NAVAL POSTGRADUATE SCHOOL

MONTEREY, CALIFORNIA

THESIS

DEFEATING THE ACTIVE SHOOTER: APPLYING FACILITY UPGRADES IN ORDER TO MITIGATE THE EFFECTS OF ACTIVE SHOOTERS IN HIGH OCCUPANCY FACILITIES

by

Charles E. Ergenbright and
Sean K. Hubbard

June 2012

Thesis Co-Advisors:	Doowan Lee
	Raymond Buettner
Second Reader:	Mike Richardson

Approved for public release; distribution is unlimited

THIS PAGE INTENTIONALLY LEFT BLANK

REPORT DOCUMENTATION PAGE			Form Approved OMB No. 0704-0188
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** June 2012	**3. REPORT TYPE AND DATES COVERED** Master's Thesis	
4. TITLE AND SUBTITLE Defeating the Active Shooter: Applying Facility Upgrades in Order to Mitigate the Effects of Active Shooters in High Occupancy Facilities		**5. FUNDING NUMBERS**	
6. AUTHOR(S) Charles E. Ergenbright and Sean K. Hubbard			
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. IRB Protocol number _____N/A_____.			
12a. DISTRIBUTION / AVAILABILITY STATEMENT Approved for public release; distribution is unlimited		**12b. DISTRIBUTION CODE** A	

13. ABSTRACT (maximum 200 words)

The average duration of Active Shooter incidents in Institutions of Higher Education within the United States is 12.5 minutes. In contrast, the average response time of campus and local law enforcement to these incidents is 18 minutes. In the majority of Active Shooter incidents affecting U.S. IHEs, the emergency response time greatly exceeds the incident duration and affords law enforcement authorities no opportunity to interdict the shooter or prevent further casualties. This stark contrast between response requirements and response capability produces a considerable delta of dead, injured or potential victims and provides the unfortunate motivation for this project. The primary focus of this project is aimed at reducing the *Rate of Kill* of Active Shooters in U.S. IHEs. This thesis contains 14 case studies that examine lethal Active Shooter incidents that occurred in U.S. IHEs, as well as the Oslo and Utoya Island Active Shooter event that occurred in Norway. Data analysis on each of these incidents revealed facility composition as a critical vulnerability common to all of these incidents. Accordingly, the recommendations included in this thesis suggest a practical implementation of facility upgrades capable of mitigating the deadly effects of Active Shooters.

14. SUBJECT TERMS Active Shooter, Mitigation, Facility Upgrades, Victim Initiated, Institution of Higher Education, High Occupancy Facility, Automated Control Measures			**15. NUMBER OF PAGES** 277
			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

NSN 7540-01-280-5500

Standard Form 298 (Rev. 2-89)
Prescribed by ANSI Std. 239-18

THIS PAGE INTENTIONALLY LEFT BLANK

Approved for public release; distribution is unlimited

DEFEATING THE ACTIVE SHOOTER: APPLYING FACILITY UPGRADES IN ORDER TO MITIGATE THE EFFECTS OF ACTIVE SHOOTERS IN HIGH OCCUPANCY FACILITIES

Charles E. Ergenbright
Major, United States Army
B.S., James Madison University, 1999

Sean K. Hubbard
Major, United States Army
B.S., Southwest Texas University, 2000

Submitted in partial fulfillment of the
requirements for the degree of

MASTER OF SCIENCE IN DEFENSE ANALYSIS

from the

NAVAL POSTGRADUATE SCHOOL
June 2012

Authors: Chuck E. Ergenbright

Sean K. Hubbard

Approved by: Doowan Lee
Thesis Co-Advisor

Raymond Buettner
Thesis Co-Advisor

Mike Richardson
Second Reader

John Arquilla,
Chairman, Department of Defense Analysis

THIS PAGE INTENTIONALLY LEFT BLANK

ABSTRACT

The average duration of Active Shooter incidents in Institutions of Higher Education within the United States is 12.5 minutes. In contrast, the average response time of campus and local law enforcement to these incidents is 18 minutes. In the majority of Active Shooter incidents affecting U.S. IHEs, the emergency response time greatly exceeds the incident duration and affords law enforcement authorities no opportunity to interdict the shooter or prevent further casualties. This stark contrast between response requirements and response capability produces a considerable delta of dead, injured or potential victims and provides the unfortunate motivation for this project. The primary focus of this project is aimed at reducing the Rate of Kill of Active Shooters in U.S. IHEs. This thesis contains 14 case studies that examine lethal Active Shooter incidents that occurred in U.S. IHEs, as well as the Oslo and Utoya Island Active Shooter event that occurred in Norway. Data analysis on each of these incidents revealed facility composition as a critical vulnerability common to all of these incidents. Accordingly, the recommendations included in this thesis suggest a practical implementation of facility upgrades capable of mitigating the deadly effects of Active Shooters.

THIS PAGE INTENTIONALLY LEFT BLANK

TABLE OF CONTENTS

I. INTRODUCTION 1
- **A. BACKGROUND 1**
- **B. SCALE OF THE PROBLEM 2**
- **C. SCOPE 3**
- **D. RESEARCH QUESTIONS 4**

II. METHODOLOGY 7
- **A. CASE STUDY SELECTION 7**
- **B. CASE STUDY COMPARISON 9**
- **C. LITERATURE REVIEW SUMMARY 10**
  - **1. Prevention/Preemption and Mental Health Intervention 11**
  - **2. Tactical Intervention 14**
  - **3. Research Void: Victim Initiated Mitigation 15**
  - **4. Project Justification 17**

III. HYPOTHESES 19
- **A. HYPOTHESIS 1: PREVENTION/PREEMPTION OF THE ACTIVE SHOOTER ALONE IS INSUFFICIENT TO REDUCE THE *RATE OF KILL* 19**
- **B. HYPOTHESIS 2: LAW ENFORCEMENT INTERDICTION OF THE ACTIVE SHOOTER IS INSUFFICIENT TO REDUCE THE RK 30**
- **C. HYPOTHESIS 3: A VICTIM INITIATED MITIGATION SYSTEM WILL SUFFICIENTLY SYNCHRONIZE IMMEDIATE CONTROL MEASURES WITH A PRESCRIBED SET OF AUTOMATED AND STANDARDIZED RESPONSES IN ORDER TO REDUCE THE RK 37**

IV. CASE STUDIES 41
- **A. VIRGINIA TECH (BLACKSBURG, VA) 41**
  - **1. Virginia Tech Prior to the Incident 41**
  - **2. The Events of April 16, 2007 ..... 47**
    - ***a. West Ambler Johnston Hall 47***
    - ***b. Norris Hall 49***
  - **3. Analysis 53**
  - **4. Conclusion 65**
- **B. UNIVERSITY OF TEXAS (AUSTIN, TX) 67**
- **C. CALIFORNIA STATE UNIVERSITY (FULLERTON, CA) 75**
- **D. UNIVERSITY OF IOWA (IOWA CITY, IA) 77**
- **E. SIMON'S ROCK COLLEGE OF BARD (GREAT BARRINGTON, MA) 80**
- **F. SAN DIEGO STATE UNIVERSITY (SAN DIEGO, CA) 82**
- **G. APPALACHIAN SCHOOL OF LAW (GRUNDY, VA) 84**
- **H. UNIVERSITY OF ARIZONA (TUCSON, AZ) 85**
- **I. DUQUESNE UNIVERSITY (PITTSBURGH, PA) 87**

J. LOUISIANA TECHNICAL COLLEGE (BATON ROUGE, LA) 89
K. NORTHERN ILLINOIS UNIVERSITY (DEKALB, IL) 91
L. UNIVERSITY OF CENTRAL ARKANSAS (CONWAY, AR) 93
M. THE UNIVERSITY OF ALABAMA (HUNTSVILLE, AL) 94
N. OHIO STATE UNIVERSITY (COLUMBUS, OH) 95

V. ANALYSIS 99
A. CASE STUDY COMPARISON 99
1. Ordinal Value Explanation 99
2. Vulnerability Ratings 109
3. Case Study Comparative Analysis 114
4. Cost Analysis 124

VI. RECOMMENDATIONS AND CONCLUSION 129
A. THE HOLISTIC APPROACH 129
1. Prevention and Preemption 130
2. Mental Health Screening and Treatment 131
3. Law Enforcement Response 131
4. Victim Actions 132
B. STANDARDIZATION OF ACTIVE SHOOTER RESPONSE 134
1. Victim Initiated Mitigation 134
a. System Components 134
b. System Concept Flow 135
c. System Upgrades 139
2. Scalable System and Priority of Install 141
3. Standard Operations for Automated Response (S.O.A.R.) 142
a. Level 1: Prevention and Preemption Measures 143
b. Level 2: Law Enforcement Readiness 143
c. Level 3: Victim Initiated Mitigation 143
4. Safe School Rating 144
C. DETERRENT EFFECT 146
D. CONCLUSION 150

APPENDIX A. LETHALITY RATING 153
A. LETHALITY RATING OF SELECTED CASE STUDIES 153
1. Lethality General Incident Information Worksheet 153
2. Lethality Incident Effects Worksheet 155
3. Lethality Rating Chart 156

APPENDIX B. VULNERABILITY RATING 157
A. INITIAL VULNERABILITY RATING (IVR) WORKSHEET 157
B. PREDICTED VULNERABILITY RATING (PVR) WORKSHEET 158
C. CASE STUDY VULNERABILITY COMPARISON 159
1. Virginia Tech University 159
2. Northern Illinois University 160
3. Louisiana Technical College 161
4. California State Fullerton 162
5. University of Iowa 163

6. Simon's Rock College of Bard 164
7. San Diego State University 165
8. Appalachian School of Law 166
9. University of Arizona 167
10. Duquesne University 168
11. University of Central Arkansas 169
12. University of Alabama, Huntsville 170
13. Ohio State University 171
14. University of Texas, Austin 172

APPENDIX C. PROFILE OF AN ACTIVE SHOOTER 173
A. SEUNG HUI CHO 173
B. ANDERS BEHRING BREIVIK 178
1. Background and Lead Up to the Attack on Norway 179
C. BILL PHILLIPS 183
D. AMY BISHOP 184
E. OMAR THORNTON 185
F. SULEJMAN TALOVIC 186
G. ROBERT A. HAWKINS 187
H. JAMES VON BRUNN 188
I. JARED LEE LAUGHNER 189
J. NIDAL HASAN 190

APPENDIX D. OSLO AND UTOYA ISLAND, NORWAY 195
A. ACKNOWLEDGEMENTS 195
B. INTRODUCTION 196
C. NORWEGIAN POLICE ORGANIZATIONAL DESIGN 197
D. BACKGROUND AND LEAD UP TO THE ATTACK ON NORWAY 206
1. Law Enforcement Preparation 206
2. Shooter Preparation 207
E. THE ATTACK 211
1. Oslo Bombing 211
2. Utoya Island Shooting 215
a. Terrorist Actions 216
b. Emergency Response 221
F. NORWEGIAN POLICE AFTER ACTION ANALYSIS 228
G. RECOMMENDATIONS 230
H. CONCLUSION 233

APPENDIX E. VIRGINIA TECH SUPPORTING FACTS 235
A. INCIDENT TIMELINE 235
B. MESSAGES ISSUED BY VIRGINIA TECH 240

LIST OF REFERENCES 241

INITIAL DISTRIBUTION LIST 249

THIS PAGE INTENTIONALLY LEFT BLANK

LIST OF FIGURES

Figure 1. Active Shooter Relevance Chart, Depicting Relevance of the Active Shooter Problem and Exportability of the Solution to All High Occupancy Facilities 4
Figure 2. Lethality Rating Chart Depicting Relative Incident Lethality Utilizing Utility Theory to Compare All Selected IHEs Meeting the Perimeters of the Refined Research Scope 9
Figure 3. Aerial View #1 of the Virginia Tech Campus highlighting Harper Hall (Cho's Dormitory), Norris Hall (Scene of the Mass Shooting) and West Ambler Johnston Hall (Scene of the Double Homicide). 42
Figure 4. Aerial View #2 of the Virginia Tech Campus highlighting Harper Hall (Cho's Dormitory), Norris Hall (Scene of the Mass Shooting) and West Ambler Johnston Hall (Scene of the Double Homicide). 43
Figure 5. Virginia Tech Emergency Reporting Guidance as of 2007 45
Figure 6. Front Entrance of West Ambler Johnston 48
Figure 7. One of the Main Entrances of Norris Hall 50
Figure 8. Norris Hall Classroom Windows on the Side of Professor Librescu's Classroom 53
Figure 9. Virginia Tech Abbreviated Emergency Alerting Procedure 54
Figure 10. Criminology Triangle (From [234]) 132
Figure 11. Victim Initiated Mitigation (VIM) System Concept Flow Demonstrating the Sequence of Events from Threat Identification through First Responder Response in Active Shooter Scenarios 138
Figure 12. Active Shooter Breakpoint Formula Demonstrating the Cost vs. Benefit Analysis Conducted by Potential Active Shooters Prior to Conducting an Act of Extreme Violence 147
Figure 13. Potential Active Shooter Breakpoint Formula Including Simulated Values for Breakpoint Variables 149
Figure 14. Manipulated Active Shooter Breakpoint Formula Including Adjusted Simulated Values for Breakpoint Variables 149
Figure 15. Lethality Rating Chart Depicting Relative Incident Lethality Utilizing Utility Theory to Compare All Selected IHEs Meeting the Perimeters of the Refined Research Scope 156
Figure 16. Virginia Tech University Vulnerability Comparison Charts 159
Figure 17. Northern Illinois University Vulnerability Comparison Charts 160
Figure 18. Louisiana Technical College Vulnerability Comparison Charts 161
Figure 19. California State Fullerton Vulnerability Comparison Charts 162
Figure 20. University of Iowa Vulnerability Comparison Charts 163
Figure 21. Simon's Rock College of Bard Vulnerability Comparison Charts 164
Figure 22. San Diego State University Vulnerability Comparison Charts 165
Figure 23. Appalachian School of Law Vulnerability Comparison Charts 166
Figure 24. University of Arizona Vulnerability Comparison Charts 167
Figure 25. Duquesne University Vulnerability Comparison Charts 168

Figure 26. University of Central Arkansas Vulnerability Comparison Charts 169
Figure 27. University of Alabama, Huntsville Vulnerability Comparison Charts.....170
Figure 28. Ohio State University Vulnerability Comparison Charts 171
Figure 29. University of Texas, Austin Vulnerability Comparison Charts.....172
Figure 30. Seung Hui Cho Pictured in the Manifesto Video he mailed to NBC News. .173
Figure 31. Anders Breivik (Oslo/Utoya Island, Norway Shooter).....178
Figure 32. Anders Breivik Shortly Before his Attack on Oslo and Utoya Island 180
Figure 33. Bill Phillips (Johnson Space Center Shooter).....184
Figure 34. Amy Bishop (University of Alabama–Huntsville Shooter).....185
Figure 35. Omar Thornton (Hartford Distributors Shooter).....186
Figure 36. Sulejman Talovic (Tolley Square Mall Shoooter).....187
Figure 37. Robert Hawkins (Westroads Mall Shooting).....188
Figure 38. James Von Brunn (Holocaust Memorial Museum Shooter).....189
Figure 39. Jared Lee Laughner (Rep. Gabrielle Gifford's Shooter) 190
Figure 40. Nadal Hasan (Ft. Hood Shooter).....191
Figure 41. Norway Police Organization.....200
Figure 42. Satellite Imagery Depicting Location of Oslo, Norway (Left), Satellite Imagery Depicting Location of Bombsite within the Oslo City Center. 211
Figure 43. Satellite Imagery Depicting The Distance And Geographical Relationship Between Oslo and Utoya Island (Left), Aerial Photo Utoya Island (Right). .215
Figure 44. Utoya Island Main Facilities, Numbered for Identification.....216
Figure 45. Location Where ABB Fired His First Shots and Killed the Initial Utoya Island Victims 218
Figure 46. Front Entrance to the Cafeteria Where ABB Entered and Killed Labor Party Children As They Clung to Each Other 219
Figure 47. Summary of Most Significant Casualty Locations Inflicted by ABB on Utoya Island. 221
Figure 48. Route Taken by DELTA Responders from the Oslo City Center to Utoya Island with Enroute and Emergency HLZs Identified 224

LIST OF TABLES

Table 1. Lethality Variable Comparison Table Used to Select IHEs to be Utilized As Case Studies....8

Table 2. Vulnerability Comparison Table Depicting the Categories of Comparison for Assignment of Vulnerability Ratings to Case Studies....10

Table 3. Law Enforcement Responsibilities for Response to Crisis Situations As Described by the "Guide for Preventing and Responding to School Violence," Written by the International Association of Chiefs of Police and the Bureau of Justice Assistance....32

Table 4. These Messages Were Issued to the Virginia Tech Community in Response to the Norris Hall Shooting by the Virginia Tech University Policy Group (From [140])....57

Table 5. Results from a Norris Hall Student Census for April 16, 2007 0905 Classes From [147])....60

Table 6. Results from the Norris Hall Faculty Census for April 16, 2007 (From [147])...60

Table 7. Key Security Recommendations as Prescribed by the Virginia Tech Review Panel in Regards to the Mass Shooting at Norris Hall....61

Table 8. Key Recommendations Describing Security Enhancement Suggestions As Prescribed by the Virginia Tech Review Panel Report to Governor Kaine....62

Table 9. Key Recommendations Describing Security Enhancement Suggestions As Prescribed by the Virginia Tech Review Panel Report to Governor Kaine....64

Table 10. Contents and Possessions of Charles J. Whitman as reported by Officer Ligon at time of Death....74

Table 11. Pre-Event Contributing Factors Depicting Assigned Ordinal Values Which Represent Each Variable's Contribution to IHE Vulnerability to Active Shooter Violence Based on Behavioral and Mental Health Histories of Each Active Shooter Represented in the Included Case Studies....101

Table 12. Pre-Event Contributing Factors Depicting Assigned Ordinal Values Which Represent Each Variable's Contribution to IHE Vulnerability to Active Shooter Violence Based on Emergency Response Capability of Each University Represented in the included case studies....102

Table 13. Pre-Event Contributing Factors Depicting Assigned Ordinal Values Which Represent Each Variable's Contribution to IHE Vulnerability to Active Shooter Violence Based on University Environmental Factors During the Year of Attack of Each University Represented in the Included Case Studies....104

Table 14. Pre-Event Contributing Factors Depicting Assigned Ordinal Values Which Represent Each Variable's Contribution to IHE Vulnerability to Active Shooter Violence Based on University Environmental Factors During the Year of Attack of Each University Represented in the Included Case Studies....105

Table 15. Pre-Event Contributing Factors Depicting Assigned Ordinal Values Which Represent Each Variable's Contribution to IHE Vulnerability to Active Shooter Violence Based on University Facility Composition of Each University Represented in the Included Case Studies 107
Table 16. Event Contributing Factors Depicting Assigned Ordinal Values Which Represent Each Variable's Contribution to IHE Vulnerability to Active Shooter Violence Based on Victim Lethality, Ballistic Lethality, and Incident Lethality of Each University Represented in the Included Case Studies.....109
Table 17. University Initial Vulnerability Rating Depicting Assigned Vulnerability Ratings to Selected Case Study Universities Prior to the Active Shooter Incident 111
Table 18. University Predicted Vulnerability Rating Depicting Assigned Vulnerability Ratings to Selected Case Study Universities with Victim Initiated Mitigation System.....113
Table 19. Vulnerability Comparison Depicting Vulnerability Contrast Between Initial Vulnerability Ratings (IVRs) Of Case Study Universities and Predicated Vulnerability Ratings (PVRs) 115
Table 20. Cost Analyses for Each Case Study University.....128
Table 21. VIM System Levels of Protection.....141
Table 22. VIM System Priority of Installation 142
Table 23. Safe School Rating IAW S.O.A.R Evaluation Criteria Taken from Recommendation Made As Part of the Holistic Approach to Active Shooter Mitigation in IHEs.....145
Table 24. Lethality Rating Spreadsheet Depicting General Incident Information 154
Table 25. Lethality Rating depicting variables of Incident Effects and associated ordinal values assigned based on their propensity to contribute to Active Shooter incident lethality. 155
Table 26. University Initial Vulnerability Rating Depicting Assigned Vulnerability Ratings to Selected Case Study Universities Prior to the Active Shooter Incident. 157
Table 27. University Predicted Vulnerability Rating Depicting Assigned Vulnerability Ratings to Selected Case Study Universities with Victim Initiated Mitigation System.....158
Table 28. Active Shooter Profile Matrix depicting U.S. Department of Homeland Security personality analysis for Personal Interactions with Multiple Conditions in Multiple Situations for Active Shooters.....193
Table 29. Abbreviated Timeline of Events as Described by the Virginia Tech Review Panel Report.....240
Table 30. These Messages Were Issued to the Virginia Tech Community in Response to the Norris Hall Shooting by the Virginia Tech University Policy Group. 240

LIST OF ACRONYMS AND ABBREVIATIONS

"5 *C*'s"	***C***ontain, ***C***ontrol, ***C***ommunicate, ***C***all SWAT and ***C***reate an Immediate Action Plan.[1]
AA	Affected Area
AHCPR	Agency of Health Care Policy and Research
ALERRT	Advanced Law Enforcement Rapid Response Training
AP	Affected Personnel
CPTED	Crime Prevention through Environmental Design
DHS	Department of Homeland Security
ERT	Emergency Response Team
FBI	Federal Bureau of Investigation
HOF	High Occupancy Facilities
ICC	Incident Command Center
ID	Incident Duration
IHE	Institution of Higher Education
IVR	Initial Vulnerability Rating
NIMS	National Incident Management System
NORSOF	Norwegian Special Operations Forces
NTOA	National Tactical Officer's Association
PV	Potential Victim
PVR	Predicted Vulnerability Rating
RK	Rate of Kill
RT	Response Time
SIRAL	Shooter Initiated Response and Automated Lockdown
SOAR	Standard of Automated Response

[1] Texas State University, *Advanced Law Enforcement Rapid Response Training (ALERRT) Manual*, June 2007, 3.

TA	Target Area
TZ	Threat Zone
VIM	Victim Initiated Mitigation
VIRAL	Victim Initiated Response and Automated Lockdown

DEFINITIONS

"5 *C*'s"	Basic principles that dictate actions by the first responders specifically related to an Active Shooter incident. The "5 *C*'s" refer to the principals of ***C***ontain, ***C***ontrol, ***C***ommunicate, ***C***all SWAT and ***C***ome up with a plan.[2]
Active Shooter	An individual actively engaged in killing or attempting to kill people in a confined populated area typically using firearms.[3]
Affected Area (AA)	Tertiary space defined by the Active Shooter's capability to cause harm outside of the Threat Zone.[4]
Affected Personnel (AP)	All personnel within the Affected Area.[5]
Conditional Threat	Is the type of threat often seen in extortion cases. It warns that a violent act will happen unless certain demands or terms are met.[6]
Direct Threat	Identifies a specific act against a specific target and is delivered in a straightforward, clear, and explicit manner.[7]
Emergency Response Team (ERT)	Emergency Response personnel capable of responding to the Active Shooter incident consisting but not limited to, HOF Security, Police, SWAT, Fire, Rescue, and other specially designated response assets.

[2] Texas State University, *Advanced Law Enforcement Rapid Response Training (ALERRT) Manual*, 3.

[3] Department of Homeland Security, *Active Shooter: How to Respond*," October 2008, 7.

[4] Sean K. Hubbard and Charles E. Ergenbright, "Defeating the Active Shooter: Applying Technology to Reduce the Capability of Armed Shooters in High Occupancy Facilities" (master's thesis draft proposal, Naval Postgraduate School, 2011), 5.

[5] Hubbard and Ergenbright, "Defeating the Active Shooter: Applying Technology to Reduce the Capability of Armed Shooters in High Occupancy Facilities," 5.

[6] Department of Justice, Federal Bureau of Investigation, *The School Shooter: A Threat Assessment Perspective*, Quantico, VA: FBI Academy, 7.

[7] Department of Justice, Federal Bureau of Investigation, *The School Shooter: A Threat Assessment Perspective*, 7.

High Level of Threat	A threat that appears to pose an imminent and serious danger to the safety of others.[8]
High Occupancy Facilities (HOF)	A public or private facility containing 100 or greater occupants or supporting a daily patron throughput of 100 or greater.[9]
IHE Campus / Facility	IHE grounds, parking lots, buildings (e.g., classroom buildings, dining halls, student unions, research centers, dormitories, fraternity/sorority houses, other university-sponsored student housing), and built venues (e.g., stadiums) that are owned, leased, operated, or reserved by the IHE for permanent or temporary use.[10]
IHE Employee	Member of an IHE's faculty, staff (e.g., mental health counselors, building maintenance personnel, campus law enforcement, financial aid counselors, medical personnel), or administration (e.g., dean, president, provost, vice president), an IHE contractor, or an individual employed by an IHE contractor.[11]
IHE Event	IHE sporting, ceremonial (e.g., graduation, award dinners), entertainment, and educational activities (e.g., student government meetings) sponsored or sanctioned by the IHE or an association affiliated with the IHE.[12]

[8] Department of Justice, Federal Bureau of Investigation, *The School Shooter: A Threat Assessment Perspective*, 9.

[9] Hubbard and Ergenbright, "Defeating the Active Shooter: Applying Technology to Reduce the Capability of Armed Shooters in High Occupancy Facilities," 5.

[10] Diana A. Drysdale, William Modzeleski and Andre B. Simons, *Campus Attacks: Targeted Violence Affecting Institutions of Higher Education*, U.S. Secret Service, U.S. Department of Homeland Security, Office of Safe and Drug-Free Schools, U.S. Department of Education, and Federal Bureau of Investigation, U.S. Department of Justice, Washington, DC, 2010, 16.

[11] Drysdale, Modzeleski and Simons, *Campus Attacks: Targeted Violence Affecting Institutions of Higher Education*, 16.

[12] Drysdale, Modzeleski and Simons, *Campus Attacks: Targeted Violence Affecting Institutions of Higher Education*, 16.

IHE Student	Individual enrolled in a college or university (e.g., undergraduate, graduate, full- and part-time). The student may still be enrolled at the IHE even though he or she is not registered for classes at the time of the incident.[13]
Incident Command Center (ICC)	A manned Communication and Control (C2) Center.
Incident Duration (ID)	Elapsed time from Active Shooter's first shot fired to threat mitigation.
Indirect Threat	Tends to be vague, unclear, and ambiguous. The plan, the intended victim, the motivation, and other aspects of the threat are masked or equivocal.[14]
Institution of Higher Education (IHE)	A postsecondary Title IV degree or non-degree granting institution[15]
Kill Ratio	The *Kill Ratio (KR)* has been defined in this project as the Law Enforcement *Response Time (RT)* compared to the Active Shooter *Incident Duration (ID)*.
Low Level of Threat	A threat that poses a minimal risk to the victim and public safety.[16]
Medium Level of Threat	A threat that could be carried out, although it may not appear entirely realistic.[17]

[13] Drysdale, Modzeleski and Simons, *Campus Attacks: Targeted Violence Affecting Institutions of Higher Education*, 16.

[14] Department of Justice, Federal Bureau of Investigation, *The School Shooter: A Threat Assessment Perspective*, 7.

[15] Drysdale, Modzeleski, and Simons, *Campus Attacks: Targeted Violence Affecting Institutions of Higher Education*, 5.

[16] Department of Justice, Federal Bureau of Investigation, *The School Shooter: A Threat Assessment Perspective*, 8.

[17] Department of Justice, Federal Bureau of Investigation, *The School Shooter: A Threat Assessment Perspective*, 9.

Potential Victim (PV)	Personnel within the Target Area or Threat Zone who have not been injured or killed.[18]
Rate of Kill (RT)	Rate at which victims are killed by an Active Shooter during a given incident.
Response Time (RT)	Elapsed time from Active Shooter's first shot fired to when first responders are capable of mitigating the threat.
Target Area (TA)	Primary space defined by the range of the Active Shooter's capability to injure or kill.[19]
Targeted Violence	Any incident of violence where a known or knowable attacker selects a particular target prior to their violent attack.[20]
Threat Zone (TZ)	Secondary space defined by the Active Shooter's capability to relocate in order to injure or kill.[21]
Veiled Threat	One that strongly implies but does not explicitly threaten violence and clearly hints at a possible violent act, but leaves it to the potential victim to interpret the message and give a definite meaning to the threat.[22]

[18] Hubbard and Ergenbright, "Defeating the Active Shooter: Applying Technology to Reduce the Capability of Armed Shooters in High Occupancy Facilities," 5.

[19] Hubbard and Ergenbright, "Defeating the Active Shooter: Applying Technology to Reduce the Capability of Armed Shooters in High Occupancy Facilities," 5.

[20] United States Secret Service, United States Department of Education, *The Final Report and Findings of the Safe School Initiative: Implications for the Prevention of School Attacks in the United States*, May 2002, 4.

[21] Hubbard and Ergenbright, "Defeating the Active Shooter: Applying Technology to Reduce the Capability of Armed Shooters in High Occupancy Facilities," 5.

[22] Department of Justice, Federal Bureau of Investigation, *The School Shooter: A Threat Assessment Perspective*, 7.

Victim Initiated Mitigation (VIM)	A mechanism by which a victim or potential victim can initiate a combination of immediate mechanical lockdown responses accompanied with a standardized emergency response resulting in the containment and control of Target Areas and Threat Zones, as well as activation of a standardized Emergency Action Plan.[23]
Victim	Personnel within the Target Area who have been injured or killed.[24]

[23] Hubbard and Ergenbright, "Defeating the Active Shooter: Applying Technology to Reduce the Capability of Armed Shooters in High Occupancy Facilities," 5.

[24] Hubbard and Ergenbright, "Defeating the Active Shooter: Applying Technology to Reduce the Capability of Armed Shooters in High Occupancy Facilities," 5.

THIS PAGE INTENTIONALLY LEFT BLANK

ACKNOWLEDGMENTS

We are grateful for the opportunity to study under esteemed professors who not only fostered an educational environment conducive to new ideas, but also encouraged innovation and intellectual diversity. Without such an environment, this atypical thesis would not have been supported by the Defense Analysis Department. Upon first approach and throughout our thesis research and processing we have been superbly supported. As a result, the assistance we received during our thesis research was extensive and our acknowledgments for this assistance will be lengthy.

To our Advisors, Doowan Lee, Raymond Buettner and Mike Richardson; thank you for your encouragement, guidance and direction during this process. To Terry Nichols and Pete Blair at the Advanced Law Enforcement Rapid Response Training center, thank you for your hospitality, and guidance. The wisdom and insight we were able to gain through our interactions with you and your instructors provided us a Law Enforcement perspective and understanding that we would have never gained without you. To Deputy Chief Shane Gardner and Emergency Management Officer, Dave Yeager, at the Naval Postgraduate School Police Department; thank you for the access you gave us to your officers and the ability to embed in your daily operations, train your officers in Active Shooter response, and observe your Active Shooter response practical exercise. Without this ability, we would have never been able to fully appreciate the responsibilities and limitations presented in securing an Institution of Higher Education. To Sergeant Louis Rapoli and Sergeant Ray McPartland from the New York Police Department School Safety Division Counterterrorism Unit, the information you imparted to us from your extensive review of contemporary Active Shooter incidents proved to be invaluable. To Steve Ramirez from the Texas State Center for Safe Schools, thank you for your review of our proposed recommendations and for your input concerning standardized response.

During the course of our thesis research, we were afforded the opportunity to brief our concept for Active Shooter Mitigation to many different organizations and influential individuals who provided instrumental guidance and feedback regarding this thesis. After

gaining approval from the Defense Analysis department to pursue this topic, we briefed our Active Shooter mitigation methodology to the Monterey Police Department Assistant Chief, Michael Aspland who, despite his harsh criticism and critical feedback, allowed us to integrate with his officers and conduct police ride-alongs in order to gain further perspective on daily officer challenges. Additionally, we would like to thank Michele Malvesti (Vice President for Special Programs Intelligence, Surveillance, and Reconnaissance Group) for listening to our concept brief and for your feedback and referral to Jeff Stern (Homeland Security Studies and Analysis Institute (HSI)). The feedback gained from our initial conference call and subsequent concept briefing conducted at the HSI office in Arlington, VA was extremely helpful in determining current threat mitigation capabilities in High Occupancy Facilities. Furthermore, we would like to thank CSM Dan Hendrex, CSM(R) Joe Vega, CSM(R) Jim Vega, DHS representative Bob Webber and other members of the Asymmetric Warfare Group (AWG) for your feedback, guidance and support for our Active Shooter Mitigation concept. We are especially grateful for AWG support of our research effort in Oslo, Norway and for assembling a research team with the necessary capabilities to support our case study research in this area. We are also appreciative of the opinions and feedback gained from numerous briefings given to many various professors and departments within the Naval Postgraduate School.

As part of our case study research, we were able to travel to Oslo, Norway in order to gain firsthand knowledge of the contemporary Active Shooter incident that occurred on July 22, 2011. We would like to express our sincere appreciation to Anders Snortheimsmoen (Politiinspektør/Avsnittssjef, Oslo politidistrikt- Beredskapstroppen) and Torgrim Solberg (Police Superintendent/Deputy Commander, Norwegian Counter Terrorist Unit) for allowing us access to your department and the ability to conduct interviews, which were extremely helpful in gaining an accurate estimate of the events that occurred in Oslo and on Utoya Island. However, these events would not have been made possible without the continued support of LTC Knut Simen Skaret of NORSOCOM who consistently ensured that our case study research in Norway was sufficiently supported.

Additionally, to the numerous SWAT, patrol, local, and federal officers whom we have had the distinct privilege of meeting and interacting with throughout the conduct of our field research; thank you for your insight and wisdom gained through many cumulative years of faithful and honorable public service. We would also like to thank John Giduck, author of *Shooter Down: The Dramatic, Untold Story of the Police Response to the Virginia Tech Massacre*, and Don Alwes, Lead Instructor for the National Tactical Officer's Association (NTOA) for their extensive review and critique of our initial data and concept for Active Shooter mitigation included in our thesis proposal. Finally, to the victims, their families, friends and associates; please accept our most sincere condolences for the loss of your loved ones. We hope in some way, the research and recommendations contained in this thesis can honor them by providing a practical solution for mitigating the effects of future Active Shooters.

