle Rounds Is Personal." *Dallas News*, March 13, 2017. <https://www.dallasnews.com/news/texas-politics/2017/03/13/police-push-funding-bulletproof-vests-personal>.
- Bavis, Lauren. "BearCat Armored Vehicle Coming to Bloomington." *Herald Times Online*, March 29, 2018. https://www.heraldtimesonline.com/htonow/bearcat-armored-vehicle-coming-to-bloomington/article_664c7122-336a-11e8-8246-23de64198fc4.html.
- Beul, Nick, and Mike Keith. "Deadly Calls and Fatal Encounters." Report, National Law Enforcement Officers Memorial Fund, 2016). <http://www.nleomf.org/assets/pdfs/officer-safety/Primary-Research-Final-8-2-16.pdf>.
- Bruer, Wesley. "Violent Crime Rising in U.S. Cities, Study Finds." *CNN*, July 25, 2016. <http://www.cnn.com/2016/07/25/politics/violent-crime-report-us-cities-homicides-rapes/index.html>.
- Call the Cops. "OSHA Instituting Regulations to Stop Firefighter from Making Interior Attacks." April 17, 2014. <http://www.callthecops.net/osha-instituting-regulations-stop-firefighter-making-interior-attacks/>.
- Carter, Jeffry, and Julie Alexander. "Reflective Vest Interpretation Letter." Letter, Indiana Department of Labor, December 2008. http://www.in.gov/dol/files/Reflective_Vests_interpretation_letter_12_12_08.pdf.

- Centers for Disease Control and Prevention. "Death in the Line of Duty...A Summary of NIOSH Fire Fighter Fatality Investigation." February 11, 2009. <http://www.cdc.gov/niosh/fire/reports/face200718.html>.
- City of Madison Police Department. "Professional Standards and Internal Affairs Disciplinary Matrix." Accessed March 22, 2018. <https://www.cityofmadison.com/police/documents/sop/PSIAdiscMatrix.pdf>.
- Civil Aviation Safety Authority. *SMS1: Safety Management System Basics*, second edition. Canberra, Australian Government, December 2014. https://www.casa.gov.au/sites/g/files/net351/f/_assets/main/sms/download/2014-sms-book1-safety-management-system-basics.pdf.
- . *SMS 2: Safety Policy and Objectives*, second edition. Canberra: Australian Government, December 2014. https://www.casa.gov.au/sites/g/files/net351/f/_assets/main/sms/download/2014-sms-book2-safety-policy-objectives.pdf.
- . *SMS 3: Safety Risk Management*, second edition. Canberra: Australian Government, December 2014. https://www.casa.gov.au/sites/g/files/net351/f/_assets/main/sms/download/2014-sms-book3-safety-risk-management.pdf.
- . *SMS 4: Safety Assurance*, second edition. Canberra: Australian Government, December 2014. www.casa.gov.au/sites/g/files/net351/f/_assets/main/sms/download/2014-sms-book4-safety-assurance.pdf.
- . *SMS 5: Safety Promotion*, second edition. Canberra: Australian Government, December 2014. www.casa.gov.au/sites/g/files/net351/f/_assets/main/sms/download/2014-sms-book5-safety-promotion.pdf.
- . *SMS 6: Human Factors*, second edition. Canberra: Australian Government, December 2014. https://www.casa.gov.au/sites/g/files/net351/f/_assets/main/sms/download/2014-sms-book6-human-factors.pdf.
- . *SMS 7: SMS for Small, Non-complex Organizations*, second edition. Canberra: Australian Government, December 2014. www.casa.gov.au/sites/g/files/net351/f/_assets/main/sms/download/2014-sms-book7-sms-small-non-complex-organisations.pdf.
- . *SMS 8: Resource Kit Workbook*, second edition. Canberra: Australian Government, December 2014. www.casa.gov.au/sites/g/files/net351/f/_assets/main/sms/download/2014-sms-book8-workbook.pdf.
- Connell, Linda J. "Cross Industry Applications of a Confidential Reporting Model." NASA, accessed September 15, 2018. https://asrs.arc.nasa.gov/docs/rs/62_Cross_Industry_Applications_of_Reporting_Model.pdf.

- DeBoard, Maggie A. "Applying Systems Thinking to Law Enforcement Safety: Recommendation for a Comprehensive Safety Management Framework." Master's thesis, Naval Postgraduate School, 2015. <http://calhoun.nps.edu/handle/10945/47932>.
- Emily, Jennifer, and Tasha Tsiaperas. "Dallas Police Shooter Killed 4 Officers on the Street, 1 through a Second-Floor Window." Dallas News, July 14, 2016. https://www.dallasnews.com/news/dallas-ambush/2016/07/14/dallas-police-shooter-killed-4-officers-street-1-second-floor-window?_ga=2.211645141.1370971398.1521055924-1853008464.1521055904.
- Facets Consulting. "Boston Fire Department Health and Safety Program Review: Summary of Recommendations and Best Practices." Report, Boston Fire Department, July 2010. https://www.cityofboston.gov/images_documents/Boston%20Fire%20Department%20Summary%20of%20Recommendations%20and%20Best%20Practices_tcm3-21425.pdf.
- FBI. "Crime in the United States 1999." Accessed May 15, 2018. <https://ucr.fbi.gov/crime-in-the-u.s/1999/crime-in-the-united-states-1999>.
- Federal Aviation Administration (FAA). *Operator's Manual: Human Factors in Airport Operations*. Washington, DC: FAA, September 2007.
- FEMA. "ICS Forms." Accessed June 27, 2015. <https://training.fema.gov/emiweb/is/icsresource/icsforms.htm>.
- Finch, Joseph, James King, and Willie Thompson. "Creating a Safety Culture." PowerPoint, Indianapolis Metropolitan Police Department, November 2014.
- Fox 4 News. "Dallas Police Get \$1 Million Grant for New Helmets, Bullet Proof Vests." January 26, 2017. <http://www.fox4news.com/news/231979136-story>.
- GAIN Working Group E. "A Roadmap to a Just Culture: Enhancing the Safety Environment." Report, Global Aviation Network, September 2004. https://flightsafety.org/files/just_culture.pdf.
- Galassi, Thomas. "Guidance Regarding Body Armor." OSHA, August 6, 2013. https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=INTERPRETATIONS&p_id=29003.
- Gasaway, Richard. "Charleston Sofa Super Store: An Unfiltered Perspective." Fire Engineering, November 23, 2009. <http://www.fireengineering.com/articles/2009/11/charleston-sofa-super.html>.

- Ginger, James. "Compliance Levels of the Albuquerque Police Department and the City of Albuquerque with Requirements of the Court-Approved Settlement Agreement." Report, U.S. Department of Justice, November 2017. <https://www.justice.gov/usao-nm/page/file/1007876/download>.
- Gourley, G. Douglas. "Police Discipline." *Journal of Criminal Law and Criminology* 41, no. 1 (1950): 85-100.
- Hanks, Ron, and Joe Bates. "Safety...the Proactive Way. Safety Management Systems (SMS)." PowerPoint, Wildland Fire Lessons Learned Center, March 2010. <https://www.wildfirelessons.net/HigherLogic/System/DownloadDocumentFile.aspx?DocumentFileKey=6f5c7447-a1f6-4b2b-a8cc-6cf2afbbdb69>.
- Hansen, Mark, Carolyn McAndrews, and Emily Berkeley. *The Advent of Aviation Safety Oversight*. DOT/FAA/AR-08/39. Washington, DC: U.S. Department of Transportation, July 2008. <http://www.tc.faa.gov/its/worldpac/techrpt/ar0839.pdf>.
- Hillmann, Michael, and Gerald Chaleff. "Los Angeles Police Department Report to the Board of Police Commissioners: An Examination of May Day 2007." Report, Los Angeles Police Department, October 2007. http://assets.lapdonline.org/assets/pdf/Final_Report.pdf.
- Indiana Department of Labor. "IN Review: Indiana Occupational Safety and Health 2009." Report, Indiana Department of Labor, March 2009. http://www.in.gov/dol/files/03.27.2009_Final_Version.pdf.
- . "IN Review: Indiana Occupational Safety and Health 2014." Report, Indiana Department of Labor, 2014. https://www.in.gov/dol/files/IN_Review_2014.pdf.
- International Association of Chiefs of Police (IACP) and Bureau of Justice Assistance. "Reducing Officer Injuries: Final Report." Report, IACP, January 2014. http://www.theiacp.org/portals/0/pdfs/IACP_ROI_Final_Report.pdf.
- International Association of Fire Fighters. "NFPA 1500." Accessed July 18, 2018. http://www.iaff.org/hs/resi/infdis/NFPA_1500.htm.
- Johnson, Kevin, and David Jackson. "Economic Woes Wear on U.S. Police Departments." *USA Today*, October 24, 2011. <http://usatoday30.usatoday.com/news/washington/story/2011-10-23/jobs-lost-economic-woes-hit-police-budgets/50885474/1>.
- Jones, Milo, and Philippe Silberzahn. "Without an Opinion, You're Just Another Person with Data." *Forbes*, March 15, 2016. <https://www.forbes.com/sites/silberzahnjones/2016/03/15/without-an-opinion-youre-just-another-person-with-data/>.