As part of our case study research regarding the Oslo bombing and attack on Utoya Island which occurred on July 22, 2011 in Norway, we requested access to the responding officers and personnel affiliated with the emergency response in order to accurately portray the events of this incident and make useful recommendations for how to mitigate future similar attacks. The response and cooperation we received from our newfound Norwegian friends and counterparts was not only impressive, but humbling as well and deserves special acknowledgment. This research was initially facilitated by the Norwegian Special Operations Forces (NORSOF) located in Oslo, Norway. LTC Knut Simen Skaret, NORSOF LNO, at the NORSOF and NORSOCOM Headquarters facilitated many aspects of this research trip, as well as introduced us to the Commander and Deputy Commander of the Norwegian Counter-Terror Unit (DELTA) that is the primary unit responsible for the emergency response to the events of July 22, 2011. LTC Skaret's unrelenting support of this trip was crucial to the overall success of this research. Additionally the welcome and informal meeting with the NORSOCOM Commander, BG Geratru was another wonderful demonstration of support and hospitality that we greatly appreciated.

To the Commander of the Norwegian Counter-Terror Unit (DELTA), Anders Snortheimsmoen, his Deputy Commander, Assault Team Leaders and the brave men

which comprise DELTA; we have never met a more professional and organized unit. Your openness and candor in support of our research was truly humbling and we are extremely grateful. Your unit's high esprit décor is direct reflection of its impeccable competence and professionalism. In order to facilitate our research we were afforded access to and conducted interviews with the Commander of the Joint Operation Center, Joint Operational Section Superintendent, as well as dispatch personnel from the Joint Operational Center, Tactical Flight Officer from the Police Helicopter Service, Police Superintendent for the Norwegian Bomb Squad, Lead Instructor for Counter Terror Unit Training, and On Scene Commander for the response to the Oslo bombing. Additionally, we were granted access to the Oslo courthouse in order to witness testimony of the shooter, Anders Behring Breivik. Finally, our research was further supported with a guided tour of Utoya Island given by the DELTA Deputy Commander and one other DELTA officer. This level of support was unparallel and has no equal to anything we have ever experienced in the past. Lastly, we would be remiss without acknowledging the support we have received from the Asymmetric Warfare Group, specifically CSM Dan Hendrex and COL(P) Robert Karmazin. Thank you for your support and friendship.

I. INTRODUCTION

A. BACKGROUND

At 7:15 on a snowy April morning, a lone gunman entered West Ambler Johnston Dormitory, proceeded to Room 4040, and killed two students. Two hours and 25 minutes later, the same gunman, armed with two semi-automatic pistols entered Norris Hall and fired 174 rounds killing 33 and seriously injuring 17 students and faculty members in a terrifying 11-minute rampage spanning five classrooms. Although 14 campus security officers are on duty at the time of the incident, and the local police department, consisting of 56 officers, was located 0.7 miles from the incident, authorities were helpless to interdict the shooter for the entire duration of the incident that lasted two hours and 36 minutes. As the gunman continues to hunt and fire upon new victims throughout the halls and classrooms of Norris Hall, students and faculty had no means to stop the massacre. This terrifying event only ended when the gunman finally turned one of his weapons on himself and committed suicide.

Tragically, the above summary of events is not a fictional account. The gunman described was Seung Hui Cho, the university depicted is Virginia Tech, and the 33 dead and 17 injured students and faculty constitute the unfortunate reality of the deadliest school shooting in American history. Equally as alarming as this account, is the fact that this is not a singular instance but rather one instance in a series of preventable tragedies of this magnitude. In fact, instances of targeted violence in American Institutions of Higher Education (IHE's) are a growing phenomenon.[25] While this violent trend has experienced a sharp increase in recent years, there has been no introduction of new technology or tactics capable of mitigating the effects of an Active Shooter, such as Cho. These effects are devastating and threaten every student in America. Although this issue has received much greater attention from Law Enforcement and educational authorities, the primary focus of Active Shooter mitigation in American IHEs has been on improvements regarding preemptive mental health capabilities, alerting infrastructure and

[25] Drysdale, Modzeleski, and Simons, *Campus Attacks: Targeted Violence Affecting Institutions of Higher Education*, Table 3.

procedures, and Law Enforcement force structure and tactics. The intent of this project is not to take away from any of these valuable and necessary improvements to IHE prevention and response security measures. Instead, the primary contention of this research is that although these improvements may afford the IHE considerable gains in general security and alerting efficiency, none of these improvements are likely to be effective at mitigating the effects of an Active Shooter. Furthermore, this research indicates that the only effective means of reducing the effects of an Active Shooter is with implementation of a Victim Initiated Mitigation (VIM) system accompanied by a prescribed set of automated and standardized responses.

B. SCALE OF THE PROBLEM

Since 1909, there have been 272 acts of targeted violence on 218 different college and university campuses throughout the U.S. These incidents resulted in 279 deaths, 245 injuries, as well as millions of dollars in civil service expenditures.[26] With over 6,500 postsecondary Title IV Institutions of Higher Education (IHEs) in the United States; a total of over 17.8 million students and 3.6 million staff, faculty, and visitors are at risk of becoming potential Active Shooter victims.[27] The average duration of an Active Shooter incident in U.S. IHEs is 12.5 minutes. In contrast, the average response time of campus and local law enforcement to each of these incidents was 18 minutes. [28] In the majority of Active Shooter incidents affecting U.S. IHEs, the emergency *Response Time* greatly exceeded the *Incident Duration* affording law enforcement authorities no opportunity to interdict the shooter or prevent further deaths or injuries sustained by university students, staff and faculty. This stark contrast between response requirements and response capability produces a considerable amount of dead, injured or potential victims and provides the unfortunate motivation for this project. The primary focus of this project is

---

[26] Drysdale, Modzeleski, and Simons, *Campus Attacks: Targeted Violence Affecting Institutions of Higher Education*.

[27] Thomas D. Snyder, Sally A. Dillow, and Charlene M. Hoffman, "Digest of Education Statistics 2008," (NCES 2009-020), *Washington, DC: National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education*, March 2009, http://nces.ed.gov.

[28] Drysdale, Modzeleski, and Simons, *Campus Attacks: Targeted Violence Affecting Institutions of Higher Education*, Table 6.

aimed at reducing the *Kill Ratio* of Active Shooter incidents in U.S. IHEs. The *Kill Ratio (KR)* has been defined in this project as the Law Enforcement *Response Time (RT)* compared to the Active Shooter *Incident Duration (ID).*

C. SCOPE

The Active Shooter threat is a potential danger to all who occupy IHEs and HOFs both domestically and internationally. In order to formulate any reasonable recommendations based on commonalities identified through detailed analysis of factors pertaining to Active Shooter incidents, the scope of this research must be focused. First, the scope of research was restricted to Active Shooter incidents occurring in U.S. IHEs only. IHEs were selected as the refined scope environment because the majority of compiled data and the greatest number of single incident fatalities in reference to Active Shooter incidents pertain to incidents that have occurred in educational institutions. Additionally, this project's research scope was confined to IHEs in order to incorporate the full spectrum of variables for Active Shooter incidents and to collect data that is representative and relevant to the widest variety of building types and institutions with varied and complex facility blueprints, as well as different campus configurations. The purpose for limiting the research scope of this project to only U.S. IHEs was to standardize as many environmental variables as possible. This standardization is accomplished within U.S. IHEs through fire code compliance, building code compliance, and common language. In an effort to achieve the end state of this research, which is to present a feasible solution capable of reducing the *Rate of Kill* of an Active Shooter incident, the research scope was again refined to only lethal Active Shooter incidents in IHEs. In an effort to separate instances that represent the Active Shooter problem from accidental and common criminal shootings occurring in IHEs, the research scope was again limited to Active Shooter incidents occurring in U.S. IHEs resulting in two or more fatalities. This final narrowing of the research scope resulted in identification of 14 IHEs that met the initial selection criteria.

Although this refined research scope is used to limit the conceptual scope of this project to U.S. IHEs, the Active Shooter threat exists in environments other than strictly

university campuses and IHEs to include any High Occupancy Facility. Therefore, the application of the proposed Victim Initiated Mitigation (VIM) system may be highly exportable and capable of achieving the same effects in a myriad of facilities and environments. As a result, this project will routinely compare events and findings associated with IHEs to High Occupancy Facilities (HOFs) in order to demonstrate the exportability of this concept.

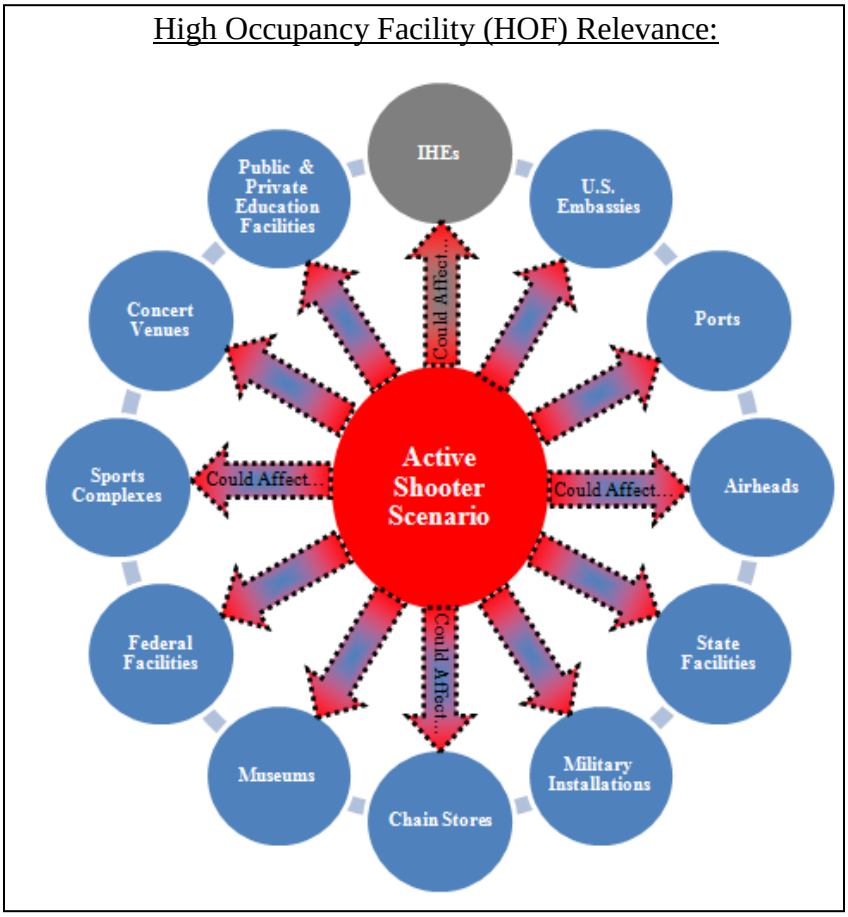


Figure 1. Active Shooter Relevance Chart, Depicting Relevance of the Active Shooter Problem and Exportability of the Solution to All High Occupancy Facilities

D. RESEARCH QUESTIONS

In consideration of the significance and scope of Active Shooter mitigation requirements, we propose the following research question:

- Can a victim-initiated system accompanied by a prescribed set of automated and standardized responses reduce the *Rate of Kill* of an Active Shooter?

Current control measures for Active Shooters are not sufficient to reduce the *Rate of Kill*, nor have they proved any more useful in improving the *Response Time* of local Law Enforcement. With those two factors remaining relatively constant over time, despite implementation of improved control measures at university campuses; the Active Shooter *Incident Duration* has remained virtually unaffected. Therefore, if the *Incident Duration* remains unaffected, and the *Response Time* remains greater than the incident itself, it is reasonable to infer that the only current variables capable of affecting the *Rate of Kill* are the motivations and capabilities of the Active Shooter. As a result, current security measures must be augmented or reinforced in some new way in order to decrease *Response Time* and *Incident Duration* of Active Shooter scenarios in order to provide an appropriate level of security for students, faculty and staff in American colleges and universities. This project proposes an augmentation to the current Active Shooter response Standard Operating Procedures involving facility upgrades sufficient to meet the changing security requirements of U.S. IHEs.

THIS PAGE INTENTIONALLY LEFT BLANK

II. METHODOLOGY

This project will examine historical examples of Active Shooter scenarios in Institutions of Higher Education (IHEs) in order to identify common variables and contributing factors that either increased or decreased the *Rate of Kill* in each of the selected case studies. To conduct this comparison, historical case studies representing the full spectrum of variables and contributing factors were selected. Once selected, all case studies were examined individually, as well as compared to each other in order to determine variable similarity and relative effect on the *Rate of Kill*.

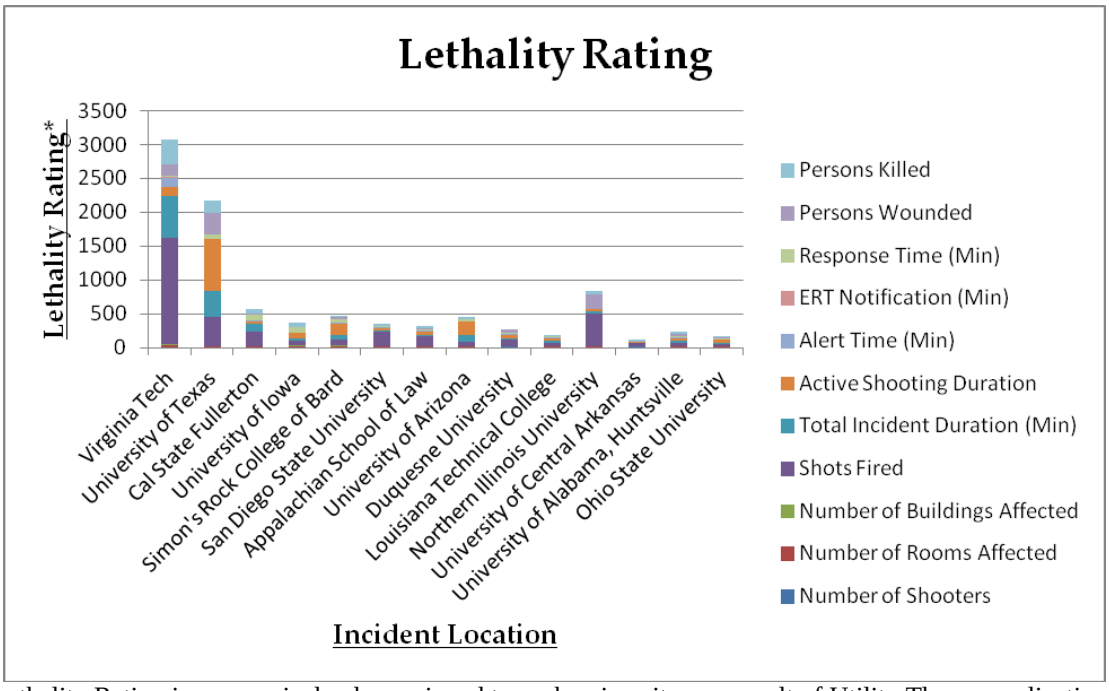
A. CASE STUDY SELECTION

Case study selection was a four-phase process. First, the scope of research was refined to Active Shooter incidents occurring in U.S. IHEs resulting in two or more fatalities. The second phase of case study selection consisted of variable identification. As the result of an exhaustive literature review of Active Shooter incidents occurring in U.S. IHEs, no list of common variables or credible comparison with relevance to affecting the *Rate of Kill* for lethal Active Shooter incidents occurring in IHEs was found. Therefore, we identified and selected variables that directly contributed to fatalities in all of the case studies within the refined research scope. The third phase of case study selection included data entry and application of utility theory in order to assign lethality ratings to each of the selected case studies. In the fourth phase of case study selection all case studies meeting the parameters outlined in our refined research scope were compared and ranked from least lethal to most lethal. As a result, case studies were selected based on the relative "lethality" of each incident. The question driving this comparative research is, "what makes one Active Shooter incident more lethal than another?" In an effort to answer this question, the initial list of 11 Lethality Comparison Variables listed in Table 2 were determined by extracting influential variables from the *Report of the Review Panel presented to Governor Kaine of the Commonwealth of Virginia in August of 2007 regarding the Mass Shootings at Virginia Tech*. Additionally, through the application of Utility Theory, weighted or ordinal values were also assigned

to these variables based initially on the authors' professional experiences gained through a combined 31 years of military service, 14 years of Army Special Forces tactical experience, and conduct of numerous Threat Vulnerability Assessments on Forward Operating Bases, foreign military installations, and U.S. embassies. These variables were then validated at the 2011 ALERRT Active Shooter Conference in San Marcos, Texas. These variables are listed in order of their relative effect on the lethality of each incident (11 = Highest, 1 = Lowest). Based on the lethality comparison and resulting "Lethality Rating," Virginia Tech was selected as our baseline case study.

Initial Lethality Comparison Variables	
Variable	**Ordinal Value**
Number of Persons Killed	11
Number of Persons Injured	10
Number of Shots Fired	9
Active Shooting Duration (Min)	8
Number of Rooms Affected	7
Number of Buildings Affected	6
Number of Shooters Affected	5
Incident Duration (Min)	4
Response Time (Min)	3
Alert Time (Min)	2
Emergency Response Team Notification (Min)	1

Table 1. Lethality Variable Comparison Table Used to Select IHEs to be Utilized As Case Studies



*Lethality Rating is a numerical value assigned to each university as a result of Utility Theory application.

Figure 2. Lethality Rating Chart Depicting Relative Incident Lethality Utilizing Utility Theory to Compare All Selected IHEs Meeting the Perimeters of the Refined Research Scope.

B. CASE STUDY COMPARISON

The selected case studies were compared in a three-phased analysis utilizing Utility Theory in order to identify the relative vulnerability of each case study. First, a comprehensive list of variables that contribute to the vulnerability of IHEs to Active Shooter incidents was developed, weighted and validated in the same manner as the lethality variables. Second, these variables were assessed through the application of Utility Theory to all selected case studies in order to gain an accurate perspective and assign an *Initial Vulnerability Rating* of each IHE prior to the incident. Finally, these variables were again assessed in each case study through the application of Utility Theory in order to reflect potential vulnerability incorporating the proposed facility upgrades and automated response included in the recommended Victim Initiated Mitigation system and assign a *Predicted Vulnerability Rating*. The variable categories for this comparison were divided into categories and include:

Vulnerability Variable Comparison			
Variable	**Ordinal Value**	**Variable**	**Ordinal Value**
Communicated Threat	TBD	Number of Persons Killed	TBD
Physically Aggressive Acts	TBD	Number of Persons Injured	TBD
Alarming Behavior	TBD	Number of Shots Fired	TBD
Mental Illness/DSM Diagnosis/Medications	TBD	Active Shooting Duration (Min)	TBD
Drug Abuse	TBD	Number of Rooms Affected	TBD
Number of Shooters	TBD	Number of Buildings Affected	TBD
Shooter Demographics	TBD	Number of Shooters Affected	TBD
Campus Demographics	TBD	Incident Duration (Min)	TBD
Campus Police Emergency Response Capability	TBD	Response Time (Min)	TBD
Local Law Enforcement Emergency Response Capability	TBD	Alert Time (Min)	TBD
University Violent Crime Rates	TBD	Emergency Response Team Notification (Min)	TBD
Local Violent Crime Rates	TBD		
University Security Level	TBD		

Table 2. Vulnerability Comparison Table Depicting the Categories of Comparison for Assignment of Vulnerability Ratings to Case Studies

The goal for this comparative research is to identify variables that directly affect the Rate of Kill of Active Shooter incidents and to highlight a feasible solution capable of enhancing or reducing those variables. Additionally, the IHEs and HOFs included as case studies for this project will be used to represent the full spectrum of data needed to accurately analyze the proposed hypotheses of this project and make meaningful recommendations. In order to accomplish this, the unfortunate stories of each of these incidents need to be told and analyzed. In the process, hard questions will be asked and uncomfortable realities may be revealed. However, the intent of this project and the research that supports it is only to prevent or reduce similar future incidents and is collected and presented with somber remembrance of the victims of each incident. In no way do we intend to defame, discredit, or assign blame to anyone involved in these incidents.

C. LITERATURE REVIEW SUMMARY

A wide separation of thought exists concerning mitigation of the Active Shooter. The principle proponents of thought relating to Active Shooter mitigation include Law

Enforcement agencies and organizations, the FBI, the Department of Homeland Security, the U.S. Secret Service and finally, the Department of Education and the Department of Justice. Each agency has its own methodology for mitigating Active Shooters in IHEs and HOFs and, as a result, three primary positions emerge.

1. Prevention/Preemption and Mental Health Intervention

The U.S. governmental proponents of prevention/preemption and mental health focused intervention for Active Shooter mitigation are the U.S. Department of Education, U.S. Department of Justice, U.S. Secret Service, and the Federal Bureau of Investigation. The U.S. Department of Education's support of a preventative and preemptive strategy with strong emphasis on mental health intervention as the most effective means of mitigating Active Shooters in IHEs is clearly stated in the *Action Guide for Emergency Management at Institutions of Higher Education*.[29] The recommendations made by the Department of Education in this Action Guide are further supported by the National Institute for Mental Health, U.S. Department of Health and Human Services, U.S. Department of Defense, U.S. Department of Veterans Affairs, U.S. Department of Justice, and the American Red Cross in their report on *Evidence-Based Early Psychological Intervention for Victims/Survivors of Mass Violence.*[30] Accordingly, in response to the increasing threat of targeted violence in schools, the DOE designed their Emergency Action Plan in accordance with FEMA's four phases of emergency management; of which, phases one and two consist of prevention and preemption methods and mental health focused intervention.[31]

The U.S. Department of Education also worked closely with the U.S. Secret Service in order to establish a practical approach to Active Shooter mitigation in IHEs and this effort resulted in the *Safe Schools Initiative*. The preventative and preemptive focused threat mitigation objectives and recommendations of the *Safe Schools Initiative*

---

[29] U.S. Department of Education, Office of Safe and Drug-Free Schools, *Action Guide for Emergency Management at Institutions of Higher Education*.

[30] National Institute of Mental Health, *Mental Health and Mass Violence: Evidence-Based Early Psychological Intervention for Victims/Survivors of Mass Violence. A Workshop to Reach Consensus on Best Practices*, 8.

[31] *FEMA's State and Local Guide SLG 101: Guide for All-Hazards Emergency Operations Planning.*

are clearly articulated in the USSS publication entitled *The Final Report and Findings of the Safe School Initiative: Implications for the prevention of School Attacks in the United States*.[32] The basis for the USSS preemptive Active Shooter mitigation strategy is focused on disrupting the *Individual Violence Process* before intense feelings manifest into ideas of justified violence and violent action.[33] Both the USSS and the DOE posit that disruption of this process for potential Active Shooters in U.S. IHEs can be accomplished by identifying pre-attack behaviors and communications that could be detectable for future attacks. Much of the USSS literature regarding Active Shooter mitigation identifies incident prevention as the primary means by which the effects of an Active Shooter can be mitigated or avoided. This level of prevention is sought through profiling, detailed threat assessments and preparation aimed at reducing the response time of law enforcement.[34] This methodology is in keeping with the US Secret Service ability to protect dignitaries, but is very resource intensive.

The USSS developed three assessment approaches as methods of identifying these behaviors and disrupting the *Individual Violence Process* for potential Active Shooters in IHEs. These assessment approaches, consisting of profiling, guided professional judgment, and automated decision making, are clearly defined and analyzed for effectiveness and feasibility by the USSS and the DOE in the publication entitled *Evaluating Risk for Targeted Violence in Schools: Comparing Risk Assessment, Threat Assessment, and Other Approaches*.[35] Although preemptive measures, such as the ones outlined in the USSS' three assessment approaches have many potential benefits, the DOE, DOJ, as well as many other education and mental health organizations denounced some of these practices in their published action guide entitled *Early Warning, Timely*

---

[32] United States Secret Service, United States Department of Education, *The Final Report and Findings of the Safe School Initiative: Implications for the Prevention of School Attacks in the United States*, ii.

[33] Mayhugh, "Active Shooters: Behavior, Conditions, and Situations."

[34] Drysdale, Modzeleski, and Simons, *Campus Attacks: Targeted Violence Affecting Institutions of Higher Education*, 19–22.

[35] Reddy, "Evaluating Risk for Targeted Violence in Schools: Comparing Risk Assessment, Threat Assessment, and Other Approaches."

Response: A Guide to Safe Schools.[36] Further criticism of these practices regarding Active Shooter profile reliability is addressed by the USSS, DOE, and FBI in their collaborative publication entitled *Campus Attacks: Targeted Violence Affecting Institutions of Higher Education*.

Despite the many advantages afforded by a properly implemented and resourced prevention/preemption strategy and effective early intervention of Active Shooters through IHE mental health augmentations, many limitations also restrict this methodology. Some of the resource limitations encountered with implementation of a mental health focused preventative and preemptive strategy in IHEs are outlined by the Suicide Prevention Resource Center in their publication entitled, *Promoting Mental Health and Preventing Suicide in College and University Settings.*[37] Further limitations to such practices regarding civil liberties and Privacy Act considerations for students, staff and faculty members of IHEs is detailed by the Family Policy Compliance Office, a sub-committee of the DOE, in their guide entitled *Balancing Student Privacy and School Safety: A Guide to the Family Education Rights and Privacy Act for Colleges and Universities.*[38] As a result of these obstacles, and the lack of empirical research related to risk factors regarding targeted school violence, the USSS and DOE admit that a preventative and preemptive strategy supported by effective mental health capabilities will be difficult to implement or sustain as an effective means of early intervention of Active Shooters in IHEs.

The U.S. Department of Justice (DOJ) focuses its research in the mental health sector and maintain that the ability to identify or rehabilitate potential active shooters is the optimal method for mitigating or preventing the effects of an Active Shooter.[39] The DOJ, Federal Bureau of Investigation (FBI), Critical Incident Response Group (CIRG),

---

[36] Dwyer, Osher, and Warger, *Early Warning, Timely Response: A Guide to Safe Schools*, 7.

[37] Suicide Prevention Resource Center, *Promoting Mental Health and Preventing Suicide in College and University Settings*, 20.

[38] U.S. Department of Education, Family Policy Compliance Office, "Balancing Student Privacy and School Safety: A Guide to the Family Education Rights and Privacy Act for Colleges and Universities."

[39] Michael O. Leavit, Alberto R. Gonzales, and Margaret Spellings, "Report to the President: On Issues Raised by the Virginia Tech Tragedy," Department of Human Services, Department of Education, Department of Justice (June 2007): 10–16.

and the National Center for the Analysis of Violent Crime (NCAVC) also present a threat assessment model in their collaborative publication entitled *The School Shooter: A Threat Assessment Perspective*.[40] However, this recommendation is subject to criticism as well regarding the discrepancy between the total number of incident of targeted violence on U.S. IHEs and the low occurrence of issued threats prior to the incident. This criticism was addressed by the DOE, DHS, FBI, and Secret Service in their collaborative review entitled *Campus Attacks*: *Targeted Violence Affecting Institutions of Higher Education*.[41] The DOJ and FBI also further elaborate on the shortages and limitations of a mental health focused method of Active Shooter prevention/preemption that make many of the recommendations included in the preceding documents impractical.[42]

2. Tactical Intervention

The state and federal organizations and associations who assert that a tactical response is the most effective means of Active Shooter mitigation in IHEs include local Law Enforcement agencies, as well as police tactical organizations, such as the National Tactical Officer's Association (NTOA) and the North American S.W.A.T. Training Association (NASTA), and Active Shooter response training organizations, such as Advanced Law Enforcement Rapid Response Training (ALERRT). The argument for tactical intervention of Active Shooters in IHEs as the most effective form of mitigation is centered on the ability to impose the "5 C's": ***C**ontain, **C**ontrol, **C**ommunicate, **C**all SWAT and **C**reate an immediate action plan*.[43] This strategy is focused on maximizing the effectiveness of Law Enforcement and campus police in order to quickly interdict the active shooter. The need for this measure of tactical response was identified during the University of Texas Tower shooting in 1966 and Law Enforcement agencies have continually evolved and improved their tactics and Standard Operating Procedures to

---

[40] Department of Justice, Federal Bureau of Investigation, *The School Shooter: A Threat Assessment Perspective*, iii–7.

[41] Drysdale, Modzeleski, and Simons, *Campus Attacks: Targeted Violence Affecting Institutions of Higher Education*, 10.

[42] Department of Justice, Federal Bureau of Investigation, *The School Shooter: A Threat Assessment Perspective*, 6–26.

[43] Texas State University, *Advanced Law Enforcement Rapid Response Training (ALERRT) Manual*, 3.

meet the emerging Active Shooter threat ever since. Current tactical response standards and recommendations regarding tactical intervention of Active Shooters in IHEs were published by the International Association of Chiefs of Police and the Bureau of Justice Assistance, and the U.S. Department of Justice in their guide entitled *Guide for Preventing and Responding to School Violence*.[44]

However, disproportional preparation and preparedness for the Active Shooter threat versus other persistent threats in IHEs preclude this strategy from effectively reducing the *Rate of Kill* in Active Shooter scenarios. This discrepancy is highlighted in LTC(R) Dave Grossman's critique of IHE preparedness for Active Shooter threats as compared to fire prevention and mitigation measures currently implemented in IHEs in his article entitled *School Shooting Contingency Plans & Considerations.*[45] As a result, no current policy, alerting procedure, or active control measure has been able to assist Law Enforcement in the mitigation of the Active Shooter threat. Accordingly, the DOE places no emphasis on Law Enforcement tactical response and integration with campus police or SROs as part of a crisis response plan their publication entitled *Creating Safe and Drug-Free Schools: An Action Guide.*[46] Additionally, no current national standard exists for the hiring criteria or training requirements for campus law enforcement officers.[47] Further limitations of this strategy are also identified by the U.S. Department of Homeland Security and the Federal Emergency Management Agency in their guideline for the *National Incident Management System*.[48]

3. Research Void: Victim Initiated Mitigation

As a result of this comprehensive literature review, which considers the principle positions of every relevant U.S. authority regarding Active Shooter mitigation in IHEs, prevention/preemption and tactical intervention emerged as the two primary arguments

---

[44] Kramen, Massey, and Timm, *Guide for Preventing and Responding to School Violence*, 24.

[45] Grossman, "School Shooting Contingency Plans & Considerations."

[46] U.S. Department of Education, U.S. Department of Justice, "Creating Safe and Drug Free Schools: An Action Guide," September 1996, http://www.ed.gov.

[47] Bromley, "Policing Our Campuses: A National Review of Statutes," 7.

[48] Department of Homeland Security, *National Incident Management System*, 24.

for effective mitigation. However, the research void regarding Active Shooter mitigation in IHEs and HOFs identified by this project is the lack of a victim initiated means of Active Shooter mitigation. Although the U.S. Department of Homeland Security identifies the potential victim as the most influential factor for mitigation or defeat of an active shooter, they also call attention to the fact that victims and Potential Victims are the least prepared or capable first responders and only recommend victim action as a last resort.[49] DHS further outlines their recommendations for actions to be taken in the event of an active shooter incident in order to facilitate survivability in their guide entitled *Active Shooter: How to Respond*.[50] When compared to other persistent threats in U.S. IHEs, such as fire, although a similar argument could be made regarding the inability for victims and Potential Victims to respond as most are not qualified fire fighters, when President Truman convened the President's Conference on Fire Prevention; victim initiated response measures were identified as critical components to an effective threat mitigation plan.[51] The level of effectiveness experienced in IHEs regarding fire prevention and mitigation that reduced fire casualties from 10,000 annually in IHES and HOFs prior to 1946 to zero after 1958 was articulated by DHS and the U.S. Fire Administration National Fire Data Center in their publication entitled *School Fires*.[52] After considering this dramatic effect, the lack of a victim initiated means for mitigating the current threat of Active Shooters in IHEs is apparent and provides the focus for the recommendations made in this thesis. The remainder of this thesis will present arguments against the prevention/preemption and tactical focused means of mitigation, expound on the methodological void identified by the literature review, and argue for a victim-initiated system coupled with standardized and automated responses as the most effective means of reducing the Rate of Kill in Active Shooter scenarios.

---

[49] Department of Homeland Security, *Active Shooter: How to Respond*, 9.

[50] Department of Homeland Security, *Active Shooter: How to Respond*, 7.

[51] Fleming, *The President's Conference on Fire Prevention Action Program*.

[52] U.S. Department of Homeland Security, U.S. Fire Administration National Fire Data Center, "School Fires."

4. Project Justification

In recognition of evolving threats, such as Active Shooters in U.S. IHEs and HOFs, the President of the United States, Barack Obama is recorded in the U.S. National Security Strategy as stating,

> At home, the United States is pursuing a strategy capable of meeting the full range of threats and hazards to our communities." "We are investing in operational capabilities and equipment, and improving the reliability and interoperability of communications systems for first responders." "That is why we are pursuing initiatives to protect and reduce vulnerabilities in critical infrastructure, at our borders, ports, and airports, and to enhance overall air, maritime, transportation, and space and cyber security.[53]

Secretary of Defense Robert Gates also presented his initial guidance for meeting the challenges of difficult problems to national security, such as the Active Shooter threat in the National Defense Strategy stating,

> However, as the spreading web of globalization presents new opportunities and challenges, the importance of planning to protect the homeland against previously unexpected threats increases. Meeting these challenges also creates a tension between the need for security and the requirements of openness in commerce and civil liberties. On the one hand, the flow of goods, services, people, technology and information grows every year, and with it the openness of American society. On the other hand, terrorists and others wishing us harm seek to exploit that openness.[54]

Chairman, Joint Chiefs of Staff, Major General Mullen confirmed these concerns articulated by the President and Secretary of Defense and addressed them in the National Military Strategy by stating, "there are no more vital interests than the security of the American people, our territory, and our way of life."[55]

---

[53] President of the United States, Barack Obama, *National Security Strategy*, May 2010, 17.

[54] Secretary of Defense, Robert Gates, *National Defense Strategy*, June 2008, 6.

[55] Chairman, Joint Chiefs of Staff, M. G. Mullen, *The National Military Strategy of the United States of America, Redefining America's Military Leadership*, February 2011, 5.

In recognition of these threats, Secretary of Defense Robert Gates delineated his guidance for military preparedness in order to protect the U.S. national security against threats, such as Active Shooters in the Quadrennial Defense Review as he stated,

> The experiences of the past several years have deepened the realization that state- and non-state adversaries alike may seek to attack military and civilian targets within the United States. Protecting the nation and its people from such threats requires close synchronization between civilian and military efforts.[56]

In an effort to further define the Department of Defense's strategy for mitigating the threat of domestic terrorism and Active Shooter incidents, U.S. Northern Command and North American Aerospace Defense Commander Admiral James Winnefeld stated in the NORTHCOM Posture Statement that,

> To help prevent acts of terrorism, we are working to improve information sharing to better position ourselves to preemptively detect and protect against these threats, particularly in regard to our military bases and other infrastructure. We are fully implementing the relevant recommendations of the Department of Defense Independent Review Related to Fort Hood, and have made progress over the last year in our ability to rapidly disseminate threat information to DOD installations when required. In the wake of a terrorist event, we are prepared to support civil authorities, as directed, to assist in mitigating the consequences.[57]

Although we agree with the general intent of these statements and believe that strategic emphasis is well placed on evolving and dynamic threats of domestic terrorism and Active Shooters in U.S. IHEs and HOFs, we also have found no clear plan articulated in any of the five primary U.S. national security documents which prescribes an operational standard with capacity to accomplish the desired level of security and readiness. It is our hope that the recommendations included in this thesis which are based on our case study analysis of the most lethal Active Shooter incidents which have taken place on U.S. IHEs will present a clear plan capable of mitigating the effects of Active Shooters in support of U.S. national security priorities.