- Kentucky Department of Criminal Justice. "OSHA for Law Enforcement: Summary." Accessed September 15, 2018. <https://docjt.ky.gov/legal/documents/TheOccupationalSafetyandhealthAdministration.pdf>.
- Kragh, JF. "The Return of Tourniquets." Mayo Clinic, 2008, <http://www.mayoclinic.org/medical-professionals/clinical-updates/trauma/combat-tested-tourniquets-save-lives-limbs>.
- Leape, Lucian L. "Error in Medicine." *JAMA* 272, no. 23 (December 21, 1994): 1851-57. <https://doi.org/10.1001/jama.1994.03520230061039>.
- Lee, Rob. "New Directions in Air Safety." *Australian Journal of Forensic Sciences* 29, no. 1 (1997): 19-28.
- Long, Marion A. "Three Reasons Why the National Fire Incident Reporting System Is Important." Firehouse, February 3, 2017. www.firehouse.com/prevention-investigation/article/12301715/importance-of-the-national-fire-incident-reporting-system-firefighter-training.
- Los Angeles Daily News. "North Hollywood Bank Heist Erupts in Gunbattle; 6 Civilians, 10 Officers Injured; 2 Robbers Killed: March 1, 1997." September 24, 2010. <http://www.dailynews.com/20100924/north-hollywood-bank-heist-erupts-in-gunbattle-6-civilians-10-officers-injured-2-robbers-killed-march-1-1997>.
- Major Cities Chiefs Association. "Violent Crime Survey- Totals: Midyear Comparison between 2016 and 2015." July 29, 2016. https://www.majorcitieschiefs.com/pdf/news/mcca_violent_crime_data_midyear_20162015.pdf.
- Marcou, Dan. "Why Cops Need Armored Vehicles: 13 Times BearCats Saved Lives." PoliceOne, December 8, 2015. <https://www.policeone.com/police-products/vehicles/specialty/articles/51458006-Why-cops-need-armored-vehicles-13-times-BearCats-saved-lives/>.
- Marx, David. "Patient Safety and the 'Just Culture': A Primer for Health Care Executives." Report, Columbia University, April 2001.
- Mayhew, Claire. *Protecting the Occupational Health and Safety of Police Officers*. Canberra: Australian Institute of Criminology, 2001.
- McMullen, M. Jo, and C.J. Williams. "Injuries to Law Enforcement Officers Shot Wearing Personal Body Armor: A 30-Year Review." *Police Chief* LXXV, no. 8 (August 2008). http://www.policechiefmagazine.org/magazine/index.cfm?fuseaction=display_arch&article_id=1571&issue_id=82008.

- Meadows, Sandra, Karen Baker, and Jeremy Butler. "The Incident Decision Tree: Guidelines for Action Following Patient Safety Incidents." In *Advances in Patient Safety: Form Research to Implementation*, Vol. 4, edited by Kerm Henriksen, James B. Battles, Eric S. Marks, and David I. Lewin. Rockville, MD: Agency for Healthcare Research and Quality, 2005. <http://www.ncbi.nlm.nih.gov/books/NBK20586>.
- Merritt, Cam. "What Is the OSHA General Duty Clause?" Chron, accessed June 26, 2015. <http://smallbusiness.chron.com/osha-general-duty-clause-44765.html>.
- Nanavaty, Brian. "Why Officers and Agencies Fail: A Case for Resiliency in Policing Part II." Legal & Liability Risk Management Institute, January 22, 2014, http://llrmi.com/articles/legal_update/2014_nanavaty_officers_agencies_fail_pt2.
- NASA. "40 Years of Safer Aviation through Reporting." September 29, 2016. <https://phys.org/news/2016-09-years-safer-aviation.html>.
- National Fire Fighter Near Miss Reporting System. "Firefighter Near Miss: 2016 Annual Report." Report, International Association of Fire Chiefs, 2016. <http://firereports.nationalnearmiss.org/Portals/2/EasyDNNNewsDocuments/Annual%20Reports/2016%20Firefighter%20Near%20Miss%20Annual%20Report.pdf>.
- National Institute of Justice. "Causes of Officer Stress and Fatigue." Last modified January 24, 2012. <http://nij.gov/topics/law-enforcement/officer-safety/stress-fatigue/pages/causes.aspx>.
- . "National Institute of Justice Body Armor Challenge: How Long Does Body Armor Really Last?" Accessed June 27, 2015. <http://www.nij.gov/funding/Pages/fy12-body-armor-challenge.aspx>.
- . "Officer Work Hours, Stress and Fatigue." National Institute of Justice, last modified August 13, 2012. <https://www.nij.gov/topics/law-enforcement/officer-safety/stress-fatigue/pages/welcome.aspx>.
- . "Sleep Disorders and Law Enforcement Officers." Accessed September 20, 2018. <https://nij.gov:443/topics/law-enforcement/officer-safety/stress-fatigue/Pages/sleep-disorders.aspx>.
- National Institute of Standards and Technology. "NIST Manuscript Publication Search." March 14, 2011. http://www.nist.gov/manuscript-publication-search.cfm?pub_id=908200.
- National Law Enforcement Officers Memorial Fund (NLEOMF). "Causes of Law Enforcement Deaths over Past Decade (2008-2017)." Updated March 15, 2018. <http://www.nleomf.org/facts/officer-fatalities-data/causes.html>.