---

[56] Secretary of Defense, Robert Gates, *Quadrennial Defense Review Report*, February 2010, 18.

[57] Admiral James A. Winnefeld, Jr., U.S. Navy , Commander, U.S. Northern Command and North American Aerospace Defense Command, *Testimony Before the House Armed Services Committee*, March 30, 2011, 4.

III. HYPOTHESES

In order to answer the research question, we have explored and tested the following hypotheses.

A. HYPOTHESIS 1: PREVENTION/PREEMPTION OF THE ACTIVE SHOOTER ALONE IS INSUFFICIENT TO REDUCE THE *RATE OF KILL*

The Department of Education, Department of Justice, the U.S. Secret Service and the Federal Bureau of Investigation posit that a prevention/preemption strategy is the most effective means of reducing the *Rate of Kill* of an Active Shooter incident. However, a pure prevention/preemption strategy consisting of mental health screening and care coupled with increased efforts to identify and mitigate an Active Shooter prior to the incident is subject to a multitude of factors and considerations that preclude it from being an effective means of mitigation. A prevention and preemption strategy capable of effectively accomplishing these tasks is impractical for an already overburdened and underfunded aspect of student health. Although homicide is the second leading cause of death for U.S. college students and campus-counseling centers report sharp increases in serious psychological needs, most of the mental health services required to address these needs are referred to off-campus care providers and are limited to the extent of student insurance coverage.[58] Additionally, most university counseling centers do not have a full-time crisis management response system in place or qualified psychiatric coverage capable of implementing an effective prevention program for campus violence.[59] As a result, in order to effectively mitigate potential effects of Active Shooters in U.S. IHEs through a mental health focused prevention/preemption strategy, the necessary enhancements to existing capabilities would require an unrealistic commitment of time and money.

---

[58] Suicide Prevention Resource Center, *Promoting Mental Health and Preventing Suicide in College and University Settings*, Newton, MA: Education Development Center, Inc., 2004, 14.

[59] Suicide Prevention Resource Center, *Promoting Mental Health and Preventing Suicide in College and University Settings*, 20.

In addition to the exorbitant costs and extreme resourcing an effective mental health focused prevention/preemption strategy would require, mental health professionals and organizations are also not predisposed to prevent acts of mass violence, such as Active Shooter incidents. Instead, the primary focus for mental health organizations is on repairing psychological trauma in a post-incident environment. According to the National Institute for Mental Health, "early intervention is defined as any form of psychological intervention delivered within the first four weeks following incidents of mass violence or disasters."[60] Although optimal early mental health assessments and interventions are conducted within a hierarchy of needs, these provisions are provided in a post-incident environment. Accordingly, the hierarchal requirements of survival, safety, security, and physical health would only be afforded to survivors and would have no preventative value for Potential Victims in a pre-incident environment.[61] As per the *Guidance for Timing of Early Intervention* for incidents of Mass Violence, the pre-incident phase published by the National Institute for Mental Health includes no mental health screening or active control measures capable of effectively mitigating the potential effects of an Active Shooter. In fact, the only mental health screening mentioned by the U.S. Department of Health and Human Services, U.S. Department of Defense, U.S. Department of Veterans Affairs, U.S. Department of Justice, and the American Red Cross in their report on *Evidence-Based Early Psychological Intervention for Victims/Survivors of Mass Violence* is for survivors in a post-incident environment. [62] According to the literature review of this report and only examining the 47 cases receiving an "A" grade according to the Agency of Health Care Policy and Research's (AHCPR) Levels of Evidence and excluding the 16 cases in which the mental health response exceeded one year, the average response time to the incidents of acute stress included in this study was

---

[60] National Institute of Mental Health, *Mental Health and Mass Violence: Evidence-Based Early Psychological Intervention for Victims/Survivors of Mass Violence. A Workshop to Reach Consensus on Best Practices*, (NIH Publication No. 02-5138), Washington, DC: U.S. Government Printing Office, 2002, 1.

[61] National Institute of Mental Health, *Mental Health and Mass Violence: Evidence-Based Early Psychological Intervention for Victims/Survivors of Mass Violence. A Workshop to Reach Consensus on Best Practices*, 2.

[62] National Institute of Mental Health, *Mental Health and Mass Violence: Evidence-Based Early Psychological Intervention for Victims/Survivors of Mass Violence. A Workshop to Reach Consensus on Best Practices*, 8.

63 days post trauma.[63] Although the psychological assistance rendered in each of these instances is invaluable to those who receive it, it is imprudent to expect these capabilities to protect potential victims in a pre-incident environment.

The U.S. Department of Education designed their Emergency Action Plan in accordance with FEMA's four phases of emergency management: Prevention-Mitigation, Preparedness, Response, and Recovery.[64] Within the Prevention-Mitigation phase of the Department of Education's Emergency Management Plan, counseling and mental health services are prescribed only for identification and training of appropriate staff to provide developmentally and culturally appropriate mental health services to the university population. Additionally, training for mental health staff members on specific interventions and basic training of university professors and staff members on available resources, common reactions to trauma, and early warning signs of potentially dangerous individuals are key components of this plan. Although the Department of Education also places particular emphasis on development of support structure and partnership agreements, as well as template letters for alerting students, parents, families, staff, and the community to emergencies; none of these capabilities offer a practical or standardized capacity for effectively preventing Active Shooter incidents in U.S. IHEs.[65]

In a collaborative effort to establish a practical approach to mitigating the effects of Active Shooters in U.S. IHEs, the U.S. Department of Education and the U.S. Secret Service produced the *Safe Schools Initiative*. This initiative made recommendations based on a comprehensive examination of the thinking, planning, and other behaviors of students who had committed school shootings.[66] These prevention and preemption efforts focused on disrupting the *Individual Violence Process*. This process consists of an

---

[63] National Institute of Mental Health, *Mental Health and Mass Violence: Evidence-Based Early Psychological Intervention for Victims/Survivors of Mass Violence. A Workshop to Reach Consensus on Best Practices*, Table 1.

[64] *FEMA's State and Local Guide SLG 101: Guide for All-Hazards Emergency Operations Planning*, September 1996.

[65] U.S. Department of Education, Office of Safe and Drug-Free Schools, *Action Guide for Emergency Management at Institutions of Higher Education*, Washington, DC, 2009, Table 2.

[66] United States Secret Service, United States Department of Education, *The Final Report and Findings of the Safe School Initiative: Implications for the Prevention of School Attacks in the United States*, ii.

individual's progression from a negative situation to intense feelings including anger, hostility, retaliation and vengeance. If not identified and mitigated at the level of intense feelings, the individual violence process will continue to escalate to ideas of justified violence and the impossibility of a peaceful resolution and will lead to planning of an attack and finally culminate with violent action.[67] This progression of the *Individual Violence Process* is common among workplace and school shooters, as well as criminal and ideological terrorists. The Department of Education and the Secret Service sought to disrupt this process for potential Active Shooters in U.S. IHEs by identifying pre-attack behaviors and communications that could be detectable for future attacks.

Three assessment approaches emerged from the Secret Service perspective as potential methods of disrupting the Individual Violence Process and identifying potential Active Shooters prior to the incident. These assessment approaches consist of profiling, guided professional judgment, and automated decision making. First, profiling is defined by the Secret Service to include, "a range of identification techniques or assessment strategies that are used in both law enforcement and non-law enforcement settings."[68] The Secret Service's use of prospective profiling begins with a specific person and utilizes compiled characteristics of previous school shooters in order to predict future likelihood that the person in question will become an Active Shooter. Two principle sources were utilized by the Secret Service to construct the prospective profile template of an Active Shooter: The *School Shooter Profile* developed by the FBI and the *Classroom Avenger* developed by McGee and DeBernardo. Through a combination of commonalities in both of these profiles, the Secret Service developed their own Profile of an Active Shooter and is able to compare potential perpetrators to the profile in order to identify those who exceed the threshold for concern.[69]

---

[67] Samuel Mayhugh, "Active Shooters: Behavior, Conditions, and Situations," *Active Shooter Awareness Virtual Roundtable*, Washington, DC, September 27, 2011.

[68] Marisa Reddy, "Evaluating Risk for Targeted Violence in Schools: Comparing Risk Assessment, Threat Assessment, and Other Approaches," *Psychology in the Schools* 38, no. 2 (2001): 161.

[69] Reddy, "Evaluating Risk for Targeted Violence in Schools: Comparing Risk Assessment, Threat Assessment, and Other Approaches," 162.

However, prospective profiling for potential Active Shooters is not yet specific enough to identify a student who is at risk for becoming an Active Shooter. Additionally, profiling of this nature carries a significant risk of false positives and the potential negative effects of falsely identifying students as potential Active Shooters is an intolerable risk for most IHEs. Additionally, both the U.S. Department of Education and the U.S. Department of Justice, in conjunction with many other nationally accredited education and mental health organizations, denounced practices of stereotyping students in their published action guide entitled *Early Warning, Timely Response: A Guide to Safe Schools*.[70] Furthermore, the accuracy of a school shooter profile is questionable and, as a result, will inevitably exclude students who do not fit the profile but still pose a significant risk of becoming an Active Shooter. Likewise, an inaccurate profile will also falsely identify students as potential Active Shooters who, in reality, pose no significant threat.[71] The challenges of creating an accurate profile are immense with 30% of offenders listed as unaffiliated or indirectly affiliated with the IHE, an accurate profile would also have to transcend the IHE boundaries and include threats from beyond the student and employee population.[72] For these reasons, the use of prospective profiling in schools has received harsh criticism from parents, students, school administrators and even the Secretary of Education. These criticisms are centered largely around fears that profiling students in this manner has the potential to limit civil liberties and increase bias against minority groups based on criteria of race, appearance, religion, sexual orientation, and other contributing demographic factors.[73] As a result, many IHEs will be extremely reluctant to adopt practices of prospective profiling on their campuses and the probability of these practices being standardized among all U.S. IHEs is extremely low.

---

[70] K. Dwyer, D. Osher, and C. Warger, *Early Warning, Timely Response: A Guide to Safe Schools* (Washington, DC: U.S. Department of Education, 1998), 7.

[71] Reddy, "Evaluating Risk for Targeted Violence in Schools: Comparing Risk Assessment, Threat Assessment, and Other Approaches," 162–163.

[72] Drysdale, Modzeleski, and Simons, *Campus Attacks: Targeted Violence Affecting Institutions of Higher Education*, 15.

[73] Reddy, "Evaluating Risk for Targeted Violence in Schools: Comparing Risk Assessment, Threat Assessment, and Other Approaches," 162–163.

The second assessment approach presented by the Secret Service as a potential means of disrupting the Individual Violence Process for potential Active Shooters is labeled Guided Professional Judgment. The practice of guided professional judgment begins when a trained and licensed mental health professional interviews a client. During the course of this interview, the counselor is able to evaluate their client's potential for violent behavior through a comparison of base rates of violence within the individual's population and relevant risk factors presented by the client. This process is aided through the use of checklists which assist the counselor in the collection and analysis of appropriate information. This approach is also known as structured clinical assessment.[74] Although these procedures are effective mental health practices, two obvious obstacles preclude guided professional judgment from effectively mitigating the effects of potential Active Shooters in U.S. IHEs. First, in order for this practice to be an effective means of Active Shooter prevention/preemption, these interviews would have to screen every member of the IHE population. As U.S. colleges and Universities are already struggling to meet current demand for routine student mental health, it is improbable that any IHE would devote the necessary staff, facilities and resources required to accomplish this task.[75] Second, according to the Family Policy Compliance Office, a sub-committee of the Department of Education, mandating all students to capitulate to interviews of this nature would not only violate their civil liberties, it would also not be conducive to preserving a learning environment.[76] These obstacles, combined with the limited availability of empirical research related to risk factors regarding targeted school violence make it highly improbable that the practice of guided professional judgment will emerge as an effective means of Active Shooter prevention.[77]

---

[74] Reddy, "Evaluating Risk for Targeted Violence in Schools: Comparing Risk Assessment, Threat Assessment, and Other Approaches," 164.

[75] Suicide Prevention Resource Center, *Promoting Mental Health and Preventing Suicide in College and University Settings*, 20.

[76] U.S. Department of Education, Family Policy Compliance Office, "Balancing Student Privacy and School Safety: A Guide to the Family Education Rights and Privacy Act for Colleges and Universities," April 5, 2012, http://www.ed.gov/policy/gen/guid/fpco/brochures/postsec.pdf.

[77] Reddy, "Evaluating Risk for Targeted Violence in Schools: Comparing Risk Assessment, Threat Assessment, and Other Approaches," 165.

The third assessment approach presented by the Secret Service as a potential means of disrupting the Individual Violence Process for potential Active Shooters is known as Automated Decision Making. This process involves computer systems consisting of artificial intelligence informed by expert knowledge on a particular situation in order to render a solution or decision. As applied to the Active Shooter problem, the automated decision making process utilizes various methods and structures to compare compiled knowledge of targeted violence in U.S. IHEs against facts presented by the case at hand.[78] However, as with the other possible forms of mental health focused prevention/preemption strategies, this too has significant obstacles to overcome if it is to become an effective means of Active Shooter prevention. First, like guided professional judgment, the practice of automated decision making would also have to be applied to the entirety of the IHE population as a screening mechanism if it were to be considered an effective means of Active Shooter prevention. Accordingly, this too would require an exorbitant amount of time, resources, and staff in order to compile relevant facts on every member of the IHE population. Furthermore, neither appropriate actuarial equations, nor agreement on the risk factors for evaluating risk regarding targeted violence have been finalized.[79] For these reasons automated decision making, while it may prove to be a valuable resource for future prevention of Active Shooters in U.S. IHEs, offers no value to the current threat.

In recognition of the fact that none of the preceding methods offered by the Secret Service and the Department of Education represent a plausible Active Shooter prevention strategy, the Secret Service offers the *Threat Assessment Approach* as their most effective preventative measure. The *Threat Assessment Approach* is comprised of operational activities that combine an investigative process and information-gathering strategies with target-violence relevant questions that are designed to identify, assess, and manage individuals with potential for becoming an Active Shooter. These questions seek to ascertain motivation, communication, unusual interests, attack-related behaviors, mental

[78] Reddy, "Evaluating Risk for Targeted Violence in Schools: Comparing Risk Assessment, Threat Assessment, and Other Approaches," 166.

[79] Reddy, "Evaluating Risk for Targeted Violence in Schools: Comparing Risk Assessment, Threat Assessment, and Other Approaches," 167.

condition, level of cognitive sophistication, recent losses, consistency, potential for harm, and contributing environmental problems.[80] The threat assessment process involves three principle steps: identifying individuals with intent to attack, assessing an individual's potential for violent action, and management of communicated threats. In the *Safe Schools Initiative*, the Secret Service suggested two principle areas in which to focus threat assessment efforts: developing detection and evaluation capabilities for information related to targeted school violence, and incorporating threat assessment findings when formulating strategies to prevent Active Shooters in IHEs.[81] As identified in the *Safe Schools Initiative*, the *Threat Assessment Approach* has many valuable aspects for prevention of Active Shooters in IHEs. However, this method still possesses little potential for reducing the *Rate of Kill* for Active Shooter incidents.

Conceding that profiling is ineffective, guided professional judgment is currently inappropriate, and automated decision making is not yet supported by the necessary empirical research; the Secret Service offers the *Threat Assessment Approach* as a good initial step toward preempting Active Shooters in U.S. IHEs.[82] However, this approach also has significant obstacles and limitations. First, in order for a threat to be assessed, one has to be rendered and indentified. Therefore, this method ignores all Active Shooters who do not first communicate a threat in some form. Second, this method requires that a threat be properly identified and reported to the appropriate authorities. In order to be accomplished in U.S. IHEs, this method of Active Shooter prevention would operate on the premise that every student, faculty, and staff member is a sensor for detecting credible threats. The U.S. Department of Defense recently adopted a similar strategy claiming that, "every soldier was a sensor," and, as a result, experienced an influx of inaccurate and useless information that only further obligated limited resources

---

[80] Reddy, "Evaluating Risk for Targeted Violence in Schools: Comparing Risk Assessment, Threat Assessment, and Other Approaches," 169.

[81] United States Secret Service, United States Department of Education, *The Final Report and Findings of the Safe School Initiative: Implications for the Prevention of School Attacks in the United States*, 5, 11.

[82] Reddy, "Evaluating Risk for Targeted Violence in Schools: Comparing Risk Assessment, Threat Assessment, and Other Approaches," 169.

and yielded negative returns.[83] The principle problem experienced by the Department of Defense in adopting this policy was the inability to standardize or effectively qualify incoming information. Similarly, U.S. IHEs should expect the same difficulties when attempting to implement the *Threat Assessment Approach* for Active Shooter prevention. Additionally, as identified with every other form of mental health focused Active Shooter prevention/preemption measures, staffing, resourcing and time requirements for effective implementation of these strategies are unrealistic for IHEs.[84]

The U.S. Department of Justice (DOJ), Federal Bureau of Investigation (FBI), Critical Incident Response Group (CIRG), and the National Center for the Analysis of Violent Crime (NCAVC) also presented a threat assessment model in their collaborative publication entitled *The School Shooter: A Threat Assessment Perspective*. In this report, Attorney General Janet Reno identified youth violence as the greatest single criminal problem in the U.S. and declared that the threat assessment and intervention recommendations included in the findings of this report represented a vital foundation for preemptive measures against the Active Shooter problem. FBI director Louis Freeh explained that the *Threat Assessment Perspective* provided a practical resource for prevention of targeted violence in U.S. IHEs. This study was based on findings of the NCAVC's 1998 review of school shootings from a behavioral perspective in order to identify influential dynamics. Conceding that prediction of school shootings is almost impossible, the DOJ and FBI pursued the threat assessment approach, which informs judgment based on threat credibility and available resources, intent, and motivation of the threatener. Operating on the common agreement that most people do not switch instantly from non-violent to violent behavior, the DOJ and FBI identified signposts along the evolutionary path of violence as part of their *Threat Assessment Perspective*.[85]

---

[83] Headquarters, Department of the Army, *Field Manual No. 3-21.75 (21-75)*, Washington, DC, January 28, 2008, 9–1.

[84] Suicide Prevention Resource Center, *Promoting Mental Health and Preventing Suicide in College and University Settings*, 20.

[85] Department of Justice, Federal Bureau of Investigation, *The School Shooter: A Threat Assessment Perspective*, iii–7.

One of the most significant signposts along this path to violence is a threat. As such, the *Threat Assessment Perspective* delineates the types of threats as direct threats, indirect threats, veiled threats, and conditional threats. The *Threat Assessment Perspective* also recommends considering specific and plausible details, emotional content, and precipitating stressors in order to effectively assess the threat as either a low, medium or high-level threat. In response to these threats, the DOJ and FBI recommend that a qualified school psychologist or counselor utilize a *Four-Pronged Assessment Model* consisting of: personality of the student, family dynamics, school dynamics, and social dynamics in order to properly assess threat level and credibility. Additionally, the DOJ and FBI recommend informing students and parents of school policies, designation of a threat assessment coordinator, and formation of a multidisciplinary team as guidelines for establishing and implementing an effective threat management system. However, all of these recommendations are contingent on the presence of a threat that precedes the incident of targeted violence. According to the DOE, DHS, FBI, and Secret Service collaborative review entitled *Campus Attacks*; of the 272 incidents of targeted violence occurring on U.S. IHEs from 1900 to 2008, threats, such as this only occurred in 13% of the total incidents. Additionally, the *Four Pronged Assessment* can only be utilized if the identity of the threatener is known prior to the incident and affords no measure of mitigation to the anonymous threat. This is a troubling reality considering the NCAVC's assessment that most threats are made anonymously. Furthermore, most of these recommendations, as well as the entire *Four Pronged Assessment* are based on the assumption that the perpetrator will be a student.[86] However, contemporary examples and case studies included in this report confirm that the student population is only one portion of the total IHE population and attacks of targeted violence are only carried out by students 60% of the time.[87] Lastly, as with all of the preceding mental health focused methods of Active Shooter prevention/preemption, shortages of qualified school psychologists and counselors make many of these recommendations impractical.

---

[86] Department of Justice, Federal Bureau of Investigation, *The School Shooter: A Threat Assessment Perspective*, 6–26.

[87] Drysdale, Modzeleski, and Simons, *Campus Attacks: Targeted Violence Affecting Institutions of Higher Education*, 10.

Although the DOJ and FBI articulate valuable contributions to the effort of Active Shooter prevention in IHEs, these recommendations are incomplete and, if utilized autonomously, would do very little to mitigate the effects of Active Shooters in IHEs.[88]

With these considerations in mind, while observing the principle mission of IHEs as places of learning, any effective form of Active Shooter Mitigation must also preserve the educational environment and facilitate safe learning. The preceding arguments have effectively summarized the official recommendations put forth by the Department of Education, Department of Justice, U.S. Secret Service, Federal Bureau of Investigation, Critical Incident Response Group, and the National Center for the Analysis of Violent Crime. However, none of these organizations can guarantee with any considerable fidelity that their recommendations will be able to effetely prevent or preempt an Active Shooter attack. This unfortunate conclusion has been confirmed throughout the United States on countless IHE campuses. However, perhaps no example illustrates the realities of our first hypothesis better than the Virginia Tech shooting. Despite a considerable mental health history, repeated incidents of threatening behavior which were known to both VT campus police and faculty, as well as involuntary committal to a mental health hospital; no form or combination of the fore mentioned prevention and preemption methods were effective in preventing the VT shooter from caring out the deadliest mass shooting in U.S. history.

Therefore, if prevention is not absolute, then any form of Active Shooter mitigation that is not capable of effectively implementing or supporting a tactical response is therefore irresponsible. Prevention/preemption measures will remain incapable of reducing the *Rate of Kill* for Active Shooter incidents because they lack the capability to meet effective crisis response criteria. These methods do not contain, control, or alert SWAT and nearby law enforcement personnel in response to an attack. Furthermore, they provide little capability to communicate with an Active Shooter and foster little innovation or adjustment to current SOPs and interagency cooperation. Although the U.S. Secret Service experiences great success with prevention and

[88] Department of Justice, Federal Bureau of Investigation, *The School Shooter: A Threat Assessment Perspective*, 6–26.

preemption tactics utilized to protect dignitaries, these methods are much too resource intensive to be a realistic solution to every IHE or HOF; and therefore, additional resources and emphasis must be placed on responsive methods of mitigation for Active Shooter incidents.

B. HYPOTHESIS 2: LAW ENFORCEMENT INTERDICTION OF THE ACTIVE SHOOTER IS INSUFFICIENT TO REDUCE THE RK

Local and Federal Law Enforcement agencies, as well as police tactical organizations, such as the National Tactical Officer's Association (NTOA) and the North American S.W.A.T. Training Association (NASTA) maintain that a tactical response is the most effective means of Active Shooter mitigation. Additionally, Active Shooter response training organizations, such as Advanced Law Enforcement Rapid Response Training (ALERRT) present a two-pronged approach to Active Shooter response advocating victim initiative and defensive actions coupled with aggressive Law Enforcement response. Since the University of Texas Tower shooting in 1966, Law Enforcement agencies have evolved and improved tactics and police organization to meet the emerging Active Shooter threat. While Law Enforcement and campus police officers are clearly better trained, equipped, and organized to meet this threat on today's IHE campuses, certain operational realities preclude this form of Active Shooter response from mitigating the effects or reducing the *Rate of Kill* for these incidents with any degree of acceptable reliability. The first operational reality of Active Shooter scenarios is that when seconds count, the police are only minutes away. Law Enforcement capability to reduce the *Rate of Kill* in Active Shooter scenarios is limited by the separation of time and space between threat and First Responders at the outset of the incident. In every Active Shooter incident, each step of tactical response (alert, dispatch, response, neutralization) requires time. However, the unfortunate reality of Active Shooter scenarios is that increased *Response Time* and *Incident Duration* yields an increased *Rate of Kill*. Law enforcement response is delayed by the time required for Potential Victims to recognize the threat and call 911 and further delayed by time required for 911 dispatches to alert responding units. Although police response in most

locations is very quick, it is not immediate in any location and, as long as the average *Response Time* to an Active Shooter scenario is greater than the average *Incident Duration*, this solution will remain as ineffective as it is impractical.

The second operational reality that precludes Law Enforcement tactical response from mitigating the effects of Active Shooters in IHEs is complacency. Complacency among federal departments, IHE administrators, and police agencies results in weak policies, as well as ill trained and equipped First Responders. Most IHEs are not willing to devote the necessary resources toward preventing a perceived low percentage threat, such as Active Shooter scenarios. However, according to the U.S. Secret Service, in 1998 alone, 35 students were murdered and a quarter of a million more were seriously injured in acts of school violence.[89] Meanwhile, not a single U.S. student has died in a school fire since the 1958 fire which consumed Our Lady of the Angels grade school on the West Side of Chicago, killing 92 children and three nuns.[90] However, in response to the threat of fire in U.S. schools, well-crafted policies, alerting procedures, active control measures, and response standards have effectively mitigated this threat. On the other hand, although the International Association of Chiefs of Police and the Bureau of Justice Assistance confirm that Law Enforcement reaction is a critical component of a well-coordinated response to crisis situations, such as Active Shooter incidents, no clear policy, alerting procedure, or active control measure has been able to assist Law Enforcement in the mitigation of this threat. Accordingly, Law Enforcement tactical response and integration with campus police or SROs was not mentioned at all in the DOE publication entitled *Creating Safe and Drug-Free Schools: An Action Guide* and no clear or concise plan capable of achieving the "**5 *C***'s" (*Contain, Control, Communicate, Call S.W.A.T., Create immediate action plan*) is articulated in the *Guide for Preventing*

---

[89] Dave Grossman, "School Shooting Contingency Plans & Considerations," *Killology Research Group: A Warrior Science Research Group Partner*, 2000, http://www.killology.com/school_notes_plans.htm.

[90] Rex Huppke, "Our Lady of the Angels: The Fire That Changed Everything," *Chicago Tribune, Chicagoland*, November 29, 2008, http://www.chicagotribune.com/news/local/chi-our-lady-of-the-angels-fire-students-killed,0,6650568.story.

and Responding to School Violence.[91] Additionally, no current national standard exists for the hiring criteria or training requirements for campus law enforcement officers.[92] While Law Enforcement response is indeed a critical component to an effective Active Shooter mitigation strategy, these discrepancies highlight that any response plan that relies solely on a tactical response is insufficient to reduce the *Rate of Kill* in Active Shooter scenarios.

	Law Enforcement Responsibilities: ***Guide for Preventing and Responding to School Violence:***
1.	Respond to all reports of criminal activities in the school. Rapid response teams should be formed to help insure immediate intervention in all emergency situations.
2.	Exercise appropriate rules of engagement when immediate intervention is needed, keeping in mind the safety of victims, bystanders, and first responders.
3.	Establish and adhere to direction from the Incident Command System.
4.	Establish appropriate security and response perimeters. Provide traffic control assistance to enable emergency services to get through to the school.
5.	Develop lines of communication with affected schools' administrations and district emergency operation centers or command posts.
6.	Protect relevant evidence from contamination. Follow approved collection procedures to facilitate effective prosecution of perpetrators.
7.	Help parents and/or guardians find their children.
8.	Be prepared to assist with many unforeseeable duties.

Table 3. Law Enforcement Responsibilities for Response to Crisis Situations As Described by the "Guide for Preventing and Responding to School Violence," Written by the International Association of Chiefs of Police and the Bureau of Justice Assistance.[93]

Law Enforcement and Campus Police are the only agencies capable of imposing security in an Active Shooter Scenario and; therefore, no Active Shooter scene should be considered secure until one of these organizations has declared it as such. However, in a pure Law Enforcement interdiction strategy, *containment* of the environment (e.g., TA,

[91] Alissa Kramen, Kelly Massey, and Howard Timm, *Guide for Preventing and Responding to School Violence* (Alexandria, VA: International Association of Chiefs of Police), 24.

[92] Max L. Bromley, "Policing Our Campuses: A National Review of Statutes," *American Journal of Police* 15, no. 3 (1996): 7.

[93] Alissa, Massey, and Timm, *Guide for Preventing and Responding to School Violence*, 24.

TZ, and AA) takes too long, and in some cases, could take hours. This reality was confirmed in the summer of 1999 at Columbine High School and, as a result, police tactics began to evolve. Previous practices of containing the scene, alerting S.W.A.T. and waiting for a properly trained and equipped Emergency Response Team are no longer hailed as valid tactics. Current policies regarding First Responder and Law Enforcement response to Active Shooter incidents advocate immediate response through formation of small contact teams and "direct-to-threat" movement techniques.[94] Accordingly, *containment* of the incident becomes a secondary priority to threat mitigation and the initial First Responders to the incident will focus their efforts on responding to the threat. However, as additional Law Enforcement and campus police personnel arrive, *containment* can be achieved through the establishment of an inner and outer security perimeter and will deny avenues of escape and access to other possible victims, hostages, weapons, or resources for the shooter. These perimeters should also be established in such a manner as to limit information regarding the actions of first responders within the inner perimeter to bystanders located outside of the outer perimeter. Although *containment* is an integral component of Active Shooter response, it does not have to be achieved prior to threat mitigation. For this reason, current Law Enforcement and campus police policies emphasize threat mitigation as a higher priority to incident containment.[95] However, *containment* as described here, would require large numbers of Law Enforcement and campus security personnel, as well as synchronized modes of communication in order to effectively contain an Active Shooter scenario on most IHEs. Unfortunately, the time, resources, and manpower required to accomplish this task on most IHEs makes this aspect of Active Shooter tactical response unattainable in many instances.

In response to Active Shooter scenarios, Law Enforcement and campus police tactics require that First Responders *control* both themselves and the situation. This level of control is accomplished through the evacuation of innocent personnel from both the

---

[94] Texas State University, *Advanced Law Enforcement Rapid Response Training (ALERRT) Manual*, 6.

[95] Texas State University, *Advanced Law Enforcement Rapid Response Training (ALERRT) Manual*, 12.

inner perimeter and outer perimeter when possible. Additionally, evacuation of injured personnel to medical treatment facilities and potential witnesses to qualified interrogators also assists in establishing situational *control*. Again, post-Columbine Law Enforcement Active Shooter response tactics regard threat mitigation as the paramount tactical objective and control can thereby be affected through threat mitigation as well.[96] While this is true, average Law Enforcement and campus police response times to Active Shooter incidents afford a significant delta of uncontrolled time and space; and, until the incident is properly *contained*, the Active Shooter will maintain *control* of the environment.

The ability to *communicate* at a tactical level through organically assigned communications assets represents a considerable advantage afforded to Law Enforcement personnel with regards to Active Shooter response. Effective communication is indeed the key to any successful tactical operation. However, in complex crisis environments, such as Active Shooter incidents, effective communication involves much more that merely inter-departmental communication. Instead, effective communication should be established with all First Responders, witnesses, and suspects in order to improve situational awareness and coordinate tactical maneuvers.[97] Unfortunately, non-standardized communication protocols limit interagency coordination at the tactical level and adversely affect Law Enforcement response.[98] Furthermore, Law Enforcement agencies have no standardized means of initiating or maintaining communication with the shooter or suspects. Additionally, when First Responders are able to initiate communication with the shooter or suspects, many are not properly trained for the situation, as field negotiation is not a standardized module of instruction in most basic police academies. Effective communication is without question an integral component to

---

[96] Texas State University, *Advanced Law Enforcement Rapid Response Training (ALERRT) Manual*, 12.

[97] Texas State University, *Advanced Law Enforcement Rapid Response Training (ALERRT) Manual*, 12.

[98] Department of Homeland Security, *National Incident Management System*, (FEMA Publications Warehouse; Pub. P-501, Catalog Number 08336-1), December 2008, 24.

any Law Enforcement response capable of mitigating the effects of an Active Shooter. However, many limiting factors and environmental constraints negate the effectiveness of Law Enforcement and campus police capability to communicate.

One such environmental constraint on communication is manifested in the alerting procedures pertaining to Active Shooter scenarios. Activation of the emergency response is incumbent on the Potential Victims and is dependent on non-standardized communication. This initial and crucial step of the tactical response to Active Shooters is facilitated through the 911-dispatch center with calls from landline and cellular phones. Although dispatching procedures are standardized after the emergency call is received by the 911-dispatch center, non-standardization of how these calls are initiated has the potential to delay response. For instance, if an emergency call is received from a cell phone, that call is automatically routed to the 911-dispatch center which is closest to the cell phone tower from where the call was received. However, as was the case during the Virginia Tech response, this is not always the closest 911-dispatch center to the crime and, as a result; these emergency calls can easily be routed to the incorrect police department. This discrepancy can have serious implications when it results in a delayed Law Enforcement response to the incident.

Once First Responders have been dispatched to the emergency, further notifications and reports are the responsibility of the first responder and can be accomplished through organically assigned communication assets. In response to barricade or Hostage Rescue situations, First Responders also utilize these assets to *call S.W.A.T.* Although current police tactics no longer require First Responders to wait for a qualified S.W.A.T. team to respond to Active Shooter incidents, in Hostage Rescue or barricade situations these specialized teams of tactical police officers and negotiators are much more qualified to respond to these dynamic situations. For these reasons, S.W.A.T teams are dispatched to Active Shooter incidents, however; First Responders must remain prepared to take action if the situation deteriorates prior to the arrival of S.W.A.T.[99]

[99] Texas State University, *Advanced Law Enforcement Rapid Response Training (ALERRT) Manual*, 12.

An effective tactical response to an Active Shooter incident is also dependent on the ability for Law Enforcement personnel and First Responders to *create an Immediate Action Plan. Immediate action plans* are typically implemented in Hostage Rescue and barricade situations and should be formulated as soon as practically possible. These plans should consider provisions for an Arrest Team, Recovery and Security Team, less than lethal options, sexual assault and countdown scenarios, as well as Active Shooter situations.[100] However, *immediate action plans* are also an integral component to First Responder and initial Law Enforcement response to all Active Shooter scenarios, not just Hostage Rescue and barricade situations. While, these plans are not formalized, good tactical plans that are communicated among the responding officers will greatly increase the effectiveness of the response and help to reduce the *Rate of Kill*. However, the ability for responding officers to formulate and communicate these plans is limited by time constraints and availability of information. As with every component of a tactical response to an Active Shooter incident, environmental factors and situational limitations make Active Shooter response one of the most difficult and disadvantageous situations Law Enforcement and campus police officers can encounter. This reality has been evidenced in all 14 of the included case studies and was extremely evident during our analysis of the University of Texas Tower shooting.

While *containment* SOPs give Law Enforcement officers, campus police and First Responders some advantage, the time elapsed from incident initiation to first response greatly reduces tactical surprise and thus, the disadvantages of this form of mitigation far outweigh any organizational advantage. The unfortunate realities presented by the dynamic and disadvantageous environment of an Active Shooter scenario also limit Law Enforcement capabilities to *control* the scene, *communicate* effectively, or *create an immediate action plan*. This assertion was demonstrated extensively during the University of Texas Tower shooting as ill-equipped and unprepared Law Enforcement and First Responders responded to a barricaded shooter who tormented a helpless crowd of UT students, staff, and faculty, as well as Guadalupe St. patrons from atop the UT

[100] Texas State University, *Advanced Law Enforcement Rapid Response Training (ALERRT) Manual*, 12.

Tower for a terrifying 1 ½ hours. The UT Tower shooting was the first incident that alerted the country to the fact that Law Enforcement personnel and campus police are expected to respond to situations that many are not trained, equipped, or prepared for. Unfortunately, this lack of preparation and assets results in loss of life. In response to the UT Tower shooting, Law Enforcement agencies throughout the U.S. amended their tactics, improved training and established specially trained response units, which later became known as S.W.A.T., in order to better mitigate the effects of attacks like the one experienced on the UT campus. Although S.W.A.T is an extremely valuable and necessary asset to any police department, this capability still does not return any immediate advantages to victims or potential victims in these scenarios.

As the Active Shooter threat evolved from UT to Columbine, and Virginia Tech; Law Enforcement agencies recognized an emerging need to change tactics from S.W.A.T. centric methods of interdiction to response methods that were more capable of providing timely interdiction through the use of small contact teams of responding police officers. Although many quality-training facilities,, such as ALERRT are available to teach these Active Shooter response tactics to Law Enforcement and campus police organizations, not every department has received this training or maintains proficiency in it. Additionally, current alerting procedures and dispatch policies allow for a considerable *Incident Duration*. The *Incident Duration* must be interrupted in some way at the outset of the shooting in order to allow First Responders the time required to react effectively to the Target Areas and Threat Zones. A comprehensive literature review of current policies and relevant cases reveals that current IHE alerting systems reliant upon a 911 notification are not adequate to reduce *Response Time* or to impose any of the "**5 *C*'s**" in order to mitigate the effects of an Active Shooter or to decrease the *Incident Duration*.

C. HYPOTHESIS 3: A VICTIM INITIATED MITIGATION SYSTEM WILL SUFFICIENTLY SYNCHRONIZE IMMEDIATE CONTROL MEASURES WITH A PRESCRIBED SET OF AUTOMATED AND STANDARDIZED RESPONSES IN ORDER TO REDUCE THE RK

Although many federal security, education, and mental health departments have contributed recommendations for Active Shooter mitigation in IHEs, the U.S.

Department of Homeland Security emerges as the largest proponent for victim actions. In a collaborative effort entitled *Active Shooter: How to Respond*; DHS, along with NTOA and the Fairfax County Police Department, identified preparedness and response of Potential Victims as the most effective means to reduce the *Rate of Kill* in Active Shooter scenarios.[101] In similar fashion, the threat of fire in IHEs and HOFs, has been effectively mitigated through the utilization of a victim initiated system commonly referred to as the fire alarm. In response to an increasing threat of fire losses in the U.S. resulting in over 10,000 annual deaths by 1946, President Harry S. Truman convened *The President's Conference on Fire Prevention Action Program* in 1947. As a result, fire alarms accompanied with complementary response policies and procedures required to effectively support a victim-initiated alert were introduced.[102] This fundamental change of victim responsibility and action has drastically reduced *Response Time* and *Incident Duration* of fires in IHEs and, as a result, has reduced current fire casualties in these facilities to Zero[103]. Likewise, a Victim Initiated Mitigation (VIM) system utilized in IHEs and HOFs incorporating automated control measures and complementary response protocols also represents the only realistic means of reducing *Response Time* and *Incident Duration* for Active Shooter scenarios.

A Victim Initiated Mitigation system capable of mitigating the effects of an Active Shooter in IHEs would have to impose the 5C's in an immediate or timely manner. Similar to fire response active control measures initiated by the fire alarm, such as sprinkler systems, fire extinguishers and fire evacuation plans; effective Active Shooter mitigation in IHEs also requires a victim initiated response coupled with active control measures. This methodology represents a fundamental shift in current Active Shooter response and victim responsibilities; however, a victim initiated response is the only means of imposing the 5C's in a practical manner. First, a VIM system can

---

[101] Department of Homeland Security, *Active Shooter: How to Respond*.

[102] Philip Fleming, *The President's Conference on Fire Prevention Action Program*, Departmental Auditorium (Washington, DC: May 1947), 7.

[103] U.S. Department of Homeland Security, U.S. Fire Administration National Fire Data Center, "School Fires," *Topical Fire Research Series* 8, no. 1 (August 2007), www.usfa.dhs.gov/statistics/reports/pubs/tfrs.shtm.

immediately notify Law Enforcement while simultaneously ***c**ontaining* the threat utilizing facility lockdown and mass alert protocols. The Active Shooter threat can be contained immediately with an automated lock down of the Threat Zone and can be further contained through the selective lock down of other adjacent IHE facilities. Second, the Victim Initiated Response and Automated Lockdown (VIRAL) will also limit the Active Shooter's ***c**ontrol* by denying his freedom of movement and limiting all movement within the IHE facility to egress only. A VIRAL activation will also increase Law Enforcement and First Responder ***c**ontrol* during Active Shooter scenarios by permitting complete access to all areas of the facility through special access protocols. Third, ***c**ommunication* is greatly increased with establishment of an immediate dialogue between the Incident Command Center and the Target Area. Additionally, all students and faculty can also be alerted and given initial guidance via prepared messages delivered through numerous networked and personally owned communication devices. Furthermore, campus police, local Law Enforcement, Fire, Rescue and S.W.A.T. resources can be simultaneously ***c**alled* by the ICC. Additionally, improved situational awareness provided by a VIM system supporting two-way communication between the ICC and the Threat Area, as well as real time video of the Threat Room will greatly assist in the ***c**reation of an Immediate Action Plan*. In an unpredictable and disadvantageous environment, such as an Active Shooter scenario, these automated actions will improve situational awareness and impose control within IHE facilities, and afford First Responders the capability to significantly reduce the *Rate of Kill*. Furthermore, by coupling victim actions with automated control measures and Law Enforcement response, the facade of current IHE safety can be replaced with Victim Initiated Mitigation.

THIS PAGE INTENTIONALLY LEFT BLANK

IV. CASE STUDIES

A. VIRGINIA TECH (BLACKSBURG, VA)

On April 16, 2007, Seung Hui Cho committed the deadliest mass shooting in American history as he murdered 32 and injured 17 students and faculty in two related incidents on the Virginia Polytechnic Institute and State University (Virginia Tech) campus.[104] This case study will examine Cho's mental health history, the contributing factors leading up to this tragedy and the security control measures in place at Virginia Tech prior to the shooting. Additionally, this case study will analyze both the West Ambler Johnston residence hall double homicide and the Norris lecture hall mass murder including a detailed timeline of events and Emergency Rescue Team (ERT) response. Finally, security and control measure upgrades made on the Virginia Tech campus since the attack will be described and analyzed for their capacity to prevent or mitigate this type of event in the future.

1. Virginia Tech Prior to the Incident

In order to place the events of April 16, 2007 in the proper context, the setting and security posture of the university must first be accurately depicted. Although the fact remains that Virginia Tech was the scene of the worst school shooting in U.S. history, the organic control measures and security posture were not substandard or dissimilar to the majority of U.S. colleges and universities nationwide. Therefore, by describing the physical security, emergency alerting system, emergency response plan and emergency assets available at the time of the incident, conclusions can be drawn to assist in mitigating the effects of future Active Shooter attacks.

Virginia Tech is a beautiful campus consisting of 131 major buildings dispersed over 2,600 acres, positioned at the foothills of the Blue Ridge Mountains in Blacksburg, VA.[105] The university is an open campus with 16 roadways permitting unrestricted

[104] Virginia Tech Review Panel, *Mass Shootings at Virginia Tech*, Report of the Review Panel Presented to Governor Kaine, Commonwealth of Virginia, August 2007, 5.

[105] Virginia Tech Review Panel, *Mass Shootings at Virginia Tech*, 11.

ingress and egress of students, staff, faculty and guests. Persistent construction required to support the university's projected growth is accompanied by the unfortunate side effect of associated consistent construction noise. On April 16, 2007 Virginia Tech hosted a total estimated campus population of 34,503 consisting of 26,370 students (9,000 of which live in dorms), 7,133 university employees, and 1,000 visitors, contractors, and transient workers.[106]

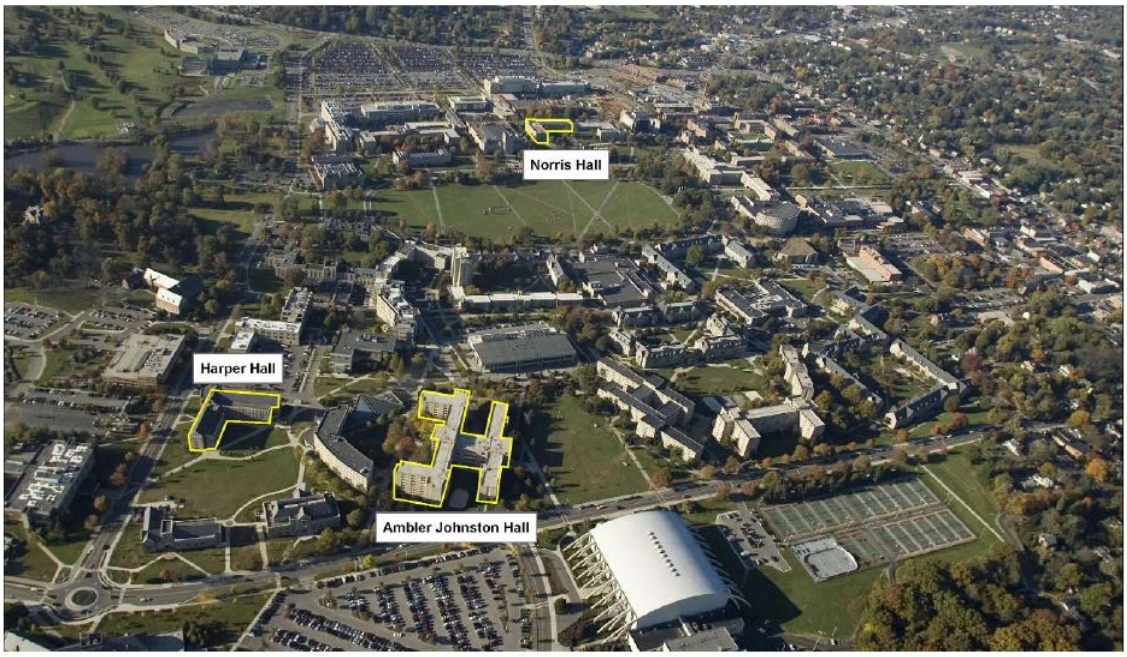


Figure 3. Aerial View #1 of the Virginia Tech Campus highlighting Harper Hall (Cho's Dormitory), Norris Hall (Scene of the Mass Shooting) and West Ambler Johnston Hall (Scene of the Double Homicide).

[106] Virginia Tech Review Panel, *Mass Shootings at Virginia Tech*, 11.

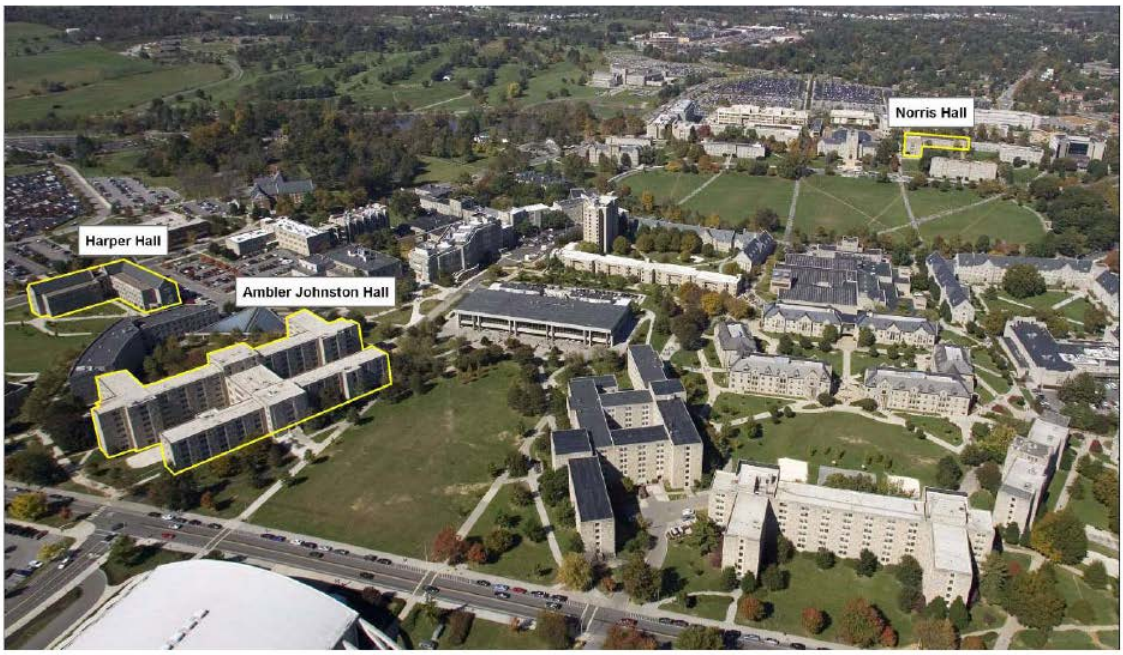


Figure 4. Aerial View #2 of the Virginia Tech Campus highlighting Harper Hall (Cho's Dormitory), Norris Hall (Scene of the Mass Shooting) and West Ambler Johnston Hall (Scene of the Double Homicide).

The Virginia Tech Police Department (VTPD) is an accredited Police Force. The officers assigned to the VTPD meet all Virginia state requirements and are credentialed as accredited Peace Officers. The VTPD also maintains an Emergency Rescue Team (ERT) capability.[107] The mission of the VTPD is:

The Virginia Tech Police Department strives to enhance the safety and quality of life for students, faculty, staff and visitors through effective law enforcement and proactive crime prevention in partnership with the university community. The VTPD Chief on April 16 was Chief Wendell Flinchum, a native of Blacksburg who spent his entire career with the VTPD beginning in 1983. Chief Flinchum was selected as the VTPD Chief of Police over 90 candidates in December of 2006.[108] Chief Flinchum commanded a well-respected Police Department consisting of a Patrol Division,

[107] *The Jeanne Clery Disclosure of Campus Security Policy and Campus Crime Act*, Annual Report of 2007, 1–6.

[108] Shawna Morrison, "Tech Police Chief Studying up on His Job," *Roanoke Times*, December 21, 2006, http://www.roanoke.com/news/nrv/cram/feature/wb/wb/xp-96761.

Investigative Unit, Emergency Response Team (ERT), K-9 program, administrative Division, and Communications unit. Additionally, the VTPD fosters positive relationships with the student population through the implementation of programs, such as the *Adopt-A-Hall Program* which links VTPD to students and RAs in Residence Halls, and the *Student Police Academy* offered twice per year which provides with an inside look of the VTPD and their Standard Operating Procedures.[109]

On April 16, 2007, the VTPD consisted of 35 officers. Normal operating procedures included a day shift that began at 0700 and consisted of five officers on patrol with an additional nine officers who work office hours of 0800–1700 totaling 14 officers on duty during a typical weekday. Even though the VTPD is an accredited police department, it is still understaffed and incapable of responding to major events in an autonomous manner. For this reason, the VTPD entered into a mutual aid agreement with the Blacksburg Police Department (BPD). This partnership requires joint training and coordination for immediate emergency response assistance. This training and coordination provides the additional support required for the VTPD to fulfill its purpose as stated in the university's Emergency Response Plan.[110]

---

[109] *The Jeanne Clery Disclosure of Campus Security Policy and Campus Crime Act*, 1–6.

[110] Virginia Tech Review Panel, *Mass Shootings at Virginia Tech*, 13.

The Virginia Tech Police has two phone numbers. One is for Police, Fire and Rescue emergency calls. The other phone line is for non-emergency calls.

Emergency - 911 (from any campus telephone)
Non-emergency – 231-6411 Crime Hotline – 232-TIPS (8477)

Police:
Dial 911

- Give the location of the incident.
- Describe what is happening or what you have observed.
- Give a description of the suspect.
- Give the suspects means of transportation and direction of travel.
- Stay on the phone and answer any questions the dispatcher may have.
- Stay on the phone until the dispatcher tells you to hang up.

Crime Hotline:
Dial 232-TIPS

- Follow the call prompts.
- Can be left anonymously.

Rescue:
Dial 911

- Give the nature of the injury or illness.
- Give the location where first aid is needed.
- Answer any questions the dispatcher may have.
- Stay on the phone until the dispatcher tells you to hang up.

Fire:
Dial 911

- Give the location of the fire or fire alarm.
- Answer any questions the dispatcher may have.
- Exit the building.

Emergency Calls
In case of an emergency don't hesitate to use the emergency **911**-phone number, however, don't misuse or tie up this line to report keys in vehicle or minor maintenance repair request.

Figure 5. Virginia Tech Emergency Reporting Guidance as of 2007

In addition to the VTPD, organic university security control measures include controlled access to residence halls that require a student or staff keycard for entrance between 2200 and 1000 hours. Furthermore, these keycards only grant individual access for assigned dormitories and mailbox areas. With the exception of staff offices, many buildings on campus are considered public spaces and open 24 hours daily along with most classrooms on campus that have no locks. Additionally, there are no guards or cameras over-watching the entrances or hallways of most Virginia Tech campus buildings. Although loudspeaker systems are present in some buildings, they were not centrally networked and required someone to speak into an intercom in each building. In light of the horrific events that occurred on this campus on April 16, 2007, the preceding security posture seems extremely lackadaisical and insufficient. However, this level of security is not uncommon and, is in fact, quite typical of most university campuses that are surrounded by low crime areas. This typical security posture is justified and

appropriate when compared to the basic mission of Institutions of Higher Education that is to provide a peaceful and open campus setting that encourages freedom of movement and expression.[111]

Virginia Tech's existing emergency alerting system was in the process of being updated in the spring of 2007. At that time, the university's system had the capability to send emergency messages to all students, staff and faculty via a broadcast email system. Virginia Tech also utilizes the university's home webpage for posting emergency messages. This site has a high volume capacity and even as the events of April 16, 2007 unfolded, the site was able to sustain over 148,000 hits per hour. Emergency messages, usually weather related, are posted on this webpage in a box directly on the primary screen so that users will see the message as soon as they are on the site.[112] Virginia Tech also maintains contact with local radio and television stations in the surrounding area and has the capability to send emergency messages to these stations that can be played immediately. This capability affords the Virginia Tech administration the ability to send an emergency message via multiple media platforms and inform not only the university population, but the local area population as well. In the spring of 2007, Virginia Tech was also in the process of installing a *Unified Campus Alerting System*. This multimedia messaging system is capable of sending parallel emergency messages to registered computers, cell phones, PDAs, and telephones.[113] Registered users of this system can include students, staff, faculty, and parents. All students are strongly encouraged to register with this system, but are not required to do so. Transmission of emergency messages utilizing this system to the entire university population on all multimedia devices can be completed in less than one minute. Drawbacks to this system are cost and available bandwidth to accommodate the surge of messages.[114] Equally important as having an efficient and expeditious means to deliver emergency messages is the plan for

---

[111] Virginia Tech Review Panel, *Mass Shootings at Virginia Tech*, 14.

[112] Virginia Tech Review Panel, *Mass Shootings at Virginia Tech*, 14.

[113] Virginia Tech Review Panel, *Mass Shootings at Virginia Tech*, 14.

[114] Virginia Tech Review Panel, *Mass Shootings at Virginia Tech*, 16.

message delivery, content, and timing. In the case of Virginia Tech on April 16, the Virginia Tech Policy Group and the Virginia Tech Police Chief had the authority to send an emergency message to the university population.[115]

2. The Events of April 16, 2007

a. West Ambler Johnston Hall

In the early hours of April 16, Seung Hui Cho departed his dormitory (Harper Hall) and walked to West Ambler Johnston (WAJ) Hall. After gaining access to the dormitory, Cho made his way to room 4040, which was Emily Hilscher's room. Miss Hilscher had just returned with her boyfriend who was a student at Radford University. Although Cho had a previous history of stalking other female students on the Virginia Tech campus, there was no previous recorded connection between Cho and Emily Hilscher prior to her murder.[116]

At approximately 0715, Cho shoots Emily Hilscher. In response to the loud noises, Resident Advisor, Ryan Clark, who lived in the adjacent room, went to Emily Hilscher's room in order to investigate. Police reports filed as part of the crime scene investigation indicate that Ryan Clark confronted Cho and was shot as well. The loud noises resulting from Cho's fatal gun shots, killing Emily Hilscher and Ryan Clark and the sounds of their bodies falling to the floor, were initially misinterpreted by other students in the dormitory as someone falling out of a loft bed. As a result, a student residing in a nearby room called the VTPD and a police officer and EMS team was dispatched to the dormitory. Upon arriving to room 4040 at 0742, the police officer identified the wounds sustained by Emily Hilscher and Ryan Clark as gunshot wounds and immediately called for additional police assistance and the EMS team began to render initial medical treatment. Miss Hilscher was transported to

[115] Virginia Tech Review Panel, *Mass Shootings at Virginia Tech*, 16.

[116] Virginia Tech Review Panel, *Mass Shootings at Virginia Tech*, 78.

Montgomery Regional Hospital and then to Carilion Roanoke Memorial Hospital where she died. Ryan Clark was transported to Montgomery Regional Hospital where he was pronounced dead on arrival.[117]

Figure 6. Front Entrance of West Ambler Johnston

Meanwhile, Cho exited the building unnoticed and arrived at his dormitory (Harper Hall) at 0717 where he changed clothes and checked his email at 0725. He then proceeded to delete all of his emails, wipe out his university account, as well as remove and dispose of his cell phone and computer hard drive. Between 0725 and 0900, an individual fitting Cho's description was seen by the duck pond.[118] At 0901, Cho mailed a package containing his seven page written manifesto along with a video recording of himself interpreting the manifesto and photos of himself with an assortment of guns to NBC News in New York. Cho also mailed a letter to the English Department at this time.[119] After Cho mailed his items, his exact course to Norris Hall is unknown.[120]

Upon notification of the double homicide, VTPD Chief Wendell Flinchum called for additional resources from the Blacksburg Police Department (BPD) and crime scene

[117] Virginia Tech Review Panel, *Mass Shootings at Virginia Tech*, 78.

[118] Virginia Tech Review Panel, *Mass Shootings at Virginia Tech*, 78.

[119] Hui Cho Seung, (Deceased), *Virginia Polytechnic Institute Mass Murder Domestic Police Cooperation 00:RH* (Case ID# 62D-RH-NEW), Federal Bureau of Investigation Official Report, April 18, 2007, 2.

[120] Virginia Tech Review Panel, *Mass Shootings at Virginia Tech*, 86.

investigators were sent to WAJ Hall. After investigators arrived, students were interviewed and the dormitory was locked down.[121] As a result of the initial crime scene investigation, Emily Hilscher's boyfriend was quickly identified as a "person of interest" by the VTPD and BPD. At the conclusion of the crime scene investigation, no other pieces of evidence or leads identified Cho as the shooter. Acting on their initial lead, law enforcement officers reached a premature conclusion and focused their efforts on the boyfriend.[122] Although this conclusion was false and diverted investigative efforts, an unanticipated but beneficial result was the alert and posture of the VTPD and BPD ERTs in order to make anticipated arrests.[123]

Once informed of the double homicide in WAJ Hall by Chief Flinchum, President Steger immediately convened the Emergency Policy Group in order to decide on appropriate content and timing of a notification to the university community. The Policy Group delivered a carefully worded alert notification message more than two hours after the WAJ double homicide.[124] Just before 0930, the Virginia Tech University population received the following emergency notification:

> A shooting incident occurred at West Ambler Johnston earlier this morning. Police are on the scene and are investigating. The university community is urged to be cautious and are asked to contact Virginia Tech Police if you observe anything suspicious or with information on the case. Contact Virginia Tech Police at 231–6411. Stay tuned to the www.vt.edu. We will post as soon as we have more information.[125]

b. Norris Hall

In response to the double homicide at WAJ Hall, many more police officers than normal were on the Virginia Tech Campus. Additionally, both the VTPD and the BPD ERTs were assembled, pre-positioned at the BPD headquarters and postured to make arrests resulting from the initial crime scene investigation currently underway at

---

[121] Virginia Tech Review Panel, *Mass Shootings at Virginia Tech*, 78.

[122] Virginia Tech Review Panel, *Mass Shootings at Virginia Tech*, 79.

[123] Virginia Tech Review Panel, *Mass Shootings at Virginia Tech*, 80.

[124] Virginia Tech Review Panel, *Mass Shootings at Virginia Tech*, 82.

[125] Virginia Tech Review Panel, *Mass Shootings at Virginia Tech*, 82.

WAJ Hall. Meanwhile, Cho left the post office at approximately 0901 and proceeded to Norris Hall wearing a backpack which he used to conceal his two pistols, nearly 400 rounds of ammunition (most of which was preloaded into magazines), a knife, heavy chains, and a hammer. Cho also wore a lightweight coat this morning in order to conceal his tactical shooting vest. Once at Norris Hall, Cho chained all three main exterior doors in order to delay response and to trap potential victims.[126]

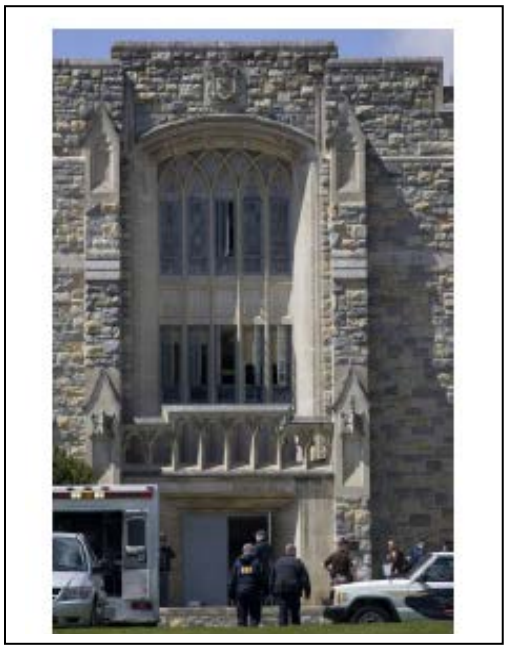


Figure 7. One of the Main Entrances of Norris Hall

The chains were noticed by some students prior to the shooting, but were not reported. In one instance, a female student on her way into Norris Hall noticed the entrance doors chained shut and crawled through a window in order to get to her destination inside the building. Another group of students attempting to leave the building also noticed the chains but did not report them to any staff or faculty members. The complacent nature of the student populace and frequent construction on campus explains why, in both instances, the students dismissed the chains as part of a campus construction project and carried on with their daily activities.[127] After Cho chained the

[126] Virginia Tech Review Panel, *Mass Shootings at Virginia Tech*, 89.

[127] Virginia Tech Review Panel, *Mass Shootings at Virginia Tech*, 90.

exterior doors, he roamed the halls of the second floor peering into classrooms. Without saying a word, Cho entered the Advanced Hydrology engineering class of Professor G. V. Loganathan, located in room 206, where he killed the instructor and continued shooting at the 13 students present for class in room 206 that fateful morning. Of the 13 students, nine were killed, two were injured, and two were unharmed. Cho carried out his actions in complete silence without saying a word. He gave no indication of rationale or motive during the entire incident that lasted 11 minutes from approximately 0940 to 0951. As Cho began his massacre, in room 206, Jocelyne Couture-Nowak who was the French teacher in the adjacent room (room 211) asked student, Colin Goddard, to call 9-1-1. Goddard's call was initially routed to the BPD and was received at 0941 and was then rerouted to the VTPD and received at 0942. Students throughout Norris hall, most of which are unfamiliar with the sound of live gunfire, were initially confused by the loud noises. Some professors even demanded that class continue as planned until fleeing students followed by Cho revealed the true seriousness of the situation.[128]

After leaving room 206 Cho walked across the hall to room 207, a German class taught by Christopher Bishop. Cho shot professor Bishop and several students has he entered the room. Once inside, he moved up and down the aisles of the classroom shooting other students as he came to them. Before Cho left room 207, he had killed Professor Bishop and four additional students, as well as wounded another six. Cho then moved to Professor Nowak's class in room 211. Despite efforts to barricade the door with furniture, Cho pushed his way into the classroom and, without saying a word, proceeded to open fire on the classroom. Goddard, the student who had called 9-1-1, was among the first to be shot. As he fell to the floor, another student named Emily Hass retrieved his cell phone and, although she was slightly wounded twice in the head by bullets, remained on the line with the 9-1-1 dispatch for the remainder of the shooting.[129]

Students in room 205 barricaded the door with their bodies and feet. Despite Cho's efforts to force his way into the room, he was unsuccessful and his haphazard shots fired through the door into the classroom did not result in any injuries.

[128] Virginia Tech Review Panel, *Mass Shootings at Virginia Tech*, 91.

[129] Virginia Tech Review Panel, *Mass Shootings at Virginia Tech*, 91.

As Cho returned to the German class in room 207, the remaining able-bodied students, some uninjured and some injured, barricaded the door with their bodies as well. Although Cho was able to open the door slightly and fire shots into the classroom, the shots fired were not effective and Cho eventually ceased at his attempt to re-enter and no further injuries were sustained in room 207. After being denied entry into room 207, he moved back to room 211 where he walked up and down each aisle shooting students again. Although Goddard was shot two more times by Cho, he continued to play dead. Ultimately, Cho killed the professor and eleven students and injured another six in room 211.[130]

While on his way to room 204, an engineering class taught by Professor Liviu Librescu, a janitor saw Cho reloading his pistols in the hallway and fled. Cho then continued his movement to room 204. As Cho arrived to the classroom, Professor Lebrescu braced his body against the door and told the students to exit through the window. Ten of the 16 students present in the class were able to escape by leaping the 19 feet from the second floor class window to the ground below. Professor Librescu was fatally shot through the door by Cho, and once in the classroom, Cho proceeded to kill one student and seriously injured three others.[131]

[130] Virginia Tech Review Panel, *Mass Shootings at Virginia Tech*, 91.

[131] Virginia Tech Review Panel, *Mass Shootings at Virginia Tech*, 91.

Figure 8. Norris Hall Classroom Windows on the Side of Professor Librescu's Classroom

The classrooms in Norris hall are mostly square and furnished with lightweight furniture. None of the classroom doors were lockable from the inside and there was no available messaging system by which professors could initiate or receive an alert. This design afforded the students and faculty in Norris Hall no reliable ability to effectively barricade classrooms or call for help. Ten minutes passed from the receipt of the first 9-1-1 call to the end of the incident when Cho finally committed suicide. Within that timeframe, Cho fired 174 rounds from two semiautomatic pistols (9mm Glock and .22 cal Walther) for which he had 19 total high capacity magazines. He fired most of his shots from point blank range and killed 30 students and faculty members and injured another 17 before finally shooting himself in the head at approximately 0951.[132]

3. Analysis

Virginia Tech's existing emergency alerting system was in the process of being updated in the spring of 2007. At that time, the university's system had the capability to send emergency messages to all students, staff and faculty via a broadcast email system. While this feature greatly expedites the flow of information in an emergency situation,

[132] Virginia Tech Review Panel, *Mass Shootings at Virginia Tech*, 92.

there are significant, inherent shortfalls with this aspect of the emergency alerting system. First, unless you are actively monitoring your email account at the time the alert is sent, then there will be a significant delay between message sent and message received. Second, the authority and capability to send such a message rested with the University Associate Vice President for University Relations. Although this individual has the capability to send this message from anywhere via internet connectivity, the emergency must first be verified before an alert can be sent. Additionally, the Virginia Tech email system had 36,000 registered email addresses as of April 16, 2007. With a message distribution rate of 10,000 messages per minute, the process of sending an emergency message alone takes 3.6 minutes.[133] Considering the steps required in order to send an emergency message and the constraints of the available network for broadcast email alerts; even by assigning a minimal and unrealistic time of one minute to each of the steps required in the emergency messaging process, the total time from incident occurrence to emergency message receipt would be 12.6 minutes.[134] As the average Active Shooter Incident is 12.5 minutes, on average, a system, such as this would not be able to even alert the university population prior to the culmination of the incident.[135]

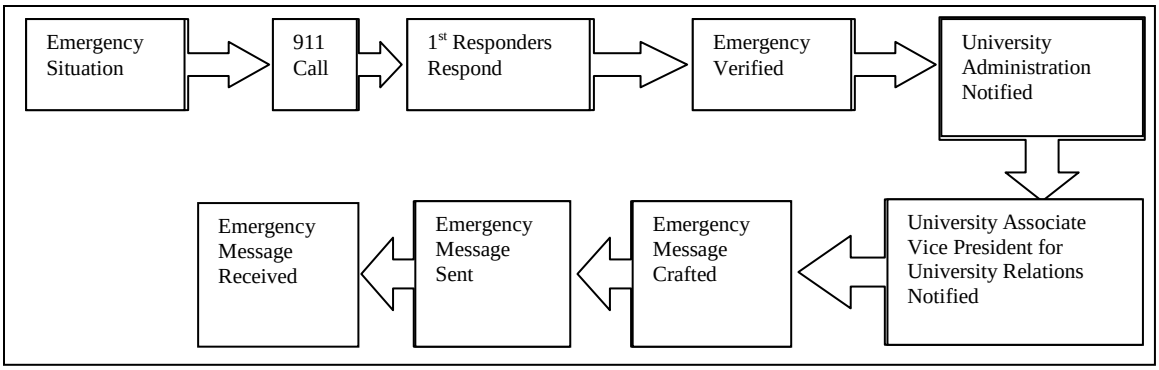


Figure 9. Virginia Tech Abbreviated Emergency Alerting Procedure

Virginia Tech also utilizes the university's home webpage for posting emergency messages. This site has a high volume capacity and even as the events of April 16, 2007

[133] Virginia Tech Review Panel, *Mass Shootings at Virginia Tech*, 92.