- . “Preliminary 2018 Officer Fatalities.” Accessed June 6, 2018. <http://www.nleomf.com/>.
- Naum, Christopher J. “National Firefighter Near-Miss Reporting System; Untapped Resource.” Firehouse, July 1, 2011. www.firehouse.com/operations-training/blog/10459459/national-firefighter-nearmiss-reporting-system-untapped-resource.
- NHTSA. “Distracted Driving.” September 8, 2016. <https://www.nhtsa.gov/risky-driving/distracted-driving>.
- Occupational Safety and Health Administration (OSHA). “Incident Command System (ICS): Safety Officer.” Accessed June 27, 2015. https://www.osha.gov/SLTC/etools/ics/safe_off.html.
- . “Indiana State Plan.” Accessed June 26, 2015. <https://www.osha.gov/dcsp/osp/stateprogs/indiana.html>.
- . *Job Hazard Analysis*. OSHA 3071 2002 (Revised). Washington, DC: U.S. Department of Labor, 2002. https://www.osha.gov/Publications/osh3071.pdf?utm_source=rss&utm_medium=rss&utm_campaign=job-hazard-analysis-13.
- . “Safety and Health Management Systems eTool: Module 2—Overview of System Components: Hazard Prevention and Control.” Accessed June 26, 2015. <https://www.osha.gov/SLTC/etools/safetyhealth/comp3.html>.
- . “State Plans.” Accessed April 4, 2016. <https://www.osha.gov/dcsp/osp/>.
- . *Workers’ Rights*. OSHA 3021-11R 2016 2014. Washington, DC: U.S. Department of Labor. <https://www.osha.gov/Publications/osh3021.pdf>.
- Office of Justice Programs. “OJP Bulletproof Vest Partnership and the Body Armor Safety Initiative.” Accessed June 9, 2015. <http://ojp.gov/bvpbasi/>.
- Officer Safety and Wellness (OSW) Group. “Officer Deaths and Injuries from Gunfire.” Meeting summary, U.S. Department of Justice, January 2012. http://www.cops.usdoj.gov/pdf/OSWG/Meeting_01-26-2012.pdf.
- PoliceOne. “NLEOMF: 24 Percent Increase in Firearms-Related LODDs in 2018.” July 10, 2018. [https://www.policeone.com/officer-shootings/articles/477523006-NLEOMF-24-percent-increase-in-firearms-related-LODDs-in-2018/?NewsletterID=85601&utm_source=iContact&utm_medium=email&utm_content=TopNewsRelated1Title&utm_campaign=P1Member&cub_id=\[cub_id\]](https://www.policeone.com/officer-shootings/articles/477523006-NLEOMF-24-percent-increase-in-firearms-related-LODDs-in-2018/?NewsletterID=85601&utm_source=iContact&utm_medium=email&utm_content=TopNewsRelated1Title&utm_campaign=P1Member&cub_id=[cub_id]).
- Police Foundation. “5 Things You Need to Know about LEO Near Miss.” Accessed September 20, 2017. https://www.policefoundation.org/wp-content/uploads/2017/07/5ThingsLEOnearmiss_Final.pdf.