[134] Drysdale, Modzeleski, and Simons, *Campus Attacks: Targeted Violence Affecting Institutions of Higher Education*, Table 3.

[135] Drysdale, Modzeleski, and Simons, *Campus Attacks: Targeted Violence Affecting Institutions of Higher Education*, Table 6.

unfolded, the site was able to sustain over 148,000 hits per hour. Emergency messages, usually weather related, are posted on this webpage in a box directly on the primary screen so that users will see the message as soon as they are on the site.[136] While this asset provides many great features and capabilities for delivering emergency messages, it too has significant shortfalls. First, as with the broadcast email, users must be either actively monitoring the web page or navigate to it in order to receive the emergency message. Second, this web page is typically used for less time sensitive emergencies, such as weather alerts, as well as standard student and staff notices. As a result, a high level of information saturation encourages webpage users to ignore alerts.

Virginia Tech also maintains contact with local radio and television stations in the surrounding area and has the capability to send emergency messages to these stations that can be played immediately. This capability affords the Virginia Tech administration the ability to send an emergency message via multiple media platforms and inform not only the university population, but the local area population as well. However, as with the previous two capabilities, this one too has significant shortfalls. First, this process requires university officials to present validation codes for each radio or television station in order to prevent false reports. As a result, the process for transmitting an emergency message in this manner takes approximately 20 minutes.[137] This time added to the existing time required to validate an emergency through the university's own abbreviated validation process would take a minimum of 29 minutes. This too is well in excess of the 12.5 minutes of duration for the average Active Shooter scenario. Additionally, emergency messages delivered in this manner have the potential to attract more curious bystanders or concerned citizens to the situation and further complicate the problem.

Although text messages delivered via cell phones would probably provide a more expedient means by which to alert the university population, this feature was not yet installed as part of the Virginia Tech emergency alerting system on April 16, 2007. Instead, the university had a broadcast phone-mail system in place that is capable of sending a phone message to all registered phone numbers. However, this system required

---

[136] Virginia Tech Review Panel, *Mass Shootings at Virginia Tech*, 14.

[137] Virginia Tech Review Panel, *Mass Shootings at Virginia Tech*, 14.

voluntary registration so messages are only sent to those phones that are registered. An emergency message was delivered to registered users on April 16. As the Associate Vice President for University Relations stated in the *Report to the Review Panel* presented to Governor Kaine, this method of emergency notification requires 11 separate actions and is not a useful approach to time critical alerts. In addition to the previously listed emergency notification capabilities, additional sporadic assets, such as loudspeaker systems, bullhorns and human relay utilizing Resident Advisors and floor wardens round out the Virginia Tech capabilities that were in place at the time of the Active Shooter incident on April 16.[138]

Equally important as having an efficient and expeditious means to deliver emergency messages is the plan for message delivery, content, and timing. In the case of Virginia Tech on April 16, the Virginia Tech Policy Group and the Virginia Tech Police Chief had the authority to send an emergency message to the university population. Virginia Tech policy at the time of the incident directed the Police Chief to consult with the Virginia Tech Policy Group, consisting of the university president and senior university officials, prior to sending any messages. Although the chief had the authority to send a message, he did not possess the means to do so. In fact, only two individuals on the university staff possessed the authority and the means to send an emergency message to the university population: the Associate Vice President for University Relations and the Director of News and Information. Furthermore, Virginia Tech had no preset messages for different types of emergencies prepared in advance. Each message sent through the Virginia Tech emergency alert system was individually crafted at the time of the incident.[139] The university Policy Group also issued five additional messages to the community that, while they assisted in informing the university population after the incident was over, had no effect on reducing the *rate of kill*. The five messages are outlined in Table 6.

---

[138] Virginia Tech Review Panel, *Mass Shootings at Virginia Tech*, 15.

[139] Virginia Tech Review Panel, *Mass Shootings at Virginia Tech*, 15.

Messages issued by the Virginia Tech University Policy Group to the Community in Response to the Norris Hall Shooting	
Time	**Message**
0950	*"A gunman is loose on campus. Stay in buildings until further notice. Stay away from all windows."*
1015	*"Virginia Tech has cancelled all classes. Those on campus are asked to remain where they are, lock their doors, and stay away from windows. Persons off campus are asked not to come to campus."*
1050	*"In addition to an earlier shooting today in West Ambler Johnston, there has been a multiple shooting with multiple victims in Norris Hall. Police and EMS are on the scene. Police have one shooter in custody and as part of routine police procedure; they continue to search for a second shooter. "All people in university buildings are required to stay inside until further notice. All entrances to campus are closed."*
1130	*"Faculty and staff located on the Burruss Hall side of the drill field are asked to leave their office and go home immediately. Faculty and staff located on the War Memorial/Eggleston Hall side of the drill field are asked to leave their offices and go home at 12:30 p.m."*
1215	*"Virginia Tech has closed today Monday, April 16, 2007. On Tuesday, April 17, classes will be cancelled. The university will remain open for administrative operations. There will be an additional university statement presented today at noon.* *"All students, faculty and staff are required to stay where they are until police execute a planned evacuation. A phased closing will be in effect today; further information will be forthcoming as soon as police secure the campus.* *"Tomorrow there will be a university convocation/ ceremony at noon at Cassell Coliseum. The Inn at Virginia Tech has been designated as the site for parents to gather and obtain information."*

Table 4. These Messages Were Issued to the Virginia Tech Community in Response to the Norris Hall Shooting by the Virginia Tech University Policy Group (From [140])

These messages were all issued too late to be of any security value and, as a result, did not affect the *Rate of Kill* for this instance at all. While these messages arguably had a moderate value for facilitating the exit plan for personnel currently on the campus, the university has received harsh criticism for the untimely nature and the vague content of these messages.[140]

According to university records, 148 students were registered for class convening at 0905 in Norris Hall on April 16. At least 31 students did not go to class that day which means that at least 100 or possibly as many as 120 students (counting those who happened to be in the building but were not registered for 0905 classes) were in Norris Hall at the time of the shooting. Additionally, other university administrative staff members were present in Norris Hall at this time as well, but none of them were injured

[140] Virginia Tech Review Panel, *Mass Shootings at Virginia Tech*, 97.

or killed. Of the students and faculty present, 30 were killed, 17 were injured by gunfire, 6 were injured by jumping from windows, and 4 sustained injuries from other causes. Room 211 suffered the highest casualty count at 12 followed by room 206 with 10, 207 with 5, 204 with 2, and 225 with 1. These casualties are further depicted in Tables 4 and 5.[141] When analyzing these totals, the most significant conclusion relative to Active Shooter mitigation is generated when these casualties are compared in the order in which they occurred. Cho began killing victims in room 206, he then moved to 207, then 211, then 205, then back to 207 and back to 211 before killing himself. Room 206 had a 77% kill ratio of persons present versus persons killed. Room 207 had a 38% kill ratio, room 211 had a 67% kill ratio, and room 205 had zero persons killed. As Cho returned to room 207, he found the door barricaded and was unable to re-enter or to inflict further injuries. Throughout this incident, in every instance where potential victims took action, whether it was jumping out of windows, barricading doors, calling police, or playing dead, the *Rate of Kill* was decreased.[142] Although this example provides strong evidence in support of victim response in incidents, such as this, lack of a standardized response and immediate control measures still affords victims and potential victims little advantage during Active Shooter scenarios. The Virginia Tech shooting demonstrated that victims and potential victims are the only immediate responders to an Active Shooter and lends great support to our third hypothesis which maintains that a Victim Initiated Mitigation system that is able to sufficiently synchronize immediate control measures with a prescribed set of automated responses would have been capable of reducing the *Rate of Kill* in this instance.

Due to the delayed release of the initial message issued by the Policy Group, some students and faculty were already in their 0905 class. If the Policy Group could have released the message earlier, more members of the university population could have been alerted prior to class.[143] In addition to the untimely emergency notification, the

---

[141] Virginia Tech Review Panel, *Mass Shootings at Virginia Tech*, 100.

[142] Pete Blair, "Response to Active Shooter Events," Lecture: Advanced Law Enforcement Rapid Response Training (ALERRT) Active Shooter Conference, San Marcos Texas, November 15, 2011.

[143] Blair, "Response to Active Shooter Events."

Virginia Tech university administration received harsh criticism for not locking down the campus in response to the murders at WAJ Hall. However, upon further analysis of the feasibility of locking down a campus as large as Virginia Tech with a total population of 35,000 people, this task proves not only to be unfeasible, but impossible with the current university infrastructure and security.[144] With a population of 35,000 people and a university composition of 131 major buildings, the process of locking this institution down could be likened to locking down a small city. In defense of the university administration's decision not to lock the campus down in response to the WAJ double homicide, if a murder were to occur in a small city of similar dimensions, the entire city is not typically locked down.[145] However, in response to this argument, it can easily be argued that universities have more control over their population and facilities than municipal leadership and law enforcement have over the population and facilities in their city. Additionally, parental expectations of university security are higher than reasonable expectations of security within a given city.[146] As the findings of the *Report of the Review Panel* presented to Governor Kaine indicate, parents, students, staff, and faculty all have an expectation that the university will be locked down in some manner in response to an incident, such as the one that occurred on April 16.

The preceding list of poorly managed and inadequate alert systems coupled with an extremely cumbersome and inefficient chain of command is indicative of a poor Emergency Response Plan. The plan in place on April 16, 2007 was two years old and included no specific instructions for a school shooting incident.[147] Instead, the plan broadly divides all emergencies into categories (0, I, II, or III). The events of April 16 constitute the highest level of emergency as outlined in this plan. A level III emergency requires the designation of an Emergency Response Coordinator (ECR), and establishment of an Emergency Operations Center (EOC), as well as Satellite Operations Centers to assist the ERC. Virginia Tech's Emergency Response plan also goes on to

---

[144] Blair, "Response to Active Shooter Events."

[145] Blair, "Response to Active Shooter Events."

[146] Virginia Tech Review Panel, *Mass Shootings at Virginia Tech*, 83.

[147] Virginia Tech Review Panel, *Mass Shootings at Virginia Tech*, 83.

identify two key decision groups: the Policy Group and the Emergency Response Resources Group.[148] While this plan goes into great detail with regards to the establishment of positions and descriptions of the authorities and responsibilities of those positions, it does not provide a clear tactical response to an emergency situation, such as the one experienced on April 16.

Norris Hall Student Census for April 16, 2007 0905 Classes

Room No.	Total Students on Class Roll	Total Students Accounted For:						Students Injured** by Gunshot	Used Windows To Escape	
		Killed or Later Died	Injured	Not Physically Injured	Did Not Attend Class	Status Not Verified	Total		Injured*	Not Injured*
200	14*	0	0	0	14**	0	14	0		
204	23	1	9	6	5	2	23	3	6	4
205	14	0	1	8	3	2	14	0		
206	14	9	2	2	1	0	14	2		
207	15	4	7	1	3	0	15	6		
211	22	11	6	0	4	1	22	6		
306	37	0	1	20	1	15	37	0		
Labs	9	0	0	9	0	0	9	0		
Totals	**148**	**25**	**26**	**46**	**31**	**20**	**148**	**17**	**6**	**4**

* Included in "Total Students Accounted For"
** Class was cancelled that day

Table 5. Results from a Norris Hall Student Census for April 16, 2007 0905 Classes From [147])

Norris Hall Faculty Census for April 16, 2007

Room #	Total Faculty Scheduled	Total Faculty Accounted For					
		Killed or Later Died	Injured	Not Physically Injured	Did Not Attend Class	Status Not Verified	Total
200	1	0	0	0	1**		1
204	1	1	0	0			1
205	1	0	0	1			1
206	1	1	0	0			1
207	1	1	0	0			1
211	1	1	0	0			1
306	1	0	0	1			1
225/hallway	1	1	0	0			1
Totals	**8**	**5**	**0**	**2**	**1**		**8**

* Class was cancelled that day

Table 6. Results from the Norris Hall Faculty Census for April 16, 2007 (From [147])

[148] Virginia Tech Review Panel, *Mass Shootings at Virginia Tech*, 17.

Key Security Recommendations as Prescribed by the Virginia Tech Review Panel	
Recommendation Number	**Virginia Tech Review Panel Recommendation**
VIII-1	*Campus police everywhere should train with local police departments on response to active shooters and other emergencies.*
VIII-2	*Dispatchers should be cautious when giving advice or instructions by phone to people in a shooting or facing other threats without knowing the situation.*
VIII-3	*Police should escort survivors out of buildings, where circumstances and manpower permit.*
VIII-4	*Schools should check the hardware on exterior doors to ensure that they are not subject to being chained shut*
VIII-5	*Take bomb threats seriously. Students and staff should report them immediately, even if most do turn out to be false alarms.*

Table 7. Key Security Recommendations as Prescribed by the Virginia Tech Review Panel in Regards to the Mass Shooting at Norris Hall

In the *Report to the Virginia Tech Review Panel* ordered by Governor Kaine, several key findings were identified as a result of an in depth review of the Virginia Tech emergency response to the mass shooting carried out by Seung Hui Cho on April 16. The first of which was that there was no provision for a school shooting anywhere in the entire plan.[149] This oversight was the largest contributing factor to the disjointed and ineffective emergency response experienced on April 16. This also accounts for the lack of student awareness, and training for staff, and faculty regarding Active Shooter scenarios. Additionally, the VTPD was not placed high enough in the decision making hierarchy.[150] This greatly contributed to the delay in alerting the university population to the emergency situation. Also contributing to this delay, was the cumbersome emergency response policy that requires that a Policy Group be convened in order to decide whether to send a message to the university population and to compose its contents. Furthermore, lack of basic security control measures on all buildings and an efficient means of emergency notification also greatly compounded the events of April 16.[151] While it may seem obvious in the wake of Cho's massacre at Virginia Tech, the Virginia Tech Review

[149] Virginia Tech Review Panel, *Mass Shootings at Virginia Tech*, 17.

[150] Virginia Tech Review Panel, *Mass Shootings at Virginia Tech*, 17.

[151] Virginia Tech Review Panel, *Mass Shootings at Virginia Tech*, 18.

Panel felt obligated to state in their report to the Governor that, "Parents and students can and do consider security a factor in making a choice of where to go to school."[152]

Key Security Recommendations as Prescribed by the Virginia Tech Review Panel	
Recommendation Number	**Virginia Tech Review Panel Recommendation**
II-1	*Universities should do a risk analysis (threat assessment) and then choose a level of security appropriate for their campus.*
II-2	*Virginia Tech should update and enhance its Emergency Response Plan and bring it into compliance with federal and state guidelines.*
II-3	*Virginia Tech and other institutions of higher learning should have a threat assessment team that includes representatives from law enforcement, human resources, student and academic affairs, legal counsel, and mental health functions.*
II-4	*Students, faculty, and staff should be trained annually about responding to various emergencies and about the notification systems that will be used.*
II-5	*Universities and colleges must comply with the Clery Act, which requires timely public warnings of imminent danger.*
II-6	*Campus emergency communications systems must have multiple means of sharing information.*
II-7	*In an emergency, immediate messages must be sent to the campus community that provide clear information on the nature of the emergency and actions to be taken.*
II-8	*Campus police, as well as administration officials should have the authority and capability to send an emergency message.*
II-9	*The head of campus police should be a member of a threat assessment team, as well as the emergency response team for the university.*
II-10	*Campus police must report directly to the senior operations officer responsible for emergency decision making.*
II-11	*Campus police must train for active shooters*

Table 8. Key Recommendations Describing Security Enhancement Suggestions As Prescribed by the Virginia Tech Review Panel Report to Governor Kaine[153]

Police response to the Norris Hall shooting was an insignificant factor in reducing the *Rate of Kill* of the incident. Within 3 minutes of the 9-1-1 call being received by the dispatch the first two officers were on scene followed immediately by three other officers. This incredible response time was a result of the increased security posture and pre-positioning of many officers at WAJ in conjunction with the earlier double homicide. Although in this instance, these circumstances provided for a prompt response; had the WAJ double homicide not occurred, the response time and composition of the responding officers would have been significantly different. After experiencing extreme difficulty bypassing the chained doors, two teams composed of a mixture of patrol and SWAT

[152] Virginia Tech Review Panel, *Mass Shootings at Virginia Tech*, 18.

[153] Virginia Tech Review Panel, *Mass Shootings at Virginia Tech*, 18.

officers proceeded to the sounds of gunfire. As they arrived to the second floor, the shooting stopped as Cho committed suicide.[154] Despite the responding officer's best efforts, they were not able to reduce the *Rate of Kill* in Norris Hall during the eleven minute *Incident Duration* because they were not equipped with the necessary tools required to defeat the chained doors, nor did they have an expedient access to building floor plans required to identify an alternate entry point. Furthermore, the events of April 16 unfolded so rapidly that police were not able to designate an Incident Commander or establish an Emergency Operations Center in order to coordinate the tactical response.[155]

The feasibility of a complete campus lock down of the Virginia Tech campus is questionable at best. When escaped convict William Morva escaped from a nearby detention facility in August of 2006, and was believed to be on the Virginia Tech campus, the university administration decided to close the university. This resulted in numerous large scale problems. First, a massive traffic jam ensued and university and surrounding roadways were congested for over an hour and a half. Additionally, many people stood for long periods of time at bus stops. In an Active Shooter scenario, this situation makes the university population very vulnerable while in their cars on congested and gridlocked roadways or congregated at bus stops for long periods of time. Second, the process of locking a building down involves locking exterior and interior doors. However, Virginia Tech classrooms are not equipped with interior door locks for classroom doors. Therefore, at the time of the incident, if the university administration had decided to lock the campus down, only the exterior doors leading into each building would have been able to be locked. In the particular instance of the April 16 shooting, this solution would have proven to be inconsequential unless the lockdown was initiated immediately after the WAJ double homicide. Furthermore, no efficient means of communicating between buildings existed on the Virginia Tech campus at the time of the shooting providing no way to coordinate a timely lock down of the campus. In fact, the only reasonable asset available to the campus at the time capable of locking all buildings down was the VTPD. However, the 14 of 41 total VTPD officers which are on duty at

[154] Virginia Tech Review Panel, *Mass Shootings at Virginia Tech*, 18.

[155] Virginia Tech Review Panel, *Mass Shootings at Virginia Tech*, 95.

any given time would not likely have the entire campus locked down in less than two hours after initiation of an Active Shooter scenario.[156] Additionally, Virginia Tech is constructed, much like most universities, as a porous campus. Even if every building on the campus were to be locked, it is completely infeasible to expect that the entirety of Virginia Tech's 2,600 acres could be locked down. A more feasible option would have been to quickly disseminate a message canceling classes in response to the WAJ double homicide. This action would have greatly reduced the number of students on campus at the time of the second shooting. Even given the limitations of the messaging system in place at Virginia Tech on April 16, if an alert was sent out canceling classes in a timely manner after the WAJ shooting, a large portion of the university population would have received the message prior to departing for class.

As a result, it was the finding of the *Report of the Review Panel* presented to Governor Kaine that, had a timely alert been issued canceling classes after the WAJ shooting or a campus lock down been initiated, that the number of casualties resulting from the incident could have been reduced. However, the panel also concluded that none of these measures taken in response to the WAJ double homicide would have likely averted the subsequent mass shooting altogether.[157]

Key Security Recommendations as Prescribed by the Virginia Tech Review Panel	
Recommendation Number	**Virginia Tech Review Panel Recommendation**
VII-1	*In the preliminary stages of an investigation, the police should resist focusing on a single theory and communicating that to decision makers.*
VII-2	*All key facts should be included in an alerting message, and it should be disseminated as quickly as possible, with explicit information.*
VII-3	*Recipients of emergency messages should be urged to inform others.*
VII-4	*Universities should have multiple communication systems, including some not dependent on high technology.*
VII-5	*Plans for canceling classes or closing the campus should be included in the university's emergency operations plan.*

Table 9. Key Recommendations Describing Security Enhancement Suggestions As Prescribed by the Virginia Tech Review Panel Report to Governor Kaine[158]

[156] Virginia Tech Review Panel, *Mass Shootings at Virginia Tech*, 83.

[157] Virginia Tech Review Panel, *Mass Shootings at Virginia Tech*, 87.

[158] Virginia Tech Review Panel, *Mass Shootings at Virginia Tech*, 83.

After review of the incident details of the Virginia Tech massacre, it is apparent that student and faculty survivability was enhanced solely by their own actions. While it can be argued that the law enforcement response contributed to Cho's decision to end the massacre at 11 minutes vice a longer duration, the evidence and firsthand accounts are irrefutable in portraying that the only factor that reduced the Rate of Kill during the Norris Hall mass shooting were actions taken by potential victims. All students who jumped out of windows in order to avoid the shooter survived. Barricading classroom doors clearly saved lives and reduced the *rate of kill.* Unfortunately, this action did not always deny the shooter entry into the classroom, but on average, Cho's freedom of movement was greatly reduced and lives were saved through the brave actions of some victims. Several students also pretended to be dead as Cho passed by them and survived as a result.[159]

4. Conclusion

In the wake of the horrible events that unfolded on the Virginia Tech campus on the morning of April 16, we are left with more questions than answers. The motivating factors which encouraged a disturbed student to indiscriminately kill 32 and injure 17 of his classmates and faculty members died with Cho. Although the VTPD and BPD responded quickly to Norris Hall, 11 minutes still remained from Cho's first shot to his last. Unfortunately, these 11 minutes and the carnage that ensued during this timeframe validate our second hypothesis by demonstrating that Law Enforcement response to the Active Shooter is insufficient to reduce the *Rate of Kill*. Law Enforcement capability to reduce the Rate of Kill in Active Shooter scenarios will always be limited by the separation of time and space between the threat and First Responders at the outset of the incident. Cho's attack on the Virginia Tech campus illustrates this claim.

With certainty, the increased presence of police at WAJ Hall, in response to the previous double homicide, contributed to a more timely response to the Norris Hall mass shooting. However, what is not certain is how the police response would have been affected if large numbers of officers were not already on campus. Given the initial

[159] Virginia Tech Review Panel, *Mass Shootings at Virginia Tech*, 94.

response time of 27 minutes to WAJ Hall, it is reasonable to assume that a significantly longer response time would have been experienced had the Norris Hall massacre been Cho's initial attack. Additionally, the events of April 16 occurred so rapidly that the VTPD was unable to establish an EOC. As a result, the confusing scenario was further complicated with difficulties of communication. While establishment of an EOC would have improved communications, it remains unknown if the resulting improved communications could have reduced the *Rate of Kill* by communicating accurate information to hospitals and local treatment facilities. Additionally, although Virginia Tech had alerting procedures and resources in place, the fact remains that 2 hours and 11 minutes passed from when the WAJ Hall double homicide occurred to when the Virginia Tech administration issued its first message informing the students, staff, and faculty of the events. Had this first warning been published prior to the beginning of 0905 classes and contained clearer guidance for either closing the campus or operating under heightened alert; perhaps Cho could have been interdicted prior to the shooting or less students would have been present in Norris Hall at the time of the shooting. Indeed, the answers to all of these questions will remain speculative in nature. However, what is known as a result of the Virginia Tech mass shooting is that although the control measures and alerting procedures Virginia Tech had in place prior to the shooting sounded very impressive; in reality, none of them did anything to mitigate Cho's attack. Instead, vigilance toward a solution capable of reducing the *Rate of Kill* of actions, such as the ones that occurred on April 16 is required.

As stated earlier, DHS reports that the average Active Shooter incident duration is 12.5 minutes, while the average First Responder response time is 18 minutes. Cho's rampage in Norris Hall lasted 11 minutes; in that time he managed to fire 174 rounds, kill 30 and injure 17 people before finally killing himself. This means that on average 16 shots were fired, three people were killed and two people were injured every minute. Although the average duration of an Active Shooter incident is 12.5 minutes, a sub-12.5 minute response standard to this type of emergency cannot be the vanguard of any reasonable response. Every minute counts. In the two minutes that it took for Colin Goddard's phone call to be transferred to the correct dispatch center, 32 shots were fired,

six people died, and four people were injured. In the five minutes it took for first responders to arrive to Norris Hall, 80 shots were fired, 15 people were killed and 10 people were injured. Every minute truly counts.

Of course, the most preferred method of mitigating attacks, such as this is to prevent them from happening at all. However, Cho's extensive and troubling mental health history prior to his attack validates our first hypothesis demonstrating that prevention and preemption of the Active Shooter alone is insufficient to reduce the *rate of kill*. The Virginia Tech mass shooting incident was conducted by a disturbed young man who, by all rights, did not receive adequate mental health care despite the efforts of his family and the Virginia Tech faculty members who made a concerted effort to ensure that he was cared for. Unfortunately, a mental health focused prevention and preemption strategy capable of effectively mitigating the Active Shooter threat is impractical for an already overburdened and underfunded aspect of student health. Instead, these aspects of mental health seem to be more applicable in a post-traumatic incident role. The events of April 16 forever changed the Cho family along with the families of the 32 victims killed that day. Deep emotional scares are felt not only by the additional 17 victims who were injured by Cho, but by the Virginia Tech community and the local Blacksburg community as well. Life will truly never be the same for the Virginia Tech and Blacksburg community. While this case study admittedly includes questions without answers, it is done with great solidarity and respect to the victims. Our hope is that through the process of examining the horrific events, such as the one that occurred on the Virginia Tech campus on April 16, 2007, we will be able to offer suggestions for how to effectively mitigate these events in the future.

B. UNIVERSITY OF TEXAS (AUSTIN, TX)

On August 1, 1966, a 25 year old architectural engineering student and former Marine named Charles Joseph Whitman opened fire from atop the University of Texas tower. Whitman's attack resulted in the death of 13 people and wounding of 31 others

and ended when a responding police officer shot and killed Whitman.[160] Whitman, frustrated and agitated by a deteriorating personal life, pending courts martial, addiction to amphetamines, and a struggling academic career, began his massacre in the early morning hours of August 1 as he stabbed his own mother in the heart and shot her in the head in her apartment at 1212 Guadalupe St. Whitman then returned to his home at 906 Jewell Street where he stabbed his wife Kathy to death as she slept.[161] After stopping at a rental company to rent a dolly, a bank to cash some checks, and a few stores to purchase additional firearms and ammunition, Whitman arrived to the University of Texas campus armed with a Remington Model 700 bolt action riffle with a Leupold M8-4X scope, a modified Sears 12 gauge semi-automatic shotgun, a Remington 35 caliber model 141 pump rifle, a U.S. Carbine 30 caliber M-1 rifle, a Smith and Wesson 357 Magnum 4.5 inch barrel revolver, a 9MM Luger semi-automatic pistol, and a 6.35 MM caliber semi-automatic pistol, and appropriate accompanying ammunition.[162] When Whitman arrived to the UT main administrative building shortly after 11:30 a.m., he met security guard Jack Rodman and presented an identification card that identified him as a research assistant for the school and explained that he had a delivery to make. Officer Rodman issued Whitman a parking pass and granted him access to the building. Whitman rode the elevator to the 27th floor of the tower that is located one floor beneath the clock face.[163]

After Whitman traversed the long flight of stairs leading to the rooms within the observation deck area, he was confronted by Edna Townsley who was the receptionist on duty and had observed the large trunk with which Whitman was struggling. Ms. Townsley asked for Whitman's University work identification. Unable to provide the appropriate identification, Whitman knocked her unconscious with the butt of his rifle

---

[160] Raymond W. Kelly, *New York City Police Department; Active Shooter Recommendations and Analysis for Risk Mitigation*, 2010.

[161] "Casting Off Shadow of UT Tower Shooting," *Austin American Statesman*, May 14, 2011.

[162] Ligon, Austin Police Department, *Charles Whitman Police Report, Supplementary Offence Report*, Offence Reported: Murder, Date Reported: 8-1-66, (Offence NO. M-968150, APD 1-1-64-11), Offence Reported: Murder, Date Reported: 8-1-66.

[163] Jesse Hicks, "What Charlie Saw," April 2006, *deekmagzine.com*.

and dragged her body behind a couch; she later died from her injuries.[164] Shortly after Whitman had concealed the body of Ms. Townsley, a young couple who had been sightseeing on the deck (Cheryl Botts and Don Walden) returned to the receptionist area and encountered Whitman, who was holding a rifle in each hand and was standing behind a puddle of Ms. Townsley's blood. Botts later stated that she believed the large red stain on the floor to be varnish, and that she thought Whitman was preparing to shoot pigeons from the observation deck. Whitman and the young couple exchanged greetings and pleasantries as Botts and Walden passed the reception area and entered the elevators. Once they were gone, Whitman barricaded the stairway.[165]

Shortly after Whitman had barricaded the stairway, two families (the Gabours and Lamports) who were ascending the staircase encountered the barricade. Michael Gabour was looking through the barricade when Whitman shot him with his sawed-off shotgun, hitting him in the left neck and shoulder region. Whitman then fired the shotgun two more times through grates on the stairway into both families as they attempted to retreat down the stairs.[166] Whitman fired his first shots from the tower's outer deck at approximately 11:48 a.m. After a brief period of disorientation and confusion, the first emergency call to the Austin Police Department was made by a history professor after he saw several students shot in the South Mall gathering center. Prior to this call, many others had dismissed the multiple reports of Whitman's rifle because they were unfamiliar with the sound of gunfire. However, panic ensued and the situation was fully understood shortly thereafter.[167] All active police officers in Austin were ordered to the campus. Other off-duty officers, Travis County Sheriff's deputies, and Texas Department of Public Safety troopers also converged on the area to assist.[168]

---

[164] Gary M. Lavergne, *Sniper in the Tower: The Charles Whitman Murders* (College Station, TX, University of North Texas Press, February 1997), 128–129.

[165] Cheryl Botts, "State of Texas, County of Travis, Sworn Affidavit," Offense Number M-968-150, August 4, 1966, http://en.citizendium.org/wiki/File:Cheryl_Botts_0001.jpg.

[166] Botts, "State of Texas, County of Travis, Sworn Affidavit," 132.

[167] Botts, "State of Texas, County of Travis, Sworn Affidavit," 148.

[168] Botts, "State of Texas, County of Travis, Sworn Affidavit," 152.

Authorities, assisted by armed civilians, were able to return fire on Whitman's position approximately 20 minutes after he began his indiscriminant killing from the tower. Whitman used the waterspouts on each side of the tower as gun ports, affording him covered firing positions.[169] Police lieutenant Marion Lee circled the tower from a small airplane and radioed a confirmation that there was only a single sniper on the observation deck. Lt Lee also attempted to shoot Whitman from the circling plane, but turbulence disrupted opportunities for a clear shot. After receiving effective fire from Whitman, pilot Jim Boutwell continued to circle the tower from a safe distance until the end of the incident.[170]

Whitman's choice of victims was indiscriminate but mostly concentrated on Guadalupe Street which is a major commercial district bordering the western campus boundary. In an effort to evacuate casualties amid Whitman's rampage, an armored vehicle and ambulances from local funeral homes were utilized. As a result of the large number of casualties and the uncertainty surrounding the amount of potential casualties, the Brackenridge Hospital administrator declared an emergency, and all available medical staff reported to the hospital in order to reinforce personnel currently on-duty.[171]

Austin Police Department (APD) Officers Ramiro Martinez, Houston McCoy and Jerry Day, assisted by an armed civilian named Allen Crum, were the first to reach the tower's observation deck. These first responders breeched the south door an entered the observation deck at 1:24 p.m. Martinez and McCoy proceeded in a northerly direction along the east deck while Day and Crum proceeded in a westerly direction along the south deck. Several feet before reaching the southwest corner, Crum accidentally discharged a shot from his borrowed rifle. Simultaneously, Martinez moved from behind the corner into the northeast area and fired all six rounds from his .38 police revolver at Whitman. While Martinez was firing, McCoy fired two fatal shots of 00-buckshot from his 12-gauge shotgun into the head, neck, and left side of Whitman, who was sitting in

---

[169] Lavergne, *Sniper in the Tower: The Charles Whitman Murders*, 172.

[170] Denise Gamino, "Austin Facility Names Hero of UT Rampage," *The Austin American-Statesman*, August 11, 2008.

[171] "16 Killed in UT Shooting Rampage," *Texas Landmarks and Legacies* MMXII, no. 213 (August 1, 1966), http://howdyyall.com/Texas/TodaysNews/index.cfm?GetItem=305.

the northwest corner approximately 50 feet away. Houston McCoy appeared before the Travis County Grand Jury on August 5, 1966 and received a justifiable homicide verdict for the death of Whitman.[172]

On August 1, 1966, the University of Texas at Austin endured a horrifying shooting spree which lasted approximately 1 hour and 34 minutes and was carried out by a deranged student who, through his actions, transformed a historical Texas landmark into a sniper's vantage point. Unfortunately, Whitman's troubled personal life consisting of a pending courts martial, addiction to amphetamines, and poor academic performance was not addressed by mental health professionals and these stressors finally culminated with violent action. Whitman's attack provides another validating example for our first hypothesis that states that prevention and preemption measures alone are insufficient to reduce the *Rate of Kill* for Active Shooter incidents. This attack differed from the Virginia Tech attack in that although Whitman was experiencing difficulties with many aspects of his personal and professional life, he had not been identified as a risk to himself or others prior to the attack as Cho was. Furthermore, no evidence was given in any police report or other review of the UT Tower shooting that indicated Whitman had received any form of mental health care or screening prior to the attack. If he had, it would have occurred as part of his entry requirements into the Marine Corps and these reports were not shared with the University. As a result, the UT Tower shooting demonstrates that a mental health focused prevention and preemption focused strategy is not capable of effectively mitigating Active Shooter attacks.

Ultimately, Whitman's rampage was ended through the brave actions of three police officers and one armed civilian. However, although the courage and resolve of these three individuals cannot be questioned, the fact remains that this was not a standardized response. As such, had these three individuals not been present that fateful day, it is illogical to assume that other individuals would react in the same manner. Furthermore, this unorganized and disadvantageous response to Whitman's attack required a lot of time to organize and execute. In the 1 hour and 34 minutes that elapsed

[172] Perry Flippin, "UT Tower Heroes to be Honored," *SA Standard Times*, August 6, 2007.

from Whitman's first shot to his demise atop the UT tower, many lives were lost or changed forever. This unfortunate aspect of the UT Tower shooting provides a validating example of our second hypothesis as it demonstrates that Law Enforcement interdiction of the Active Shooter was insufficient to reduce the *Rate of Kill* during this incident. Similar to the Virginia Tech shooting, law enforcement capability to reduce the *Rate of Kill* during the UT Tower shooting was limited by the separation of time and space between the threat and First Responders. In the case of the UT Tower shooting, overcoming these limitations took 1 hour and 34 minutes. The administrators and authorities of the UT campus and surrounding business district of Austin found themselves unprepared, ill-equipped, and inadequately trained to respond to an event, such as this. They were not alone. In fact, as a result of the UT tower shooting, coupled with a nationwide escalation of violence, police departments around the country began a critical introspective review of their training and capabilities. In fact, it is largely argued among the Law Enforcement community that the UT tower shooting provided the catalyst for the formation of SWAT teams.[173]

As demonstrated by the UT tower shooting, Whitman had full access and freedom of movement while victims below remained helpless with no viable means of mitigation. No alert or security measures were in place that were capable of providing notifications of the event or protection to the UT students, staff and faculty or Guadalupe St patrons. Whitman's rampage was only halted through the brave, but unorganized and ill-advantaged assault of three police officers and one armed civilian. Similar to the Virginia Tech shooting, actions taken by potential victims clearly saved lives and reduced the Rate of Kill during the UT Tower shooting. However, with no advantages afforded to them, this response was haphazard and delayed. In the absence of an adequate plan, equipment, or control measures; the first responders to the UT tower shooting were afforded no advantages and were forced to rely only on creativity and courage in order to stop the killing. As Law Enforcement and civil authorities in 1966 recognized the need to adapt tactics and equipment in response to this tragedy, authorities of our present time are

[173] Robert Snow, *Swat Teams: Explosive Face-offs with America* (Cambridge, MA: Perseus Books, November 1999), 6.

charged with the responsibility to take a critical look at available assets and determine if the current security needs are meet in High Occupancy Facilities in light of Active Shooter incidents since the UT tower shooting. This case study provides a good validating example of our third hypothesis confirming that a victim initiated response capable of sufficiently synchronizing immediate control measures with a prescribed set of automated and standardized responses is an effectively way to reduce the *Rate of Kill* for incidents, such as this. The UT Tower shooting demonstrates that a Victim Initiated Mitigation system incorporating automated control measures and complementary response protocols represents the only realistic means of reducing Response Time and Incident Duration for Active Shooter scenarios.

Charles J. Whitman's Possessions at time of Death		
Trunk Contents	Channel Master 14 Transistor AM-FM Radio (portable) brown case Robinson Reminder (note book, no writing) White 3.5 gallon plastic water jug (full water) Red 3.5 gallon plastic gas jug (full gas) Sales slip from Davis Hardware for August 1, 1966 4 "C" cell flashlight battery Several lengths of cotton and nylon ropes (different lengths) One plastic compass ("Wonda-scope") One paper mate ball point (black) Hatchet (Nesco) Machete with green scabbard (Hercules) hammer Green ammunition box with gun cleaning equipment Alarm Clock , "Gene" brand Cigarette lighter Canteen with water Rifle Scabbard, green, "Sears" Hunting knife (Camallus) with brown scabbard and whit stone	Large pocket knife (Wooden handle) lock blade Pipe wrench (10") Pair eye glasses, brown frame and brown case Box of kitchen matches 12 Assorted cans of food and two cans Sego, jar honey One can charcoal starter White and green 6-volt flashlight One set ear plugs Two rolls tape (white adhesive) Approximately one foot long solid steel bar Army green rubber duffle bag Green extension cord Lengths of clothes line wire and yellow electrical wire Bread- sweet rolls Gray gloves Deer bag (same bag) 6MM Remington, (full 20 box) shells – ammunition Large knife (Randall) with bone handle name of "CHARLES J. WHITMAN" on blade with brown scabbard with whit stone
Printed on Trunk	*L/CPL. CHARLES J. WHITMAN* *USMC - 1871634* *Marine Bks.* *Navy 115, Box 32-A* *FPO, NY, N.Y.* *To: Mrs C.A. WHITMAN, Jr.* *P.O. Box 1065* *Lake Worth, FLA. USA* (Insured Tag #10372 - May 17, 1961 - N.Y. N.Y.)	
Ammunition	35 Remington (full box) shells 35 Remington (full box) shells-"Peters" 35 Remington (full box) shells 357 Mag (Peters 50 rounds) full box 357 Mag Western (full box)	357 Mag Western (7 shells) 30 Caliber "Peters" (2 full boxes) Box Western 25 caliber auto. (approx. 40) Box Remington 9mm Luger (full box) Box 35 Western two shells
Weapons Found Around the Body of Charles Whitman	Remington Model 700 - 6MM, Bolt action #149037, with Leupold four power - M8-4X scope, cheek stock (serial #61384) and leather strap. Sears 12 gauge 2.75 chamber automatic shotgun, barrel and stock, both sawed off Remington 35 caliber model 141 pump #1859 rifle U.S. Carbine 30 caliber M-1 Universal #69799 with Webb sling. 357 Mag Smith and Weston 4.5 barrel, chrome, Model 19 #K391583 9MM Luger #2010 6.35 MM Caliber Automatic pistol - Galesi-brescia #366869	
Items Belonging to Whitman, Tagged and Placed in CID.	1-15 round clip 30 cal carbine loaded with hollow points 1-30 round clip, 30 cal carbine loaded with hollow points 1-30 round cilp 30 cal carbine loaded with lead nose bullets 2- clips 9mm Luger loaded, one clip had X cut on bullet 1-clip 25 cal. loaded 1- pair light brown leather gloves 1-Cartridge belt with 22 round of 6 mm ammunition 1- Shoulder holster for 357 Magnum with ammunition holder with 11 rounds of ammunition 1- pair Kirby 7x35 Field Glasses 1- knapsack and web belt and canteen holder, also one US compas with canvas case and B-D snake bite kit in canvas cask on belt	
Items Found in Knapsack	4- 30 rd clips for 30 cal carbine 1- Small package of toilet paper 1- Mirach can opener 1- Soap dish with some pills and other items 1- Queen #19 pocket knife 1- Pair of sunglasses 1- Foot powder	Gillette razor 18-round 12 ga Winchester #4 buckshot shells 4-35 Remington shells 44 rounds 6mm shells 6 rounds 357 Magnum 7 round 30 cal carbine ammunition 5 hulls 6 mm

Table 10. Contents and Possessions of Charles J. Whitman as reported by Officer Ligon at time of Death

C. CALIFORNIA STATE UNIVERSITY (FULLERTON, CA)

On July 12, 1976, a 37-year-old man named Edward Charles Allaway entered the basement of the Cal State Fullerton library where he was employed as a custodian and opened fire, killing seven people and wounding two others.[174] Allaway pulled into the parking lot adjacent to the west side of the library shortly after 8:00 am an walked casually towards the library entrance with a .22 caliber rifle in one hand and a box of .22 caliber ammunition in the other. Although Allaway was motivated by his psychotic dilutions that some of his co-workers were forcing his estranged wife to participate in pornographic films and were plotting to kill both of them, he had received no mental health care, nor had he been subjected to any psychological screening prior to the shooting which could have prevented or preempted this attack. Similar to the UT Tower shooting where no prior mental health history existed with Whitman prior to the attack, this example also validates our first hypothesis that maintains that prevention and preemption of the Active Shooter alone is insufficient to reduce the Rate of Kill for these incidents. Instead, Allaway entered a stairwell in the library and proceeded to the basement where, at approximately 8:30 am, he entered secretary Karen Dwinell's office and shot Paul Herzberg who was a photographer. A fleeing media center assistant, Bruce Jacobsen, was shot in the chest as he was attempting to escape in the adjacent 150-foot long hallway. Allaway then fired on the Graphics department killing Frank Teplansky and Professor Seth Fesseden.[175]

From the Graphics department, Allaway chased down and killed custodians Debra Paulsen and Donald Karges. After reloading his rifle in the stairwell, Allaway continued up the stairs towards the elevators in the library lobby. Janitorial supervisor Maynard Hoffman was shot in the elevator and as Allaway stood over his body to watch him bleed to death, library technician Steven Becker hit him in the back of the head with a plate and attempted to wrestle the rifle from Allaway. Becker was soon assisted by Library Supervisor Don Keran who wrapped Allaway in a bear hug. After an intense struggle,

---

[174] Kelly, New York City Police Department, *Active Shooter Recommendations and Analysis for Risk Mitigation.*

[175] Nicole Smith, "Blood Spills in Library Hallways," *The Daily Titan* 82, no. 51 (May 16, 2006): 1.

Allaway regained the advantage and shot Keran. A wounded Becker pursued Allaway out of the library until he turned and killed Becker near the southeast side of the building. Although Allaway was not subdued, the actions taken by Keran and Becker discouraged him enough to cease his assault. Allaway then re-entered the library through the east entrance and proceeded through the library to his car which remained in the parking lot adjacent to the west side of the building.[176] As with Virginia Tech and the UT Tower shooting, actions taken by potential victims clearly reduced the *Rate of Kill* for this incident as well. However, because these potential victims were afforded no advantages, this response was not standardized and was insufficient to contain or control the threat. After killing seven people and wounding another two in less than five minutes, Allaway decided to end his rampage and eluded University and local Police in route to the Anaheim Hilton Inn, where his estranged wife was on duty.[177] After arriving at the hotel, Allaway asked his estranged wife for a glass of water and a dime so he could make a phone call. He then placed a call to Police confessing to the shooting and providing his current location. Subsequently, local Police Officers arrested an unarmed Allaway who was waiting for them in the banquet hall of the hotel.[178]

This tragic event which took place in the California State Fullerton University Library demonstrates that even in an Active Shooter instance of short duration where there is no feasible response opportunity for Law Enforcement, the shooter was afforded freedom of movement throughout the duration of the event and victims and potential victims were afforded no advantages capable of increasing their survivability. However, even with no advantages afforded to them, potential victims did choose to act and, as was the case in the Virginia Tech and University of Texas case studies, victim actions arguably reduced the *Rate of Kill* in this case as well. Although, the brave actions of potential victims discouraged Allaway's activities they did not mitigate the effects of the shooter, or conclude the incident. In fact, this incident was only concluded when the

---

[176] Smith, "Blood Spills in Library Hallways," 2.

[177] Associated Press, Anchorage Daily News, "Library Shooting Kills 7," July 19, 1976, http://news.google.com/newspapers?nid=1828&dat=19760710&id=XjUeAAAAIBAJ&sjid=fb4EAAAAIBAJ&pg=1447,1114782.

[178] Smith, "Blood Spills in Library Hallways," 3.

shooter decided to cease his activities. During the five minutes that elapsed in the Cal State Fullerton Library during Allaway's rampage, casualties were sustained at a rate of one death per minute and one injury per 2.5 minutes. At this *Rate of Kill* it is very plausible to postulate that had Allaway desired to continue his activities, he could have inflicted many more casualties. These unfortunate circumstances are not dissimilar to the incidents that transpired at Virginia Tech or the University of Texas in that although the actions of potential victims clearly reduced Active Shooter effectiveness. However, because these actions were not standardized or assisted with immediate control measures, the effects of this attack were not able to be mitigated. This lends great support for our third hypothesis that maintains that a Victim Initiated Mitigation system utilized in IHEs, which is capable of incorporating automated control measures and complementary response protocols represent the only feasible means of reducing *Response Time* and *Incident Duration* for Active Shooter scenarios.

D. UNIVERSITY OF IOWA (IOWA CITY, IA)

On November 1, 1991 at 3:42 p.m., a 28-year-old Chinese graduate student named Gang Lu opened fire on the University of Iowa campus, killing five people and wounding one other.[179] Angered by an unenthusiastic reception of his doctoral dissertation coupled with the University's failure to award him with the highly prestigious Spriesterbach Dissertation Prize, Lu constructed a list of targets and formulated detailed plans for how to exact his revenge. Armed with a .38 caliber snub nosed revolver and a .22 caliber revolver, Lu attended a physics and astronomy department meeting in room 208 of Van Allen Hall and shortly after the meeting began killed his professor, Christoph Goertz; fellow doctoral student Linhua Shan, and wounded associate professor Robert A. Smith.[180] Lu exited the seminar room and killed department chair Dwight Nicholson in his office. After killing Nicholson, Lu returned to

[179] Kelly, New York City Police Department, *Active Shooter Recommendations and Analysis for Risk Mitigation.*

[180] Steve Maravetz, "Remembering November 1: A University Tragedy 10 Years Later," *Faculty and Staff News* 39, no. 5 (October 19, 2001).

room 208 and shot all of his initial victims again, killing the wounded Robert Smith.[181] Lu then left Van Allen Hall and walked three blocks across the snow covered campus to Jessup Hall which houses the University's administration offices.[182] After arriving at Jessup Hall, Lu entered the Office of Academic Affairs in room 111 and asked for T. Anne Cleary, who was the associate vice president of academic affairs. After a brief conversation with Cleary, Lu shot her in the face. He then wounded Ms. Cleary's 23-year-old receptionist before going upstairs to room 203 and fatally shooting himself in the head at 3:50 p.m.[183]

In the eight minutes that elapsed during his premeditated mass murder which spanned two buildings, four rooms and three city blocks across the university campus, Gang Lu fired 16 shots and succeeded in killing everyone he held responsible for his failure to be nominated for his department's most prestigious physics award.[184] Christoph K. Goertz was one of America's leading space plasma physicists, a professor of physics and astronomy at the University of Iowa and was Lu's dissertation chairperson. Dwight R. Nicholson was the chairman of the University's physics and astronomy department and was one of Lu's dissertation committee members. Robert A. Smith, who was an associate professor of physics and astronomy, was also on Lu's dissertation committee. Linhua Shan, was a research investigator for the physics and astronomy department and was Lu's fellow doctoral student who ultimately won the Spriestersbach prize over Lu. Ms. T. Anne Cleary was the associate vice president for academic affairs and the grievance officer at the university whom Lu had made several complaints to regarding nomination for the Spriestersbach prize. Miya Rodolfo-Sioson was a temporary student employee working in the grievance office and was shot by Lu for undetermined reasons.[185]

---

[181] Megan L. Eckhardt, "10 Years Later, U. Iowa Remembers Fatal Day," *The Daily Iowan*, November 1, 2001, http://web.archive.org/web/20070422044050/http://www.uwire.com/content/topnews110101001.html.

[182] Michel Marriott, "Iowa Gunman Was Torn by Academic Challenge," *New York Times*, November 4, 1991, http://www.nytimes.com/1991/11/04/us/iowagunman-was-torn-by-academic-challenge.html.

[183] Eckhardt, "10 Years Later, U. Iowa Remembers Fatal Day."

[184] Eckhardt, "10 Years Later, U. Iowa Remembers Fatal Day."

[185] Maravetz, "Remembering November 1: A University Tragedy 10 Years Later."

Due to the current security posture and preparedness of the University of Iowa campus in November of 1991, Lu was afforded access and freedom of movement throughout the entire shooting incident that affected multiple rooms and buildings. Despite a timely response by then chief of the Iowa City Police Department, R.J. Winkelhake, the incident had already culminated with Lu's suicide. In the eight minutes that elapsed from Lu's first shot to his last, the *Rate of Kill* for this incident was one casualty per every 1.6 minutes that does not account for the critical wounding of Miya Rodolfo-Sioson who, although she survived, was paralyzed from the neck down as a result of her injuries. This case clearly supports the assertion that although qualified and competent Law Enforcement personnel are capable to respond to Active Shooter incidents, the assumption that this response will be able to mitigate the effects of an Active Shooter is a false one. This is in keeping with our second hypothesis and similar to all three preceding case studies, Law Enforcement response was limited by time and space in this case as well and although qualified responders were available, they were not able to respond in time to mitigate the effects of this incident. There is simply no reasonable method in which qualified first responders can respond quickly enough to disrupt the Rate of Kill in Active Shooter incidents. The University of Iowa case study only highlights the fact that the shooter is the one who determines the length and severity of the majority of Active Shooter incidents and that until a standardized system of active control measures capable of being initiated by Potential Victims can be implemented, this unfortunate reality will remain true. As with the Cal State Fullerton shooting, Lu had no previous mental health history and short of performing a mental health screening of every incoming student, the University of Iowa possessed no means by which to identify Lu prior to the attack or to otherwise prevent the attack. These assertions are in keeping with our first hypothesis which maintains that a mental health focused prevention and preemption strategy that is capable of effectively preventing an Active Shooter incident is impractical for an already overburdened and underfunded aspect of student health.

However, as with each of the preceding case studies, had the University of Iowa facilities been equipped with a Victim Initiated Mitigation system that is capable of synchronizing immediate control measures with a prescribed set of automated and

standardized responses, students, staff and faculty could have initiated this system and limited Lu's freedom of movement. A system, such as this would not have allowed Lu's rampage to continue through two buildings, four rooms and three city blocks. Instead, a Victim Initiated Mitigation system would have incorporated automated control measures with complementary response protocols, decreased *Response Time* and *Incident Duration*, as well as accomplish the *Five C's* in a timely manner.

E. SIMON'S ROCK COLLEGE OF BARD (GREAT BARRINGTON, MA)

On December 14, 1992, an 18-year-old undergraduate student named Wayne Lo opened fire on the Simon's Rock College of Bard campus at 10:20 p.m., killing two people and wounding four others.[186] Prior to the attack, on December 14, a United Parcel Service package addressed for Lo arrived to the campus mail room. The receptionist, who accepted the package, noticed that it came from a North Carolina based company called Classic Arms. Suspecting that the package may contain weapons, she notified the appropriate college officials. Mr. Rodgers, Dean of the college, determined that although he was notified that Lo had received a package from an ammunition company, the school had no authority to interfere with the delivery of the package. However, the Dean did request that Lo's dormitory advisors inspect the contents of the package and conduct an inspection of his room. Lo's dormitory advisors, Trinka and Floyd Robinson, went to Lo's room and asked to see the contents of the package. After initially refusing, Lo finally consented to show the advisors what was in the package. The contents consisted of ammunition magazines, a plastic rifle stock and an empty cartridge box. Lo gave plausible explanations for having a package with these contents shipped to him at school stating that the cartridge box was a Christmas present for his father and that the other items were to be used by him when he returned home. The Robinsons also conducted an inspection of Lo's room, but no weapons were found. Dean Rodgers met with Lo in order

[186] Kelly, New York City Police Department, *Active Shooter Recommendations and Analysis for Risk Mitigation*.

to discuss the contents of his package and to reiterate the college's policy regarding weapons on campus. Lo was calm and rational throughout the meeting and assured the Dean that he did not possess any weapons on campus.[187]

Immediately following his meeting with Dean Rogers, Lo got into a taxi for the 20-mile ride north to Pittsfield, Massachusetts where he bought an SKS semi-automatic assault rifle. At 10:20 p.m. Lo began his rampage on the Simon's Rock College of Bard campus by shooting Teresa Beavers, a security officer, twice in the abdomen. Teresa's husband was on the phone with his wife at the time of the shooting and called 911 immediately to report the incident. After seriously wounding Teresa Beavers, Lo indiscriminately killed Nacunan Saez who was a professor of Spanish as she drove her car onto campus. Lo then proceeded to Simon's Rock library where he fatally shot Galen Gibsonand and wounded Thomas McElderry. Not yet satisfied, Lo continued to a nearby dormitory where he seriously wounded Joshua A. Faber before his rifle malfunctioned forcing him to end his 20 minute rampage. Lo then called police and submitted to his arrest without further incident.[188]

In this case study, the *Rate of Kill* is one casualty per 10 minutes and the rate at which people were wounded was one person wounded every five minutes. Although staff members and administrators had strong suspicions that Lo was in violation of the college's weapons policy, after conducting the inspection of his dorm room and reviewing the school's weapons policy with him, he was no longer viewed as a violent threat. Similar to the University of Texas, Cal State Fullerton, and the University of Iowa, Lo had no previous mental health history and although his actions raised suspicions, they did not warrant further action at the time. These events are in keeping with our first hypothesis as they demonstrate yet again that preventative and preemptive measures remain insufficient to reduce the Rate of Kill for Active Shooter incidents. Additionally, throughout Lo's attack, he was afforded complete freedom of movement across the Simons Rock College campus, and although competent Law Enforcement authorities

[187] Anthony DePalma, "Questions Outweigh Answers In Shooting Spree at College," *The New York Times*, December 28, 1992.

[188] DePalma, "Questions Outweigh Answers In Shooting Spree at College."

were available and were alerted to the incident immediately after it began, this incident was not able to be contained or otherwise controlled for 20 minutes. Unfortunately, these circumstances are not unique and this case is not an outlier. Rather, in keeping with our second hypothesis, the response characteristics and resulting casualties of this shooting highlight a common inability of IHEs to reduce response time or effectively mitigate the effects of an Active Shooter. Additionally, as with every one of the preceding case studies, a Victim Initiated Mitigation system could have restricted Lo's movement and isolated potential victims through automated control measures and complementary response protocols. If the Simons Rock College of Bard had a system, such as this in place at the time of this incident, a drastic reduction in *response time*, *incident duration* and *Rate of Kill* would have been the result.

F. SAN DIEGO STATE UNIVERSITY (SAN DIEGO, CA)

On August 15, 1996, a disgruntled graduate student named Frederick Martin Davidson entered the Engineering Building on the San Diego State University campus and killed three professors. Davidson, who believed the three professors and the entire engineering department were involved in a conspiracy against him, had his thesis rejected once and was fearful that the faculty would reject it again.[189] Davidson along with Professors Liang, Lowrey and Lyrintzis, as well as three other engineering students gathered in a classroom in the Engineering Building shortly before 2:00 p.m. After being formally introduced by Professor Liang, Davidson handed Liang a printed copy of an e-mail, he had received from a prospective employer who was interested in hiring Davidson. The email stated that Davidson's future employment with the company hinged on a successful Master's thesis defense. Without allowing Liang time for comment, and without saying anything himself, Davidson removed the 9mm semiautomatic Taurus handgun and five spare magazines he had stored in the first aid box on the wall prior to the meeting and immediately started firing. Liang was the first casualty as Davidson shot him while he was still seated at the faculty table. Lowrey and Lyrintzis were also wounded initially. As Lowrey tried to escape throughthe only main access door,

[189] Joe Hughes, "3 at SDSU Shot Dead Student Held Professors Were Hearing Defense of Master's Thesis," *San Diego Union-Tribune*, August 16, 1996.

Davidson shot Lowrey several more times, and he died on the floor in front of the main doorway. Lyrintzis fled into an adjoining classroom, and hid under a table. After killing Lowrey, Davidson reloaded another clip into the handgun, and pursued Lyrintzis into the other room and killed Lyrintzis while he hid under the desk.[190]

Davidson did not harm the three other Graduate students who were in the classroom. Davidson later stated that his anger was not directed at the students and that he never had any intentions of harming them.[191] Before Davidson decided to end his rampage which lasted only four minutes and call 9-1-1 himself, he had fired 23 rounds hitting the three professors 16 times. Police arrived to find Davidson in the 3rd floor hallway still holding the handgun and pleading for the officers to kill him. [192] Although, he ultimately surrendered to police without further incident, Davidson had intended to kill himself after the shootings, but was unable to do so. [193] Davidson had left a murder suicide note in the hallway for the police to find, detailing the location of evidence and computer files in his house.[194]

In this case, Davidson's actions and the Law Enforcement response only serve to further substantiate the emerging reality that there is currently no viable security measure in place that is capable of effectively mitigating the effects of an Active Shooter. Although Davidson's rampage lasted only four minutes, he was able to kill three people and had the capacity to kill many others but chose not to. The *Rate of Kill* for this incident was one casualty per every 1.33 minutes. However, more disturbing than the rate at which casualties were inflicted in this case, is the trending affirmation of our second hypothesis and the realization that the only person who is capable of mitigating the effects of an Active Shooter is the shooter himself. Here, the killing only ceased as a

---

[190] Joe Hughes and Maria Hunt, "Suspect Hid Handgun in First-Aid Kit Graduate Student Then Shot Three Profs, Police Say," *San Diego Union-Tribune*, August 17, 1996.

[191] Bill Callahan, "Transcript Bares Warring Emotions of SDSU Gunman," *San Diego Union-Tribune*, October 18, 1996.

[192] Hughes and Hunt, "Suspect Hid Handgun in First-Aid Kit Graduate Student Then Shot Three Profs, Police Say."

[193] Tony Perry, "Ex-San Diego State Student Pleads Guilty to Murdering 3 Professors," *Los Angeles Times*, May 28, 1997.

[194] Callahan, "Transcript Bares Warring Emotions of SDSU Gunman."

result of Davidson's choice to discontinue his rampage. Neither potential victims, nor Law Enforcement personnel were afforded any viable means to interdict the shooter or to mitigate the effects of his actions. In fact, in this particular case, the campus was not even alerted to the incident until 2:40 p.m., over 40 minutes after the shooting began.[195] Additionally, as with the University of Texas, Cal State Fullerton, University of Iowa, and Simons Rock College of Bard; in support of our first hypothesis, San Diego State University had no viable or effective means of prevention or preemption capable of mitigating the effects of this incident. Again, the only feasible means by which this Active Shooter incident could have been mitigated was through the implementation of a Victim Initiated Mitigation system. In this case, automated control measures initiated by a VIM system could have restricted Davidson's freedom of movement that would not have allowed him to enter subsequent rooms and inflict further casualties. Likewise, through the complementary response protocols offered by a VIM system, authorities would have been dispatched more rapidly thereby reducing the *Response Time, Incident Duration* and ultimately the *Rate of Kill*.

G. APPALACHIAN SCHOOL OF LAW (GRUNDY, VA)

On January 16, 2002 just past 1:00 p.m., a 42-year-old former student named Peter Odighizuwa who was angered about his recent academic dismissal from the school, opened fire with a .380 caliber semi-automatic handgun on the campus of the Appalachian School of Law, killing three people and wounding an additional three.[196] Among the dead were Dean L. Anthony Sutin, Professor Thomas Blackwell, and student Angela Denise Dales. At approximately 1:00 p.m. Odighizuwa, discussed his academic problems with Professor Dale Rubin. At the end of this discussion, Odighizuwa reportedly told Rubin to pray for him and walked to the office of Dean Anthony Sutin and killed him. From the Dean's office, Odighizuwa proceeded to Professor Thomas

[195] Stacy Finz, "SDSU Stunned By 3 Faculty Slayings at the College of Engineering, Shock and Pain," *San Diego Union-Tribune*, August 16, 1996.

[196] Kelly, New York City Police Department, *Active Shooter Recommendations and Analysis for Risk Mitigation*.

Blackwell's office and killed him. When Odighizuwa exited the building, he was confronted by two students with personal firearms and one unarmed student who subdued him.[197]

In this case, the actions of Potential Victims clearly prevented further casualties and ended Odighizuwa's rampage on the Appalachian School of Law campus. However, all of the students that assisted in subduing the shooter were off-duty Law Enforcement officers and two of them responded with their own personally owned firearms. This unique response is atypical to say the least. However, even with such a well-trained and timely response, three people were still killed and three additional people were seriously injured. Again, no feasible advantages were afforded the first responders in this case either. As a result, it was only by virtue of the heroic actions of Potential Victims that this incident was ended. Unfortunately, this response cannot be standardized, nor is it prudent to anticipate that these actions alone will mitigate future incidents.

Similar to the University of Texas, Cal State Fullerton, University of Iowa, Simon's Rock College of Bard, and San Diego State University; Odighizuwa had no prior mental health history and the Appalachian School of Law had no feasible means of prevention or preemption in place that was capable of mitigating the effects of this incident. Although, this case presents a unique composition of potential victims who became first responders, the fact remains that uniformed Law Enforcement had no opportunity to respond to this incident. However, in this case, as well as all of the preceding case studies included in this research, a Victim Initiated Mitigation system could have mitigated the effects of this incident as well. In this case, Odighizuwa's freedom of movement would have been limited by a VIM system and, as a result, he would not have been able to inflict subsequent casualties.

H. UNIVERSITY OF ARIZONA (TUCSON, AZ)

On October 29, 2002, Robert Flores opened fire in an instructor's office at the University of Arizona Nursing College, killing three instructors. The shooter, a 41-year-

[197] CNN.com/U.S., "Suspect in Law School Slayings Arraigned," January 17, 2002 Posted: 12:28 PM EST, http://archives.cnn.com/2002/US/01/16/law.school.shooting/.

old male burst into a nursing class building shortly after the building opened.[198] He first killed Professor Rogers in her office, then moved to an adjacent classroom and killed two additional professors before killing himself. The victims included Barbara Monroe, 45, Cheryl McGaffic, 44, and Robin Rogers, 50, all nursing professors. The incident was motivated by an administrative block initiated by the three professors that prohibited Flores from taking a mid-term in a critical care nursing class that he was failing. Flores' weapons of choice included 4 handguns (.45-caliber semi-automatic, .40-caliber semi-automatic, .357-caliber revolver, and 9-millimeter revolver).[199]

As with many other Active Shooter incidents, a retrospective review reveals favorable conditions for a retaliation shooting.[200] Earlier in the school year, Flores bragged about his obtainment of a concealed handgun license. Additionally, students and teachers recalled that the shooter talked about "taking care" of the school of medicine at the University if the administration did not assist him with his studies. This threat prompted a fellow nursing student, Lori Schenkel, to alert the authorities in late 2001, almost one year prior to the incident. The police report states that authorities attempted to contact the shooter but were unable to and that there were no follow on attempts to investigate Schenkel's report.[201] In addition to the report filed in 2001, Flores often mentioned that he suffered from Gulf War Syndrome, having served in an Army engineering unit deployed to Iraq and Kuwait in 1990 and 1991. Flores claimed that exposure to chemical weapons caches that were destroyed by his unit were the cause of his mental anxiety and that he had previous bouts of depression as well. However, these warning signs were never brought to the attention of authorities and Flores received no mental health treatment for his self-proclaimed mental illness.[202] This lack of mental

---

[198] Kelly, New York City Police Department, *Active Shooter Recommendations and Analysis for Risk Mitigation*.

[199] Kelly, New York City Police Department, *Active Shooter Recommendations and Analysis for Risk Mitigation*.

[200] Freydis, "The School Shootings Report Part II," (n.d.), http://hologology.com/shooting2.html#12.

[201] Freydis, "The School Shootings Report Part II."

[202] Freydis, "The School Shootings Report Part II."

health intervention coupled with the lack of follow-up on Schenkel's report confirms our first hypothesis that prevention and preemption measures remain inadequate to reduce the *Rate of Kill* in Active Shooter incidents.

Flores' attack lasted ten minutes and Law Enforcement officials were alerted through 911 calls made by potential victims. Although Flores selected only three targets, the facility floor plan and lack of control measures afforded hi freedom of movement and access to many other rooms throughout the building to include a full classroom. Throughout the duration of this incident, Law Enforcement officers had no capability to respond in a timely manner and, as with every other preceding case study validating our second hypothesis, Law Enforcement interdiction of the Active Shooter remains insufficient to reduce the *Rate of Kill* in this incident as well. Here, as with every other example provided thus far, the only factor that limited the duration of this incident was the desire of the shooter. In this case, Flores ended his attack by committing suicide. However, if Flores had decided to continue with his attack, there were no obstacles and the *Rate of Kill* for this incident could have been much higher considering the number of available targets. Additionally, this case highlights the lack of utility in the current profiling and reporting process to prevent these attacks. Department of Education profiling and prevention methodology were not enough to highlight the potential effects of the shooter nor was the local report filed by fellow students prior to the incident.

I. DUQUESNE UNIVERSITY (PITTSBURGH, PA)

At 2:00 am on the morning of September 17, 2006, gun shots erupted outside of a school dance resulting in three critically wounded and two moderately wounded Duquesne University basketball players. Law Enforcement officers responded quickly and began their investigation of the scene searching for signs of the shooter and questioning witnesses. The shooter, William Holmes, 18, was arrested almost three days later in his home by local authorities. Although initial arrests were made on scene

immediately following the shooting, after Holmes' arrest all charges against other suspects were dropped and the prime suspect, Brandon Baynes, 19, was released after evidence exonerated him.[203]

On the night of the incident, a young transfer student named Brittany Jones, 19, allowed for several friends to pass through the security checkpoint at the dance with concealed weapons. Jones, who sponsored the event for the Black Student Union, was carrying a concealed handgun as well. Shortly before 0200 hours, it is believed an argument broke out at the dance over a jealous relationship between the Holmes and one of the five basketball players. After the dance, the argument spilled into a cross street approximately a half-block away, yet still within the campus grounds. Witnesses describe seeing the wounded boys on the ground shortly after hearing gunfire. Police officials asked local authorities to help physically secure the campus and check buildings. Although casings from two different guns were found but authorities were only able to positively identify one shooter in the incident.[204]

This case demonstrates that an active shooter event can be spontaneous and not necessarily preplanned. In this case, similar to the University of Texas, Cal State Fullerton, University of Iowa, Simons Rock College of Bard, San Diego State University, and Appalachian School of Law, no feasible preventative or preemptive measures could have reasonably prevented this shooting. Likewise, although the response by authorities seems to be well coordinated and timely, responding Law Enforcement officers had no opportunity to interdict the Active Shooter or to reduce the Rate of Kill. Additionally, all adjacent buildings and other structures remained unsecured throughout the shooting incident. If the shooting had continued or spilled into other areas of campus, it is likely that other casualties would have occurred. Although a Victim Initiated Mitigation system would most likely not have been effective against this attack, if this incident had escalated into adjacent buildings or into other portions of the dance hall, a VIM system would have been the only viable means by which the Rate of Kill could have been

[203] Jim McKinnon, "2 Arrested, 1 Sought in Duquesne University Shooting," *Pittsburgh Post-Gazette*, September 19, 2006, http://postgazette.com/pg/06262/723109-100.stm.

[204] McKinnon, "2 Arrested, 1 Sought in Duquesne University Shooting."

reduced. This incident also demonstrates the lack of security protocols for high occupancy facilities on campus since several concealed weapons were allowed inside the dance. This lack of standardization or appropriate mitigation measures only foster an environment in which an active shooter incident can occur. As a result of this shooting, Duquesne University raised the security budget on campus two months later in order to provide for more campus police and security personnel in an effort to better secure campus events.[205] However, unless these improvements incorporate a Victim Initiated Mitigation system, this university will remain vulnerable to future Active Shooter attacks.

J. LOUISIANA TECHNICAL COLLEGE (BATON ROUGE, LA)

On February 8, 2008, Latina Williams, 23, opened fire in a classroom in Louisiana Technical College with a handgun, killing two students before turning the gun on herself and committing suicide. The two victims, Karsheika Graves, 21, and Tanieshia-Deanna Butler, 26, were only known to be classmates to the shooter and the motive for the incident remains unknown.[206] The mother of the shooter later issued a statement of regret for the two victims and denounced her daughters' actions.[207]

Prior to the incident, warning signs had emerged regarding Williams' behavior that went unanswered. Williams was estranged from her family for nearly two years and students noticed signs of paranoia and anxiety in the classroom and outside of the classroom. She was unemployed and living out of her car while attending school. Shortly before the shooting, authorities believe that Williams made a call to a crisis counselor indicating that she was going to commit suicide. The counselor immediately notified authorities but before they could react to the call the incident had already taken place. These events again confirm our first hypothesis in that despite many indicators and even a direct warning issued to a crisis counselor, prevention and preemption measures remained insufficient to reduce the Rate of Kill for this incident. The shooter was quoted

---

[205] McKinnon, "2 Arrested, 1 Sought in Duquesne University Shooting."