- . “LEO Near Miss.” Accessed September 20, 2017.
<https://www.policefoundation.org/projects/leo-near-miss/>.
- President’s Task Force on 21st Century Policing. “Final Report of the President’s Task Force on 21st Century Policing.” Report, DoJ, 2015. http://www.cops.usdoj.gov/pdf/taskforce/TaskForce_FinalReport.pdf.
- Reason, James. “Human Error: Models and Management.” *BMJ* 320, no. 7237 (2000): 768-770.
- . *Managing the Risks of Organizational Accidents*. Burlington, VT: Ashgate, 1997.
- Reynard, William. “The Acquisition and Use of Incident Data: Investigating Accidents before They Happen.” NASA, accessed September 15, 2018.
https://asrs.arc.nasa.gov/docs/rs/51_Acquisition_and_Use_of_Incident_Data.pdf.
- Rinehart, Jack. “Emergency Gunshot Trauma Kits Can Save Lives.” The Indy Channel, March 11, 2014. <http://www.theindychannel.com/news/local-news/emergency-gunshot-trauma-kits-can-save-lives>.
- Samuels, Jocelyn, and Damon Martinez. “Department of Justice Investigation of the Albuquerque Police Department.” U.S. Department of Justice, April 10, 2014. https://www.justice.gov/sites/default/files/crt/legacy/2014/04/10/apd_findings_4-10-14.pdf.
- Sandberg, Elizabeth, Corina Solé Brito, Andrea Morrozoff Luna, and Shannon M. McFadden. *A Guide to Occupational Health and Safety for Law Enforcement Executives*. Washington, DC: Police Executive Research Forum, September 2010. <http://www.valorforblue.org/Documents/Publications/Public/A-Guide-to-Occupational-Health-and-Safety-for-Law-Enforcement-Executives.pdf>.
- Shults, Joel. “What Mid-year LODD Stats Tell Us about Police Risks in 2018.” PoliceOne, July 18, 2018. <https://www.policeone.com/Officer-Safety/articles/477925006-What-mid-year-LODD-stats-tell-us-about-police-risks-in-2018/>.
- Stephens, Darrel. “Police Discipline: A Case for Change.” *New Perspectives in Policing*, June 2011. <https://www.ncjrs.gov/pdffiles1/nij/234052.pdf>.
- . “Police Errors Are Opportunities to Build Trust.” Police Foundation, accessed September 21, 2017. <https://www.policefoundation.org/police-errors-are-opportunities-to-build-trust/>.
- Stephens, Darrel, Mora Fiedler, and Steven Edwards. *OSW Group Annual Summary: Issues and Recommendations Discussed for Improving the Wellbeing of Police Officers*. Washington, DC: U.S. Department of Justice, 2012. <http://ric-zai-inc.com/Publications/cops-w0673-pub.pdf>.

- Swedler, David I., Cassandra Kercher, Molly M. Simmons, and Keshia M. Pollack. "Occupational Homicide of Law Enforcement Officers in the US, 1996-2010." *Injury Prevention* 20, no. 1 (February 2014): 35-40. <https://doi.org/10.1136/injuryprev-2013-040799>.
- United States Department of Justice Civil Rights Division. "Investigation of the Ferguson Police Department." Report, DoJ, March 2015. https://www.justice.gov/sites/default/files/opa/press-releases/attachments/2015/03/04/ferguson_police_department_report.pdf.
- . "Investigation of the New Orleans Police Department." Report, DoJ, March 2011. www.justice.gov/sites/default/files/crt/legacy/2011/03/17/nopd_report.pdf.
- U.S. Secret Service National Threat Assessment Center. "Enhancing School Safety Using a Threat Assessment Model: An Operational Guide for Preventing Targeted School Violence." Report, Secret Service, July 2018. https://www.secretservice.gov/data/protection/ntac/USSS_NTAC_Enhancing_School_Safety_Guide_7.11.18.pdf.
- Wallace, Duncan, and Stephen Rayner. "Combat Helmets and Blast Traumatic Brain Injury." *Journal of Military and Veterans' Health* 20, no. 1 (January 2012): 10. <http://jmvh.org/article/combat-helmets-and-blast-traumatic-brain-injury/>.
- Weick, Karl. "Organizational Culture as a Source of High Reliability." *California Management Review* XXIX, no. 2 (Winter 1987): 112-27.

THIS PAGE INTENTIONALLY LEFT BLANK

INITIAL DISTRIBUTION LIST

1. Defense Technical Information Center
Ft. Belvoir, Virginia
2. Dudley Knox Library
Naval Postgraduate School
Monterey, California