[206] Kelly, New York City Police Department, *Active Shooter Recommendations and Analysis for Risk Mitigation*.

[207] "3 Dead in LTC Shooting," *Baton Rouge, LA–WAFB*, February 18, 2008, http://www.wafb.com/Global/story.asp?S=7842633.

by an eyewitness in the classroom before she turned the gun on herself saying, "Don't worry, I'm not mad at ya'll."[208] Emergency calls were first received by the 911-dispatch center at 8:36 am and Law Enforcement officers responded to the classroom at 8:40 am, four minutes after the shooting began. Police immediately locked down the school with additional police forces and cancelled the remainder of classes for the day.[209] However, even with this extremely short police response time, this incident had still culminated prior to arrival of first responders and, as a result and similar to each of the preceding case studies, responding Law Enforcement had no ability to interdict the Active Shooter or to reduce the Rate of Kill in this case either.

Although Williams had no apparent motivation for murdering two students, she certainly exhibited warning signs prior to the incident and made attempts to call for help. Unfortunately, an effective mental health focused prevention and preemption strategy was not feasible in this instance as well. This is yet another example confirming that profiling and mental health examinations cannot be relied upon solely to mitigate active shooters. Louisiana Technical College is simply not fiscally able to fund the robust mental health resources required to implement such a program. The short duration of this incident prevented Law Enforcement officers from being able to interdict the shooter. Once again, the factor that limited the Rate of Kill in this instance was the desire of the Shooter to continue or discontinue their attack. The shooter used a .357 revolver and reportedly fired all rounds, reloaded the gun in the classroom, and continued shooting. This indicates that the victims still remained in a state of shock and were not capable of actively taking down the shooter during the reload. Although a Victim Initiated Mitigation system would most likely not have been effective in reducing the Rate of Kill in this instance, this example provided evidence confirming that actions taken in stressful situations by potential victims are difficult to standardize. Therefore, in keeping with our

---

[208] Jared Janes, "Killer Acted Paranoid: Woman Lived in Car, Believed Suicidal Before Shootings," *The Advocate*, February 12, 2008.

[209] "3 Dead in LTC Shooting," *Baton Rouge, LA–WAFB*.

third hypothesis, additional control measures, such as a VIM system must be implemented in order to assist potential victims by standardizing their response and reducing the *response time and incident duration* by improving response protocols. .

K. NORTHERN ILLINOIS UNIVERSITY (DEKALB, IL)

On Valentine's Day, February 14, 2008, Steven Kazmierczak entered Cole Hall and opened fire with a shotgun and three handguns.[210] The auditorium held 123 students and the resulting casualties were six dead and 21 wounded. Similar to Virginia Tech, Kazmierczak had a history of mental illness prior to the attack. However, this history was not divulged to the University due to mental health privacy acts. In the Northern Illinois University final report on this incident, speculation that Kazmierczak had stopped taking his mental health medications was listed as a contributing factor leading to his attack.[211] Similar to each of the preceding case studies, Northern Illinois University also did not have an effective prevention or preemptive program in place that was capable of mitigating the effects of this attack.

On February 14, the Kazmierczak entered the side entrance of the auditorium and was dressed in all black with a T-shirt that said "Terrorist" superimposed over a picture of an automatic rifle. He wore a duty rig with two magazines and a pistol and had another set of pistols in a bag over his shoulder with additional ammunition. He first opened fire with the shotgun into a grouping of students located in the center of the class and then fired his remaining rounds at the instructor located at the far end of the lecture stage. The instructor attempted to escape from a side door but found it locked and was forced to move back into the open to escape.[212] When his shotgun rounds were complete, Kazmierczak began moving down the aisles with a Glock 9mm, shooting at moving and

[210] Kelly, New York City Police Department, *Active Shooter Recommendations and Analysis for Risk Mitigation*.

[211] Northern Illinois University, "Report of the February 14, 2008 Shooting at Northern Illinois University," 2009.

[212] Northern Illinois University, "Report of the February 14, 2008 Shooting at Northern Illinois University."

stationary targets as he went. At one point, witnesses recall yelling to each other while he reloaded but there are no indications that any student attempted to subdue the shooter.[213]

According to the NIU final report, university police responded to the incident within 26 seconds of the first round being fired and were the first to enter Cole Hall. The police officers established a perimeter around building prior to entering to interdict the shooter. By the time police entered the auditorium, the shooter had already taken his own life.[214] Unfortunately, even with such an impressive *response time*, this incident still had a Rate of Kill of one person per every four seconds and people were wounded at a rate of one person per every second. Additionally, despite their best efforts, this incident had culminated prior to the arrival of Law Enforcement officers and similar to each of the preceding case studies, Law Enforcement reaction was insufficient to reduce the Rate of Kill for this incident as well.

In the ensuing chaos that followed for police, authorities believed that there may be other areas on campus where shootings had taken place. This speculation and lack of situational awareness for the University caused first responders to fan out away from Cole Hall to clear and secure other buildings. Although it is not noted as a negative aspect of the tactical response, the first responding units were unable to attend to wounded individuals or develop accountability based on these additional perceived threats.[215] Additionally, outside agencies were not requested or alerted to the attack by University authorities until 40 minutes after the incident began.[216]

In response to these capability gaps, NIU implemented a text message system and introduced additional patrol units to the campus since this attack. The university also developed a new operating procedure to integrate the outside law enforcement and

---

[213] Northern Illinois University, "Report of the February 14, 2008 Shooting at Northern Illinois University."

[214] Northern Illinois University, "Report of the February 14, 2008 Shooting at Northern Illinois University."

[215] Northern Illinois University, "Report of the February 14, 2008 Shooting at Northern Illinois University."

[216] Northern Illinois University, "Report of the February 14, 2008 Shooting at Northern Illinois University."

fire/emergency units to assist in a timelier manner to Active Shooters.[217] However, these improvements still fall short of the facility upgrades required to better protect potential victims from such an event provide additional escape routes for potential victims, or to provide first responders with fast and accurate situational awareness of the remainder of the campus.

L. UNIVERSITY OF CENTRAL ARKANSAS (CONWAY, AR)

At 9:22 pm on October 26, 2008, four men, Kawin Brockman, 19, of Conway; Kelcey Perry, 19, of Morrilton; Mario Toney, 20, of Little Rock; and Brandon Wade, 20, of Lake Village, opened fire on a group students near their dorms on the University of Central Arkansas campus in Conway, Arkansas. This shooting resulted in the death of two students, Ryan Henderson, 18, of Little Rock and Chavares Block, 19, of Dermott and a minor leg wound to student Martrevis Norman of Blytheville.[218] The shooters used handguns and fired from a moving vehicle.

Although the men all were charged with two counts of capital murder, police never found a motive. It is believed that the shooters were targeting certain individuals but that the actual victims were not the intended targets. Police were able to apprehend three of the shooters later in the night and the fourth man turned himself in two days later.[219]

This incident spawned an investigation that led police to begin to develop techniques to respond to drive by shootings on campuses. Although no techniques exist to mitigate these types of incidents, facility management and upgrades that separate students from roadways and other potential firing points could greatly increase the survivability of victims. Although this attack is indicated within the DHS listing of university shootings, the drive-by shooting style of this attack offers very unique characteristics. As a result, it

---

[217] Northern Illinois University, "Report of the February 14, 2008 Shooting at Northern Illinois University."

[218] "Four Men Charged in University of Central Arkansas Campus Shooting That Left 2 Dead," *The Associated Press*, October 29, 2008, http://articles.nydailynews.com/2008-10-29/news/17908440_1_campus-shooting-shooting-deaths-four-men-face.

[219] "Four Men Charged in University of Central Arkansas Campus Shooting That Left 2 Dead."

would be unfair to compare this incident against prevention and preemption measures, or to expect that Law Enforcement officers could have mitigated the effects. Furthermore, a Victim Initiated Mitigation system is not relevant for this attack either.

M. THE UNIVERSITY OF ALABAMA (HUNTSVILLE, AL)

Amy Bishop, 42, opened fire in a faculty meeting at the University of, Alabama, Huntsville on February 12, 2010.[220] Her shooting killed three professors, Gopi K. Podila, the chairman of the Department of Biological Sciences, and two other faculty members, Maria Ragland Davis and Adriel Johnson. The attack also wounded three others, Joseph G. Leahy, listed in critical condition after the shooting; professor's assistant Stephanie Monticello, also in critical condition; and Professor Luis Rogelio Cruz-Vera, listed in stable condition.[221]

At approximately 4:00 pm, Bishop entered the biology building on campus, and proceeded to the meeting room and opened fire with a 9mm pistol. The campus police were alerted and a campus wide text message went out roughly three minutes after the shooting. Police apprehended the shooter after she walked out of the front door of the building and appeared to be in a daze. The shooting was motivated by a recent decision to not give tenure to the shooter and not renew her teaching contract at the University.[222] Despite the fact that there were several dozen other students in the building at the time, no one else was injured. The targets were preplanned and meditated by Bishop.

Bishop's history is unique in the fact that in 1986 she killed her brother with a shotgun in the family's Massachusetts kitchen. The story given to police was that she was learning how to operate the firearm from a relative when the gun went off and fatally wounded her brother. Since that time, Bishop has displayed a multitude of psychological dysfunction and is described by students as both a brilliant teacher and a

---

[220] Kelly, New York City Police Department, *Active Shooter Recommendations and Analysis for Risk Mitigation*.

[221] Desiree Hunter and Jay Lindsay, "Alabama Suspect Fatally Shot Her Brother in 1986," *AOL News*, February 13, 2010, http://www.aolnews.com/2010/02/13/3-dead-in-shooting-at-university-of-alabama-huntsville/.

[222] Robin Abcarian and Richard Fausset, "Three Killed in Shooting at Alabama Campus," *LA Times*, February 13, 2010, http://articles.latimes.com/2010/feb/13/nation/la-na-alabama-shooting13-2010feb13.

schizophrenic.[223] However, despite these obvious warning signs, the University of Alabama, Huntsville was still unable to effectively prevent or preempt this attack. Unique to this case as well was the inability of the University message system to properly inform the student body and the families of the incident. Several students complained that they did not receive notification of the lockdown until two hours after the incident and some did not receive it at all. Most of the information was obtained from local television broadcasts after the incident was already contained.[224]

While this case clearly undermines the mental health and behavioral health approach to preventing or preempting mitigation of active shooters. The pre-planned targets and motivation of the shooter again become the only limiting factor affecting the *Rate of Kill* for this incident. Because prevention and preemption measures, as well as Law Enforcement reaction were of no consequence to mitigating the effects of this attack, victim response emerges as the only feasible means of mitigation. If the University of Alabama, Huntsville campus had a Victim Initiated Mitigation system in place at the time of this attack, other potential victims would not have remained vulnerable throughout the attack. Furthermore, failures experienced by campus police and emergency incident alert systems as well and inabilities to properly lockdown the university in the event that there were multiple shooters or if the shooter herself had decided to select additional targets would not have occurred.

N. OHIO STATE UNIVERSITY (COLUMBUS, OH)

At approximately 3:30 am, March 9, 2010, 51-year-old Nathaniel Brown showed up for his early morning maintenance shift at Ohio State University. Shortly after arriving he opened fire with two small caliber handguns killing one employee, Larry Wallington, 48, and wounding another, Henry Butler, 60. After shooting both employees, one being

[223] Hunter and Lindsay, "Alabama Suspect Fatally Shot Her Brother in 1986."

[224] Abcarian and Fausset, "Three Killed in shooting at Alabama Campus."

the shooter's immediate supervisor, Brown turned the weapon on himself and committed suicide.[225] Witnesses and the 911 call that accompanied the attack state the shootings lasted less than two minutes.[226]

Prior to the incident the shooter had received a few bad reports about his lack of work ethic, sleeping on the job and overall laziness at the workplace. These reports prompted university maintenance supervisors to recommend Brown for termination of employment. Brown placed complaints to the local Union chapter and stated that the university was treating him unfairly. Ohio State's hiring policy placed Brown on probation for the first few months of employment which meant he would be scrutinized harder during that period. Police officials believe that Browns attack was set in motion on March 2 when he received official word from the university that he would be terminated from his position.[227] In addition to his employment difficulties, Brown's criminal record revealed that he lied on his application to the University. He had been charged with receipt of stolen property in 1979 and served five years in prison before being released in 1984. He lied about this on his application and it contributed to his employer's decision to terminate him.[228]

Similar to every other case study included in this research, prevention and preemption measures failed to prevent this attack. In this case, the university failed to conduct a thorough background check on the shooter and also failed to see the warning signs that resulted from Brown's termination. His Rate of Kill was low because he had already pre-planned his shooting spree and decided on his targets. However, despite being in a terminated status, Brown still maintained access to the grounds and the specific building in which he used to work. Facility security measures and an active plan for termination of employees is an area that Ohio State University has sought to fix since the

---

[225] Kelly, New York City Police Department, *Active Shooter Recommendations and Analysis for Risk Mitigation*.

[226] Ian Urbina, "Ohio State Employee Kills Co-Worker, Then Self, Police Say," *New York Times*, March 9, 2010, http://www.nytimes.com/2010/03/10/us/10ohio.html.

[227] Urbina, "Ohio State Employee Kills Co-Worker, Then Self, Police Say."

[228] Matt Leingang, "Ohio State Shooting: 1 Killed, 2 Wounded At Ohio State University Campus," *Associated Press*, March 9, 2010, http://www.huffingtonpost.com/2010/03/09/ohio-state-shooting-1-kil_n_491250.html.

incident. However, although Law Enforcement officers had no opportunity to mitigate the effects of this incident, no new security measures have been emplaced that would enable a victim-initiated response.

THIS PAGE INTENTIONALLY LEFT BLANK

V. ANALYSIS

A. CASE STUDY COMPARISON

1. Ordinal Value Explanation

After selecting our case studies and defining the lethality of each case utilizing Utility Theory by assigning ordinal values to variables that contribute to the lethality of Active Shooter incidents, we applied the same principles when comparing these case studies in order to determine relative vulnerability of each university to Active Shooter violence. Vulnerability is defined as being susceptible to physical or emotional injury or susceptible to attack.[229] The Universities included in this research as case studies, all exhibit vulnerabilities that made them susceptible to attack. Determining these points of vulnerability and rating them according to their propensity to contribute to an IHE's susceptibility to acts of extreme violence is a crucial aspect in determining which variables can be manipulated in order to mitigate the effects of Active Shooters. The following analysis of 14 most lethal Active Shooter incidents occurring in U.S. IHEs will demonstrate that there are three main factors contributing to higher *Rates of Kill.* These factors include university demographics and population, local area demographics and university facility composition.

Before the analysis of this research can be discussed, it is necessary to explain the weighting of ordinal values assigned to factors that either promote or reduce vulnerability of IHEs to Active Shooter violence. The following tables depict the variables chosen and the assigned weight of each variable. The ordinal values assigned to these variables were initially selected based on the authors' professional experiences gained through a combined 31 years of military service, 14 years of Army Special Forces tactical experience, and conduct of numerous Threat Vulnerability Assessments on Forward Operating Bases, foreign military installations, and U.S. embassies. These variables were then validated by expert Law Enforcement representatives at the 2011 ALERRT Active Shooter Conference in San Marcos, Texas, as well as proponents of Law Enforcement

[229] Vulnerability, *The American Heritage Dictionary* (Boston: Houghton Mifflin Company, 1985).

training and Active Shooter response, such as the National Tactical Officers Association, ALERRT, DHS, as well as various state police agencies throughout Texas, Iowa, New York, California, Washington, D.C., and numerous other municipal departments represented at the 2011 ALERRT Active Shooter Conference. Although the variables selected may not encompass all factors contributing to IHE vulnerability, they should provide an accurate estimate of a university's susceptibility to Active Shooter violence. However, as with any other review of law enforcement or military tactics, these results are only representative of current threats and in order to remain relevant must be consistently updated in order to accurately represent an evolutionary threat.

The variables selected to determine IHE vulnerability to Active Shooter violence are separated into two main headings: *Pre-Event Contributing Factors* and *Event Contributing Factors*. *Pre-Event Contributing Factors* represent factors prior to the occurrence of Active Shooter violence that contribute to the likelihood of an individual becoming an Active Shooter, and either promote or preclude potential victim survivability. The first sub-heading of *Pre-Event Contributing Factors* is *Shooter Profile*. Factors within this category are taken from the shooter summary of each of our selected case studies and each relevant characteristic was weighted with an ordinal value. It is important to regard this comparative analysis as a tactically oriented perspective with corresponding weighted values based on each variable's propensity to contribute to Active Shooter violence. This research does not contend that values are not subject to change as tactics in Active Shooter response evolve and, more importantly, as Active Shooters themselves evolve. For example, the ordinal value of 13 is given to the variable "Verbal/Written Warning Given Prior to the Event." Within this category, this factor has the highest ordinal value. When comparing this variable to "Prior Disciplinary Action/Incarceration," which has an ordinal value of 4, the inference can be made that a university is more vulnerable to a person who makes a threat to conduct an act of extreme violence as opposed to someone who has been incarcerated. Incarceration, although thought to be an indicator of potential future misconduct, is not in itself as significant an

indicator of Active Shooter violence as the actual verbal or written threat to conduct the act is. The remaining variables listed in this category are assigned ordinal values in the same manner.

Pre-Event Contributing Factors	
Shooter Profile	
Characteristic	Ordinal Value
Verbal/Written Threat Prior	13
Time Elapsed from Threat to Incident (Days)	12
Physically Aggressive Acts Prior	10
Time Elapsed from Physically Aggressive Acts to Incident (Days)	9
Stalk / Harass Acts Prior	8
Alarming Behavior Observed Prior	11
Mental Illness History	7
Medication Prescribed	3
Prior Disciplinary Action / Incarceration	4
DSM Diagnosis	6
Time Elapsed from DSM Diagnosis to Incident	5
Drug Abuse	Yes: 1 No: 0
Health Issues	Yes: 1 No: 0

Table 11. Pre-Event Contributing Factors Depicting Assigned Ordinal Values Which Represent Each Variable's Contribution to IHE Vulnerability to Active Shooter Violence Based on Behavioral and Mental Health Histories of Each Active Shooter Represented in the Included Case Studies

The second sub-heading of *Pre-Event Contributing Factors* is *Emergency Response Capability*. This sub-heading is further separating into two sub-headings of *Campus Police Response* and *Local Law Enforcement Response*. Ordinal values for each contributing variable is assigned in the same manner as the preceding category and assessed based on propensity to contribute to IHE vulnerability to Active Shooter violence and potential to either promote or preclude potential victim survivability.

Pre-Event Contributing Factors	
Emergency Response Capability	
Campus Police Response	
Characteristic	Ordinal Value
Police Force Accreditation	-15
ERT/SWAT Capability	-17
Number of Officers at Time of Incident	-18
Number of Officers on Duty at Time of Incident	-19
Number of Adjacent Law Enforcement Agencies	-16
Established Active Shooter Plan of Action In Place	21
Active Shooter Training Conducted	Yes: -20 No: 20
Local Law Enforcement Response	
Characteristic	Ordinal Value
Police Force Accreditation	-8
ERT / SWAT Capability	-9
Number of Officers at Time of Incident	-12
Number of Officers on Duty at Time of Incident	-11
Number of Adjacent Law Enforcement Agencies	-10
Distance from Police Station to Campus Center (Mi.)	-7
Active Shooter Plan of Action in Place	Yes: -14 No: 14
Active Shooter Training Conducted	Yes: -13 No: 13

Table 12. Pre-Event Contributing Factors Depicting Assigned Ordinal Values Which Represent Each Variable's Contribution to IHE Vulnerability to Active Shooter Violence Based on Emergency Response Capability of Each University Represented in the included case studies

In the instances where an ordinal value does not fit into an incremental rating system, some answers to the criteria were simply "yes" or "no." In these instances, the ordinal value assigned was either a 1 or 0 where 1 demonstrates a contribution to IHE vulnerability and 0 represents no contribution to IHE vulnerability. Additionally, in order to accurately depict IHE vulnerability to Active Shooter violence, certain variables also had to be assessed based on their ability to either contribute to vulnerability or reduce IHE vulnerability. For example, the variable of "Active Shooter Plan of Action in Place"

has a weight of either -14 or 14. This contrast in weighting demonstrates that Law Enforcement agencies that have an Active Shooter plan of action in place prior to an Active Shooter incident are clearly more prepared and better equipped to respond to emergencies of this nature. Therefore, if a plan was in place prior to the Active Shooter incident, the ordinal value is a negative number, in this case -14, and works in the university's favor to reduce its vulnerability. Likewise, a university that does not have an Active Shooter plan in place prior to the Active Shooter incident is clearly less prepared and equipped to meet the challenges of emergencies, such as this. Therefore, these universities receive a positive number, in this case 14, as this lack of preparedness increases a universities vulnerability to Active Shooter violence. Assigning ordinal values in this manner creates a more accurate representation of IHE vulnerability to Active Shooter violence as some historical factors are assessed favorably for IHEs and others are assessed as the security shortfalls they are. However, in every instance and in the interest of fairness and academic honesty, where an advantage could be given to a university, no matter how small, it was always granted. For example, no negative values were assessed to the "Police Ability to Communicate with Student Population" variable for any university. Even if the university only possessed rudimentary phone lines in each building at the time of the incident, such as the case of the UT Tower Shooting, credit was given in the form of reduction of the university's vulnerability. Further concessions were afforded when considering the factors of Law Enforcement response, both from adjacent agencies and university police. These factors were very well received by law enforcement personnel as valid variables and accurate representations of IHE vulnerability.

The third sub-heading of *Pre-Event Contributing Factors* is *University Environmental Factors*. This sub-heading is further separating into three additional sub-headings of *Violent Crime, Other Crime,* and *University Demographics and Population.* Ordinal values for each contributing variable is assigned in the same manner as the preceding category and assessed based on propensity to contribute to IHE vulnerability to Active Shooter violence.

Pre-Event Contributing Factors	
University Environmental Factors (Year of Attack)	
Violent Crime	
Characteristic	Ordinal Value
Murder	27
Assault	25
Rape	26
Armed Robbery	24
Other Crime	
Characteristic	Ordinal Value
Gang Related Arrests	23
Drug Arrests	21
Illegal Weapons Arrests	22
University Demographics and Population	
Characteristic	Ordinal Value
% Male	1
% Female	1
White	1
Black	1
Hispanic	1
Asian	1
American Indian	1
Other	1
Total University Population	1
Police Ability to Contain and Control Student Population	Yes: -1 No: 1
Police Ability to Communicate with Student Population	Yes: -1 No: 1

Table 13. Pre-Event Contributing Factors Depicting Assigned Ordinal Values Which Represent Each Variable's Contribution to IHE Vulnerability to Active Shooter Violence Based on University Environmental Factors During the Year of Attack of Each University Represented in the Included Case Studies

The fourth sub-heading of *Pre-Event Contributing Factors* is *Local Environment Factors*. This sub-heading is further separating into three additional sub-headings of *Violent Crime*, *Other Crime*, and *Local Area Demographics and Population*. Ordinal values for each contributing variable is assigned in the same manner as the preceding category and assessed based on propensity to contribute to IHE vulnerability to Active Shooter violence.

Pre-Event Contributing Factors	
Local Environmental Factors (Year of Attack)	
Violent Crime	
Characteristic	Ordinal Value
Murder	20
Assault	19
Rape	18
Armed Robbery	17
Other Crime	
Characteristic	Ordinal Value
Gang Related Arrests	16
Drug Arrests	14
Illegal Weapons Arrests	15
University Demographics and Population	
Characteristic	Ordinal Value
Unemployment Rate	1
Poverty Rate	1
% Male	1
% Female	1
Median Age Male	1
Median Age Female	1
White	1
Black	1
Hispanic	1
Asian	1
American Indian	1
Other	1
Total University Population	1
Police Ability to Control Access of Local Population to University Facilities	Yes: -1 No: 1
Police Ability to Communicate with Local Population	Yes: -1 No: 1

Table 14. Pre-Event Contributing Factors Depicting Assigned Ordinal Values Which Represent Each Variable's Contribution to IHE Vulnerability to Active Shooter Violence Based on University Environmental Factors During the Year of Attack of Each University Represented in the Included Case Studies

Factors of University Crime and Local area crime statistics, as well as the demographics of both variables, were utilized to weight factors that demonstrate the vulnerability of an IHE. The demographics and student population are key factors and have profound influence on weighted vulnerability of IHEs. Again, a tactically focused

application of Utility Theory reveals that larger university populations result in higher risk Active Shooter violence. This logic takes into account that as student population increases, university police departments and local Law Enforcement does not always expand proportionally. This logic is also validated within our selected case studies by the majority of Active Shooter incidents that occurred in large universities and the severity of these attacks that were, on average, much more severe among larger universities as well. Larger university campuses and student populations make it much more difficult to contain and control a sprawling campus of hundreds of acres and potentially hundreds of buildings. Additionally, the perception of academic openness that every IHE wishes to portray on their campus also grants the local population with the freedom to freely walk through the grounds and enjoy the history and atmosphere of the institution. As a result, this also presents much additional vulnerability to Active Shooter violence.

The fifth sub-heading of *Pre-Event Contributing Factors* is *University Facility Composition*. Ordinal values for each contributing variable is assigned in the same manner as the preceding category and assessed based on propensity to contribute to IHE vulnerability to Active Shooter violence and potential to either promote or preclude potential victim survivability.

Pre-Event Contributing Factors	
University Facility Composition	
Characteristic	Ordinal Value
Guards Present at Buildings	Yes: -6 No: 6
Total Number of Buildings	28
Total Campus Acreage	1
Guarded Roads or Gateways	Yes: -5 No: 5
Campus Entranceways	1
Total Campus Population at Time of Incident	1
Student Population at Time of Incident	1
Campus Daily Visitor Population at Time of Incident	1
Faculty Population at Time of Incident	1
Door Locks on Buildings	Yes: -4 No: 4
Buildings with Security Cameras	Yes: -2 No: 2
Ability to Contain Threat to Student Population	Yes: -1 No: 1
Ability to Contain Student Population	Yes: -1 No: 1
Alert System in Place at Time of Incident	Yes: -1 No: 1

Table 15. Pre-Event Contributing Factors Depicting Assigned Ordinal Values Which Represent Each Variable's Contribution to IHE Vulnerability to Active Shooter Violence Based on University Facility Composition of Each University Represented in the Included Case Studies

The factors of facility composition also had profound effects on IHE vulnerability to Active Shooter violence. Many of the ordinal values within this category are listed as a yes or no based on evidence that university facilities either have some type of security provision or they do not. Similar to *University and Local Area Demographics and Population*, *University Facility Composition* became the other largest contributor to vulnerability in IHE's as the data compiled and compared utilizing Utility Theory demonstrated. Data showed that the ability to simply lock a door, to communicate directly to a threat building or to have security cameras were crucial aspects to significantly reducing the vulnerability of IHE's to Active Shooter violence and for increasing potential victim survivability during these events. Although the data collected and analyzed in this category does not reflect preventative attributes of *Facility Composition*, the deterrent value of these capabilities is easily inferred and expounded on

later in this thesis. This data revealed that the potential ability to contain, control and communicate with students, law enforcement and the shooter in a timely manner significantly reduced *response time* and *Rate of Kill* in every case study. Although significant advances have been made on campuses since tragedies, such as Virginia Tech, the majority of IHE's included as case studies in this research still fell short of physical security considerations comparable with those recommended in this thesis. While text message and mass alert systems afford IHEs the ability to communicate a threat to students, staff, and faculty, they fail to contain or control the IHE population or the shooter during acts of extreme violence. Additionally, these text and mass alert services are still generated from a 911 call and subject to delays and confusion resulting from dispatch services.

The sixth sub-heading of *Event Contributing Factors* is divided into three sub-headings of *Victim Lethality, Ballistic Lethality*, and *Incident Lethality*. Ordinal values for each contributing variable is assigned in the same manner as the preceding category and assessed based on propensity to contribute to IHE vulnerability to Active Shooter violence and potential to either promote or preclude potential victim survivability.

Event Contributing Factors	
Victim Lethality	
Characteristic	Ordinal Value
Number of Rooms Affected	33
Number of Buildings Affected	37
Ballistic Lethality	
Characteristic	Ordinal Value
Number of Weapons	32
Number of Shots Fired	40
Incident Lethality	
Characteristic	Ordinal Value
Number of Shooters	36
Total Incident Duration	41
Active Shooting Duration	34
Shooter Suicide	-31
Shooter Submission	-30
Shooter Interdiction	-29
Alert Time	-39
Incident Lethality	
Characteristic	Ordinal Value
ERT Notification	-38
Response Time	-35
Persons Wounded	42
Persons Killed	43
Other	1
Total University Population	1
Police Ability to Control Access of Local Population to University Facilities	Yes: -1 No: 1
Police Ability to Communicate with Local Population	Yes: -1 No: 1

Table 16. Event Contributing Factors Depicting Assigned Ordinal Values Which Represent Each Variable's Contribution to IHE Vulnerability to Active Shooter Violence Based on Victim Lethality, Ballistic Lethality, and Incident Lethality of Each University Represented in the Included Case Studies

2. Vulnerability Ratings

In order to identify the relative vulnerability of each university, after a comprehensive list of contributing variables was developed, weighted and assessed through the application of Utility Theory; an accurate threat perspective was gained and an *Initial Vulnerability Rating* of each IHE was assigned. These values are assigned

through the application of Utility Theory to actual data mined from police reports, press releases, as well as university, state and federal records of the incident and represent each IHE's relative vulnerability to Active Shooter violence prior to the incident. Once the *Initial Vulnerability Rating* (IVR) was assessed for each IHE, these variables were again assessed in each case study through the application of Utility Theory to predicted values in order to reflect potential vulnerability. This process allowed us to incorporate the proposed facility upgrades and automated responses included in the recommended Victim Initiated Mitigation system and assign a *Predicted Vulnerability Rating* (PVR).

This comparative analysis of the included case studies allowed us to identify variables that directly affect the *Rate of Kill* of Active Shooter incidents in IHEs and highlighted a feasible solution capable of enhancing or reducing appropriate variables resulting in a reduction in the *rate of kill*. In order to accomplish this, ordinal values were entered into two separate spreadsheets and Utility Theory was applied to values for each IHE. The first spreadsheet titled *Initial Vulnerability Rating* represents capabilities that were available to the university at the time of the Active Shooter incident to mitigate the effects of the shooting. The second spreadsheet titled *Predicted Vulnerability Rating*, represents the adjusted vulnerability after a Victim Initiated Mitigation system is implemented. In the *Initial Vulnerability Rating* spreadsheet, the column labeled *Emergency Response Capability* presents all negative values after being applied to the associated ordinal values. This represents the only factor in the *Initial Vulnerability Rating* assessment that reduced IHE vulnerability to Active Shooter violence. This means that everything else, to varying degrees, is contributing to university vulnerability. *University Demographics*, *Local Demographics* and *Facility Composition* represent the highest totals, or the most influential factors contributing to vulnerability and higher *Rates of Kill*.

University Initial Vulnerability Rating

		Emergency Response Capability		University Environmental Factors			Local Environmental Factors							
	Shooter Profile	Campus LE	Local LE	Violent Crime	Other Crime	Univ. Dem.	Violent Crime	Other Crime	Local Dem	Facility Comp.	Victim Lethality	Ballistic Lethality	Incident lethality	**Total Initial Vulnerability Rating**
Virginia Tech	18115.32	-944	-1037.9	277	399	200	5473	0	3985.3	49179	272	7024	960	83902.724
Northern Illinois University	14668	-883	-483.2	641	948	198	1598	1075	266.12	35967	70	2400	1461	57925.92
Louisiana Technical College	20	-578	-1318	123	168	200	47587	2308	293.51	2105	70	152	150	51280.51
Cal State Fullerton	17	-851	-4174	824	405	200	7682	288	10217	35312	136	832	447	51335
University of Iowa	63	-451	-3051.3	1327	4347	200	5490	846	10160.93	47011	206	704	491	67343.63
Simon's Rock College of Bard	11	-340	-367	0	147	200	125	353	10201.97	2340	210	1232	966	15078.97
San Diego State University	0	-814	-30737	1254	6645	187	180192	12025	10209.6	36157	103	952	191	216364.6
Appalachian School of Law	3317.083	-237	-144.434	0	0	199	0	0	10186.99	563	136	672	372	15064.6388
University of Arizona	7706	-809	-593	176	1890	200	168005	80619	10226	50569	103	448	263	318803
Duquesne University	0	-885	-14776.9	101	105	200	49346	40212	10182.67	12084.5	0	424	222	97215.27
University of Central Arkansas	0	-706	-740.5	156	1939	200	3346	0	10168.76	15398	37	776	110	30684.26
University of Alabama, Huntsville	3321	-520	-6231.5	180	338	200	87223	590	10189.94	6058	70	512	104	102034.44
Ohio State University	3306	-1262	-9599	728	1094	200	228	0	10193.6	127144	70	464	-65	132501.6
University of Texas	75	-997	-5296.4	50	63	200	71326	17675	10792.21	60766	70	2080	8049	164852.81

Table 17. University Initial Vulnerability Rating Depicting Assigned Vulnerability Ratings to Selected Case Study Universities Prior to the Active Shooter Incident

The second spreadsheet titled *Predicted Vulnerability Rating* depicts resulting values of Utility Theory application incorporating implementation of the VIM system. The most notable observation made during this comparison was that upgrading facility composition to VIM system compliance became the largest factor in reducing IHE vulnerability. The remaining two largest contributors to IHE vulnerability were unchanged from the *Initial Vulnerability Rating*: demographics and population. This indicates that university populations and surrounding populations are going to be comprised of all different ethnicities, genders, religions, political affiliations, and the threats associated with each demographic composition will remain constant. Assuming that universities will not change admission demographics and will continue to admit new students on the basis of academic merit, it is safe to say the only variables contributing to IHE vulnerability that can be manipulated are those associated with the physical composition of the university's facilities and terrain. In doing so, First Responders to acts of extreme violence have an advantage that actually begins to work for the Law Enforcement personnel in an Active Shooter scenarios. Further explanation of the VIM system is extensively covered in the final chapter.

University Predicted Vulnerability Rating with VIMS

		Emergency Response Capability		University Environmental Factors			Local Environmental Factors							
	Shooter Profile	Campus LE	Local LE	Violent Crime	Other Crime	Univ. Dem.	Violent Crime	Other Crime	Local Dem.	Facility Comp.	Victim Lethality	Ballistic Lethality	Incident lethality	**Total Vuln. with VIMS**
Virginia Tech	18115.32	-944	-1037.9	277	399	200	5473	0	3985.3	-20869	272	7024	960	13854.724
Northern Illinois University	14668	-883	-483.2	641	948	198	1598	1075	266.12	-19821	70	2400	1461	2137.92
Louisiana Technical College	20	-578	-1318	123	168	200	47587	2308	293.51	-987	70	152	255	48293.51
Cal State Fullerton	17	-851	-4174	824	405	200	7682	288	10217	-24920	136	832	622	-8722
University of Iowa	63	-451	-3051.3	1327	4347	200	5490	846	10160.93	-9949	206	704	771	10663.63
Simon's Rock College of Bard	11	-340	-367	0	147	200	125	353	10201.97	1172	210	1232	1666	14610.97
San Diego State University	0	-814	-30737	1254	6645	187	180192	12025	10209.6	-24803	103	952	331	155544.6
Appalachian School of Law	3317.083	-237	-144.434	0	0	199	0	0	10186.99	31	136	672	1112	15272.6388
University of Arizona	7706	-809	-593	176	1890	200	168005	80619	10226	-15839	103	448	438	252570
Duquesne University	0	-885	-14776.9	101	105	200	49346	40212	10182.67	-6275.5	0	424	292	78925.27
University of Central Arkansas	0	-706	-740.5	156	1939	200	3346	0	10168.76	-5546	37	776	145	9775.26
University of Alabama, Huntsville	3321	-520	-6231.5	180	338	200	87223	590	10189.94	-1182	70	512	314	95004.44
Ohio State University	3306	-1262	-9599	728	1094	200	228	0	10193.6	35944	70	464	180	41546.6
University of Texas	75	-997	-5296.4	50	63	200	71326	17675	10792.21	-2534	70	2080	8714	102217.81

Table 18. University Predicted Vulnerability Rating Depicting Assigned Vulnerability Ratings to Selected Case Study Universities with Victim Initiated Mitigation System

3. Case Study Comparative Analysis

A comparative analysis of each case study depicts the percent change in vulnerability from the initial vulnerability of each IHE to the lowered vulnerability with the VIMs implementation. The percent difference represents the decrease in vulnerability to active shooter incidents, thereby increasing the ability to lower the *Rate of Kill*. There are so many factors that cause a university to be more or less vulnerable to higher *Rates of Kill* that it is necessary to explain each case study comparison, starting with the highest percent change and then in descending order. The final two that will be discussed will be the outliers: Cal State Fullerton and Appalachian School of Law. These two instances represent very unique circumstances and variables that cause the data to fall outside of the anticipated data set.

Case Study Universities	Total Initial Vulnerability of University	Total Vulnerability of University with Victim Initiated Mitigation System	Percent Decrease in Vulnerability with VIMS Implementation
Virginia Tech	83902.724	13854.724	**84%**
Northern Illinois University	57925.92	2137.92	**97%**
Louisiana Technical College	51280.51	48293.51	**6%**
Cal State Fullerton	51335	-8722	**117%****
University of Iowa	67343.63	10663.63	**85%**
Simon's Rock College of Bard	15078.97	14610.97	**3%**
San Diego State University	216364.6	155544.6	**29%**
Appalachian School of Law	15064.6388	15272.6388	**-1%****
University of Arizona	318803	252570	**21%**
Duquesne University	97215.27	78925.27	**19%**
University of Central Arkansas	30684.26	9775.26	**68%**
University of Alabama, Huntsville	102034.44	95004.44	**7%**
Ohio State University	132501.6	41546.6	**69%**
University of Texas	164852.81	102217.81	**38%**
**** Outlying data is explained in Chapter 4, Case Study Comparison**			

Table 19. Vulnerability Comparison Depicting Vulnerability Contrast Between Initial Vulnerability Ratings (IVRs) Of Case Study Universities and Predicated Vulnerability Ratings (PVRs)

The largest percent change in vulnerability, 97%, is Northern Illinois University. NIU was more prepared for an active shooter incident than most universities at the time. As outlined in the case study, First Responders were on scene very quickly and moved

tactically to interdict the shooter. In this instance, the shooter committed suicide before the First Responders could end the situation but not before the shooter was able to kill six and wound twenty-one students. Even with an extremely low response time, the shooter was able to affect a high Rate of Kill and a very high casualty rate. Factors that lead to NIU's vulnerability include the high number of students on campus, over 26,000 at the time of incident. Despite the fast response of the police, they still did not possess a means to contain or control the student population if the shooter had decided to continue his rampage. The data suggests that if a VIM system were installed at NIU, coupled with its existing active shooter countermeasures, the campus would be 97% less vulnerable to Active Shooter Violence. Please refer to Appendix B for a comparative vulnerability assessment and Victim Initiated Mitigation system estimate.

The University of Iowa presented unique characteristics for reducing the Rate of Kill in an active shooter scenario. The percent change in vulnerability after VIMs implementation is 85%. The university police were not as well equipped or trained as the NIU departments but a significant amount of effort was placed on communications processes for students in the event of an emergency. The shooter in this instance was able to inflict casualties in two rooms within the first affected building, then walked three blocks on campus to continue his shooting spree, and ultimately shot himself. The incident lasted approximately eight minutes, but law enforcement was unable to respond until nine minutes after the first shot. The shooter was able to freely move from building to building in order to carry out his plan without any disruption. The data suggests that if a VIM system existed, the targets would be behind several layers of locked doors. The VIM system would have eliminated the shooter's ability to return to the first room and execute an already wounded victim and would have blocked his entry into the second building where he killed his fifth victim and wounded another. With a population of over 28,000 on campus at the time of incident, the percent change between *Initial and Predicted Vulnerability Ratings* is partially explained by the large number of unprotected potential victims. With the addition of the VIM system to the current security profile of

the University of Iowa, it is probable that the university would be 85% less vulnerable to Active Shooter violence. Please refer to Appendix B for a comparative vulnerability assessment and Victim Initiated Mitigation system estimate.

Virginia Tech represents the worst school shooting in history. The university has made many improvements to security protocols and first response techniques and policies since the deadly rampage by a deranged shooter. The data suggests that with the implementation of a VIM system, the school would be 84% less vulnerable to Active Shooter violence. At the time of the shooting, VT had a student population of 34,500 and the shooter had several open buildings and rooms to choose from. In an effort to maximize casualties, the shooter chose a series of high occupancy classrooms. Although VT receives high praise for a rapid response time to this incident, the facility composition worked against potential victim survivability throughout the duration of the incident. Students and faculty were unable to securely lock doors until the death toll had already reached 32 and an additional 17 injured. In the instance of VT, students adapted to the situation and barricaded the final room that the shooter sought entry into. Unable to inflict additional casualties, the shooter decided to kill himself before First Responders could interdict. With the implementation of a VIM system, all the classrooms that were engaged by the shooter would have locked before he made his way through the building. His initial shooting in a dorm room across campus would have initiated the system to respond and contain and control the remainder of the campus. With the implementation of a VIM system, the data suggest that Virginia Tech would be 84% less vulnerable to Active Shooter Violence. Please refer to Appendix B for a comparative vulnerability assessment and Victim Initiated Mitigation system estimate.

Ohio State University data suggests a 69% decrease in vulnerability with a VIM system implemented as part of a larger security plan. OSU had approximately 63,000 students enrolled during the shooting that occurred in 2010. The shooter entered his place of work and killed one and wounded another before killing himself. Because of the short duration of the shooting, the school received an unfavorable *Initial Vulnerability Rating*. An important inference demonstrated by the comparative analysis of this case study is the ability of facility upgrades to ensure that the remainder of the campus remains protected

from further violence. The VIM system would have immediately locked down the campus, allowing first responders to isolate the shooting location, contain and control the population and disrupt or block any additional targets throughout the campus. This unique shooting situation lead to a suggested 69% decrease in overall vulnerability after a VIM system is implemented. Please refer to Appendix B for a comparative vulnerability assessment and Victim Initiated Mitigation system estimate.

In the case of the University of Central Arkansas, the shooters conducted a drive by shooting on campus, resulting in the deaths of two students and wounding of another. The percent change in vulnerability with a VIM system was unusually high at a 68% for this type of shooting. However, like the case of OSU, the university had a high campus population of 11,817 students. The implementation of a VIM system would have prevented further potential casualties in adjacent buildings by containing and controlling the population immediately. The lower percent changes in vulnerability compared to other universities where shootings took place in classrooms is due to the location of the shooting being in an open area from a moving vehicle. It is difficult to predict how any type of system could immediately begin to mitigate the effects of this type of attack. But, as stated, the VIM system would protect the remainder of the IHE population, facilitate environmental control for First Responders and lower the vulnerability of Active Shooter violence to 68 percent. Please refer to Appendix B for a comparative vulnerability assessment and Victim Initiated Mitigation system estimate.

The University of Texas shooting provides an even more unique case of an active shooter on an IHE. The data suggests that if a VIM system were implemented at the time of the shooting, the vulnerability of the school would have dropped by 38%. It is a much lower decrease as opposed to the other universities of high population density. The unique characteristics of this case are the fact that the shooter was able to isolate himself in a tower, S.W.A.T. tactics did not exist at the time of incident and the *Rate of Kill* was extremely high at 13 killed and 31 wounded. The interdiction of this shooter is perhaps the best example of first response in all of the 14 case studies. Victim actions and brave first responders were able to stop the shooting. This incident changed the way Law Enforcement reacts to active shooter incidents and lead to the development of S.W.A.T.

capabilities across the nation. Despite applying police response tactics across universities and HOFs across the country, the data still suggests that in order to drastically cut the vulnerability of an IHE with a high population a VIM system is a crucial component to an effective security plan. Please refer to Appendix B for a comparative vulnerability assessment and Victim Initiated Mitigation system estimate.

In the cases of San Diego State University and the University of Arizona, the data suggests a decrease in vulnerability of 29% and 21%, respectively. Both universities gain points for security by having robust local Law Enforcement units close to each school, as well as Emergency Response Procedures in place. However, shooters in both events were able to affect multiple rooms within a four- and ten-minute period, well before law enforcement could respond. Facility composition increased vulnerability in both instances in every way until the San Diego State shooter gave up and called 911 and the University of Arizona shooter committed suicide. Data suggests that the implementation of a VIM system alone would reduce *Rate of Kill* in this instance and the vulnerability to Active Shooter violence by an average of 25 percent. Please refer to Appendix B for a comparative vulnerability assessment and Victim Initiated Mitigation system estimate.

The above eight cases represent universities with large populations and densely populated outlying communities. This particular demographic makes the Law Enforcement task of security much more difficult. The data suggests that a tool, such as a VIM system, capable of assisting victims and first responders in disrupting active shooters and containing/controlling the student and faculty population will have a significant effect on the ability to lower the *Rate of Kill* and vulnerability to future Active Shooter violence. Additionally, it can be inferred that by containing and controlling the population and isolating the incident location, First Responders response time should decrease and allow for more incidents where First Responders interdict the shooter. In these situations, the duration of the incident, assuming the population is contained/controlled and isolated from the shooter, is immaterial. The incident may last one minute or three hours, as long as the *Rate of Kill* is minimized based on the victim actions through the initiation of the VIM system and based on the First Responder actions facilitated by the increased situational awareness gained through the VIM system. The

next set of four case studies will outline how smaller universities with smaller campuses can still benefit from a VIM system but must be integrated with other mitigation approaches as well.

In the case of Duquesne University, the data suggested a decrease in vulnerability of 19%, against a campus population of 10,296 students. The shooting itself took place in an open quad of the school against several basketball players. The unique place for the shooting, like University of Central Arkansas, tends to lead the data to a lower percentage decrease in vulnerability. Implementation of a VIM system would contain and control the remainder of the IHE population and prevent a higher potential *rate of kill.* However, this particular data assessed with utility theory cannot predict how many potential victims would be present or not in any given open area of the campus. Nineteen percent is a significant decrease in vulnerability and it does not negate the use of a VIM system in a smaller populated school. However, other forms of Active Shooter mitigation must be implemented in order to effectively prevent or mitigate this type of attack. Please refer to Appendix B for a comparative vulnerability assessment and Victim Initiated Mitigation system estimate.

The University of Alabama, Huntsville, with a population of 7,600, would have a 7% decrease in vulnerability with VIM system implementation based on the data set. The shooter killed three and wounded three others before turning herself in. The lower number of students, the lack of diversity amongst the student population and a well-trained police force assisted in reducing the *Initial Vulnerability Rating*. Although the VIM system does not drastically lower the vulnerability, police forces do not stay constant based on personnel changeover, budget changes and other variables. The vulnerability of even a small school can rise and fall from year to year based on admissions as well. A VIM system represents a constant security advantage for universities. The other variable that reduces percentage reduction in this case is the fact that the shooter only affected one room then turned herself in to local authorities. The VIM system would, again, shield the remainder of the IHE population until police arrive but the data scrutinizes the lower number of students as opposed to other larger universities. Despite a small 7% decrease in vulnerability, a VIM system would still be a

valid tool for improving security at the University of Alabama, Huntsville. Please refer to Appendix B for a comparative vulnerability assessment and Victim Initiated Mitigation system estimate.

Louisiana Technical College receives a 6% decrease in vulnerability based on the data set. Much like University of Alabama, Huntsville, its small population of 1,490 students account for the reduction in initial vulnerability. The shooter killed two students in one room before shooting herself. The VIM system would have locked down the remainder of the school allowing first responders to account for other students and ensure the absence of multiple shooters. The data accounts for the one room simplicity of the shooting event and the low student population. However, the data still shows that a VIM system would still contribute to a lowered vulnerability and, in theory, would reduce *Rate of Kill* outside of the first classroom engaged.

The last of the small school case studies that met the predicted analysis of the study is the Simon's Rock College of Bard. With the implementation of a VIM system, the data suggests a 3% decrease in vulnerability to Active Shooter violence. Simon's Rock is unique from all the other schools based on the fact it is an early education school that admits gifted high school students from Junior or Senior year secondary schools. Its total population does not exceed 450 students in any given year. The school has a 9:1 ratio of students to faculty and is therefore much more supervised than most universities. The school also implements more robust security protocols, such as would be observed on a high school campus. Many entrance doors of buildings remain locked at all times and access to academic buildings is regulated to enrolled students and faculty. The shooter conducted his shooting in an open parking lot and the library, which he had access to. The VIM system, in this instance, would have locked the shooter out of the library, which would have mitigated the death of one student and the wounding of an additional student. The significant contribution of a VIM system in this instance would be a lockdown of remaining potential victims, immediate notification to first responders and potential isolation of the shooter from the targets. Although 3% is a comparatively low number when placing it next to Northern Illinois University, it still represents a valid

security improvement and two lives that were changes forever. Please refer to Appendix B for a comparative vulnerability assessment and Victim Initiated Mitigation system estimate.

The above four cases represent small scale schools with significantly smaller student populations and/or circumstances that other than 100% prevention that couldn't be mitigated with swift, trained, armed victim response. Although it may be inferred that a VIM system would not have mitigated the exact situations in these cases, the VIM system would prevent any additional casualties and to help reinforce tactics and procedures already specified by the university and responding units. The VIM system serves as a tool that should enhance the training of students or occupants of IHEs and HOFs and to serve as a tool to aid first responders at any training level to effectively manage mitigate and ultimately resolve the shooting situation.

The last two case studies and the resulting data represent outlying data that, because of the uniqueness of the shooting incident itself and the uniqueness of the demographics, set themselves apart from the first twelve studies analyzed. These data sets are unrepresentative of the usual findings but still provide interesting insight as to why a VIM system may be useful in these two universities.

The first university, Cal State Fullerton, involves an active shooter scenario that spanned over two rooms of a basement, a stairwell, a hallway, an elevator, an open area of the library and the outside of the library near a parking lot. During the shooting, two victims, after being wounded, wrestled with and pursued the shooter in an attempt to stop him only to be shot and killed. In an extreme act of bravery, this case represents the only case in the 14 case studies to have immediate action from victims against the shooter. Because the shooting takes place over such a large area of the school, with multiple uses of doors and areas that could be locked down with a VIM system response, the decrease in vulnerability calculates to 117 percent. This number represents that the incident would be completely prevented before it started. This is obviously not a reasonable contention of this thesis. The VIM system is used to aid victims and first responders to gain rapid advantages for survival in Active Shooter situations. The multiple rooms that the VIM system would lock down and the number of students, 32,611, account for the skewed

number set. What is interesting to note however, is how effective the VIM system is projected to be in this instance with the numbers provided for the university with regards to demographics and facility composition. Therefore, it can be inferred that regardless of training level of the police or other First Responders, Cal State Fullerton would significantly benefit from a VIM system based on their unique demographic and complex facility composition. Please refer to Appendix B for a comparative vulnerability assessment and Victim Initiated Mitigation system estimate.

The second set of skewed data represents the Appalachian School of Law in Grundy, Virginia. The data set represents a -1% change in vulnerability with a VIM system, implying that the school would be 1% more vulnerable to Active Shooter violence with a VIM system implemented. The uniqueness of this case is a result of the demographics of the school population. It is comprised mostly of police officers and security personnel within federal agencies who are pursuing a Juris Doctorate. This student population is highly trained compared to the average university population, is older than the average undergraduate student population and only has a student population of 350 students. The data has heavily weighted the ability of the victims to mitigate the active shooter. The data suggests that a VIM system may actually inhibit the ability of the victims, police officers in this case, from mitigating the shooting. In this particular instance, the students did act accordingly to stop the shooter. After the shooter was able to kill three and wound three others, students with their issued weapons in their vehicles held the shooter at gunpoint and subdued him. That being said, the shooter was still able to affect two rooms during the shooting that could have been reduced to one with the implementation of the VIM system. Enough cannot be said for the heroes that disrupted the shooter's actions and ultimately detained him, but the fact remains that the shooter still enjoyed relative freedom of movement and was able to continue through open doors and throughout the building before First Responders could stop him. Since this is the only school to not benefit from the implementation of a Victim Initiated Mitigation system as per the Utility Theory data set, it is clear that victim actions play a large role in this case. It should still be argued that a VIM system would aid in the mitigation of this event by containing and controlling the remaining students on the

campus and would still allow those victims the opportunity to exit buildings and retrieve their weapons, as in this particular case. Please refer to Appendix B for a comparative vulnerability assessment and Victim Initiated Mitigation system estimate.

Although the data in all 14 cases supports the use of a VIM system to varying degrees, the overwhelming numbers in the first eight cases is sufficient to argue that the use of a VIM system would significantly lower the *Rate of Kill* in an active shooter scenario. To mitigate the remaining six cases, the VIM system would also significantly enhance the capabilities of victims to survive and for First Responders to mitigate the effects of the shooter after the shooting has begun. At any time prior to a suspected event, a victim could initiate the VIM system resulting in an alert and lockdown of the IHE and effectively prevent the shooting from ever happening. At the very least it would disrupt the shooter's plan and force them to make decisions about whether to continue the shooting and where. This may allow enough time for First Responders to neutralize the event altogether. Understanding that the data presented above is simply mathematical theory, the contention of this thesis is that the only effective way to immediately lower vulnerability on school campuses is with the technological application of a VIM system that is capable of containing the IHE population, controlling the population and shooter, communicating with the population, the shooter and First Responders, calling local authorities immediately and aiding First Responders in developing a plan to immediately neutralize the threat.

4. Cost Analysis

The cost associated with implementation of this system will be considerable for IHEs choosing to reduce their vulnerability to Active Shooter violence and *Rate of Kill* in potential attacks. However, this cost will vary for each university based on facility composition and desired levels of protection and readiness desired by each IHE as suggested in the scalable solutions recommendation made in Chapter V of this thesis. Ideally, similar to the fire alarm, call boxes should be installed in all areas accessible to potential victims that would allow for virtually anyone within the perimeter of the IHE or HOF to immediately activate the system. The simple cost analysis for each IHE included

below represents an estimate based on an optimal install that would include a call box in every room of the university. For the purposes of this cost analysis components, network synchronization, software creation, installation and associated facility infrastructure upgrades were estimated at a per room cost of $3,000.00 USD. In order to compute a total cost for system installation per university, we had to first estimate the total number of rooms per IHE. However, the data included in our case study analysis of each IHE only contains the number buildings and excludes values for the number of rooms on each campus. For the purposes of this research and simple cost analysis, an estimation of 100 rooms per building will be applied in order to determine the number of required VIM units to be installed in each university. Although, the accuracy of this estimation will vary for each campus, this cost analysis should provide an overestimation of cost associated with VIM system install. Furthermore, the same estimates can be performed with actual data at a later date if so desired by the IHE. After determining estimated values for associated cost of the VIM system and number of rooms per IHE, this cost analysis determines the initial investment required by each IHE to install a VIM system and provide its population with the highest possible levels of protection and readiness. Furthermore, by assigning a proposed $200.00 USD security fee per student, per academic year; a projected pay-off plan and estimated residual income was also created as part of this cost analysis. The following table depicts a cost analysis for each case study university.

Northern Illinois University			
Number of buildings	*100 Rooms = Total Number of Rooms	* $3,000.00 USD / Unit Cost	Total Price for VIM System
64	6,400	$19,200,000.00	$19,200,000.00
Total Number of Enrolled Students	Total number of enrolled students * $200.00 USD proposed security fee / Year = Total Income / Year with Security Fee	* 5 year Payoff Plan	Amount Owed on VIM System Installation after five years
27,638.00	$5,527,600.00	$27,638,000.00	0 (Surplus of $8,438,000.00 at yr. 5)

Louisiana Technical College			
Number of buildings	*100 Rooms = Total Number of Rooms	* $3,000.00 USD / Unit Cost	Total Price for VIM System
14	1,400	$4,200,000.00	$4,200,000.00
Total Number of Enrolled Students	Total number of enrolled students * $200.00 USD proposed security fee / Year = Total Income / Year with Security Fee	* 5 year Payoff Plan	Amount Owed on VIM System Installation after five years
1,490	$298,000.00	$1,490,000.00	$2,170,000.00
Cal State Fullerton			
Number of buildings	*100 Rooms = Total Number of Rooms	* $3,000.00 USD / Unit Cost	Total Price for VIM System
29	2,900	$8,700,000.00	$8,700,000.00
Total Number of Enrolled Students	Total number of enrolled students * $200.00 USD proposed security fee / Year = Total Income / Year with Security Fee	* 5 year Payoff Plan	Amount Owed on VIM System Installation after five years
32,611	$6,522,200.00	$32,611,000.00	0 (Surplus of $23,911,000.00 at yr. 5)
University of Iowa			
Number of buildings	*100 Rooms = Total Number of Rooms	* $3,000.00 USD / Unit Cost	Total Price for VIM System
120	12,000	$36,000,000.00	$36,000,000.00
Total Number of Enrolled Students	Total number of enrolled students * $200.00 USD proposed security fee / Year = Total Income / Year with Security Fee	* 5 year Payoff Plan	Amount Owed on VIM System Installation after five years
30,500	$6,100,000.00	$30,500,00.00	$5,500,000.00
Simon's Rock College of Bard			
Number of buildings	*100 Rooms = Total Number of Rooms	* $3,000.00 USD / Unit Cost	Total Price for VIM System
46	4,600	$13,800,000.00	$13,800,000.00
Total Number of Enrolled Students	Total number of enrolled students * $200.00 USD proposed security fee / Year = Total Income / Year with Security Fee	* 5 year Payoff Plan	Amount Owed on VIM System Installation after five years
400	$80,000.00	$400,000.00	$13,400,000.00

San Diego State University			
Number of buildings	*100 Rooms = Total Number of Rooms	* $3,000.00 USD / Unit Cost	Total Price for VIM System
120	12,000	$36,000,000.00	$36,000,000.00
Total Number of Enrolled Students	Total number of enrolled students * $200.00 USD proposed security fee / Year = Total Income / Year with Security Fee	* 5 year Payoff Plan	Amount Owed on VIM System Installation after five years
32,817	$6,563,400.00	$32,817,000.00	$3,183,000.00
Appalachian School of Law			
Number of buildings	*100 Rooms = Total Number of Rooms	* $3,000.00 USD / Unit Cost	Total Price for VIM System
4	400	$1,200,000.00	$1,200,000.00
Total Number of Enrolled Students	Total number of enrolled students * $200.00 USD proposed security fee / Year = Total Income / Year with Security Fee	* 5 year Payoff Plan	Amount Owed on VIM System Installation after five years
350	$70,000.00	$350,000.00	$850,000.00
University of Arizona			
Number of buildings	*100 Rooms = Total Number of Rooms	* $3,000.00 USD / Unit Cost	Total Price for VIM System
176	$17,600.00	$52,800,000.00	$52,800,000.00
Total Number of Enrolled Students	Total number of enrolled students * $200.00 USD proposed security fee / Year = Total Income / Year with Security Fee	* 5 year Payoff Plan	Amount Owed on VIM System Installation after five years
35,747	$7,149,400.00	$35,747,000.00	$17,053,000.00
Duquesne University			
Number of buildings	*100 Rooms = Total Number of Rooms	* $3,000.00 USD / Unit Cost	Total Price for VIM System
45	4,500	$13,500,000.00	$13,500,000.00
Total Number of Enrolled Students	Total number of enrolled students * $200.00 USD proposed security fee / Year = Total Income / Year with Security Fee	* 5 year Payoff Plan	Amount Owed on VIM System Installation after five years
10,296	$2,059,200.00	$10,296,000.00	$3,204,000.00

University of Central Arkansas			
Number of buildings	*100 Rooms = Total Number of Rooms	* $3,000.00 USD / Unit Cost	Total Price for VIM System
118	11,800	$35,400,000.00	$35,400,000.00
Total Number of Enrolled Students	Total number of enrolled students * $200.00 USD proposed security fee / Year = Total Income / Year with Security Fee	* 5 year Payoff Plan	Amount Owed on VIM System Installation after five years
11,817	$2,363,400.00	$11,817,000.00	$23,583,000.00
University of Alabama Huntsville			
Number of buildings	*100 Rooms = Total Number of Rooms	* $3,000.00 USD / Unit Cost	Total Price for VIM System
30	3,000	$9,000,000.00	$9,000,000.00
Total Number of Enrolled Students	Total number of enrolled students * $200.00 USD proposed security fee / Year = Total Income / Year with Security Fee	* 5 year Payoff Plan	Amount Owed on VIM System Installation after five years
7,600	$1,520,000.00	$7,600,000.00	$1,400,000.00
Ohio State University			
Number of buildings	*100 Rooms = Total Number of Rooms	* $3,000.00 USD / Unit Cost	Total Price for VIM System
900	90,000	$270,000,000.00	$270,000,000.00
Total Number of Enrolled Students	Total number of enrolled students * $200.00 USD proposed security fee / Year = Total Income / Year with Security Fee	* 5 year Payoff Plan	Amount Owed on VIM System Installation after five years
63,000	$12,600,000.00	$63,000,000.00	$207,000,000.00
University of Texas at Austin			
Number of buildings	*100 Rooms = Total Number of Rooms	* $3,000.00 USD / Unit Cost	Total Price for VIM System
550	55,000	$165,000,000.00	$165,000,000.00
Total Number of Enrolled Students	Total number of enrolled students * $200.00 USD proposed security fee / Year = Total Income / Year with Security Fee	* 5 year Payoff Plan	Amount Owed on VIM System Installation after five years
34,000	$6,800,000.00	$34,000,000.00	$131,000,000.00

Table 20. Cost Analyses for Each Case Study University

VI. RECOMMENDATIONS AND CONCLUSION

A. THE HOLISTIC APPROACH

When analyzing the Active Shooter problem and forming recommendations to mitigate the effects of these horrendous acts, certain immutable realities, as outlined in the included case studies, must be addressed. First, these acts of extreme violence cannot be prevented despite a university's best effort to do so. Second, there will always be a delay between initiation of violence and Law Enforcement response. Third, in the time separating the first and last shots fired in Active Shooter incidents the only individuals who have the capacity to react are the victims and potential victims. The fourth and final immutable reality of these incidents is that with current security configurations within U.S. IHEs, the only individual predominantly in control during an Active Shooter incident is the shooter himself. In an effort to counter this evolving threat, Attorney General Janet Reno and Secretary of Education Richard W. Riley advocated a systematic approach to threat assessment as part of a nationwide approach to an overall effort to make sure that every school in the Nation has a comprehensive violence prevention plan in place.[230] However, to date, no federal, state, or independent agency has produced a reasonable plan for accomplishing this and, as a result, the student and faculty populations of U.S. IHEs remain at risk. Although we do not postulate that we can prevent these incidents or to reduce the Active Shooter problem to a zero Rate of Kill, the accumulated research and analysis conducted as part of this project has confirmed that a holistic approach incorporating preventative measures and improvements in Law Enforcement response coupled with a Victim Initiated Mitigation system could drastically improve *Response Time* and decrease *Incident Duration.* Ultimately, these improvements, if implemented correctly, will reduce the *Rate of Kill* for Active Shooter incidents.

[230] Department of Justice, Federal Bureau of Investigation, *The School Shooter: A Threat Assessment Perspective*, 5.

1. Prevention and Preemption

Prevention and preemption focused efforts within IHEs are valuable assets and must be supported. Without these assets, students will not receive proper mental health care and attention required to identify and mitigate violent tendencies before they manifest into violent actions. However, we do not think that it is practical to expect an already overburdened and typically underfunded aspect of student health to identify and prevent extreme acts of violence, such as Active Shooter incidents in an autonomous manner. Instead, we present this aspect of security as one element of a holistic approach to Active Shooter mitigation. The U.S. Secret Service and U.S. Department of Education presented a collaborative document entitled *Threat Assessment in Schools: A Guide to Managing Threatening Situations and to Creating Safe School Climates* which addresses this problem and makes useful suggestions for preventing school violence.

First, a culture of safety in which bullying and other forms of intimidation is not tolerated must also be complemented with mutual respect among teachers and students.[231] Second, U.S. IHEs must establish and empower a Threat Assessment infrastructure that is capable of evaluating threats across the threat assessment continuum from inquiry to investigation. IHEs should possess internal capacities to identify threats and perform formal threat assessment inquiries and, when warranted, have the professional relationships and protocols in place to transition to a threat assessment investigation carried out by Law Enforcement. Third, students, staff, and faculty must be trained to identify and report students and coworkers of concern to the Threat Assessment Team. Finally, a central point of contact must be established for the reporting of potential threats. This point of contact should be heavily publicized to the entire IHE population and careful consideration must be given to the confidentiality and protection of personal

[231] United States Secret Service, United States Department of Education, *Threat Assessment in Schools: A Guide to Managing Threatening Situations and to Creating Safe School Climates*, Washington, DC, May 2002, 12.

information when reports are received. Also, all reports of potential threats must be perceived as credible until otherwise dismissed and feedback to the reporting individual must be received in order to terminate the threat inquiry.[232]

2. Mental Health Screening and Treatment

While mental health care and treatment are clearly crucial components to identification of potential threats and for treatment of post-traumatic issues resulting from acts of extreme violence, these assets have no place in a reasonable Active Shooter mitigation plan of action. These resources were never intended to be utilized in a mitigating role as evidenced by the 63-day average post trauma response time cited earlier in this thesis. Furthermore, limitations placed on IHE mental health resources of funding, manning, and privacy acts preclude mental health screening from becoming a viable mitigation measure as well. Instead, it is our recommendation that IHE mental health resources be reserved for treatment and evaluation of potential threats as identified by the proposed Threat Assessment Team and for treating of post-traumatic injuries resulting from these events.

3. Law Enforcement Response

A well-trained police force is a cornerstone of any safe society and the IHE environment is no different. Regardless of other recommendations put forth as part of this thesis, none is more crucial than a well-trained police force. Campus police and local Law Enforcement readiness for Active Shooter response must first begin with relative and practical training on Active Shooter response. The premier training on this subject and the recommendation of this thesis after a review of available training programs is the Active Shooter response training for Law Enforcement officers offered through the Advanced Law Enforcement Rapid Response Training (ALERRT) organization located in San Marcos, TX. This training is designed to encourage participants to implement the concepts and principles of appropriate actions in situations that may include Active

[232] United States Secret Service, United States Department of Education, *Threat Assessment in Schools: A Guide to Managing Threatening Situations and to Creating Safe School Climates*, 12.

Shooters, barricade and hostage situations, and terrorist attacks.[233] This training represents a fundamental shift from pre-Columbine tactics of cordon, contain the threat, and call SWAT. These contemporary lessons taught by Law Enforcement agencies, such as ALERRT are focused on First Responder initiative and Law Enforcement officers are now taught to form small contact teams if possible and move directly to and neutralize the threat. Unfortunately, this level of training is not taught in most police academies and most Law Enforcement officers and campus police have not received this level of training regarding Active Shooter response. In order to properly prepare our Law Enforcement community for the evolving threat of Active Shooters; it is our recommendation that Active Shooter response training be incorporated in all basic Law Enforcement and campus police training.

4. Victim Actions

In addition to training our police officers, students, staff, and faculty must be trained in Active Shooter response as well. Applying an ecological criminology perspective to crime in general; assuming offenders exist, in order for a crime to happen the victim and the offender must meet in time and space. This concept is best explained by the Criminology Triangle.

Figure 10. Criminology Triangle (From [234])

[233] Texas State University, *Advanced Law Enforcement Rapid Response Training (ALERRT) Manual*, 5.

This model demonstrates that offenders are usually influenced or controlled by other people known as handlers. Likewise, victims are usually protected by other people as well called guardians. Additionally, places are usually controlled by other people known as managers.[234] Therefore when approaching the Active Shooter problem, ALERRT sought to understand how offenders and their victims come together in time and place in order to form better recommendations for ways to mitigate the effects of Active Shooters. Reasoning that if victims were able to be separated from the offenders; crime could not occur, and applying this logic to the Active Shooter problem, their resulting recommendation was to focus on victim actions. ALERRT advocates three actions: Avoid, Deny, Defend (A.D.D) for potential victim response to Active Shooter incidents. First, ALERRT suggests that potential victims should attempt to avoid the gunman, exit the Threat Area and continue their escape until they are out of danger. Second, if potential victims are unable to escape from the Threat Area, then they should enter a room and deny the gunman access to their position by locking and barricading doors, covering windows, turning off lights, and silencing audible electronic devices. Lastly, potential victims are encouraged to prepare to defend themselves against the gunman with improvised weaponry in the event the gunman is able to bypass their defensive measures and enter their room. The A.D.D. response for potential victims is also endorsed by the Department of Homeland Security as a best practice for improving survivability of potential victims in Active Shooter scenarios.[235] We also endorse this methodology for victim actions in Active Shooter incidents and recommend that this program of instruction be implemented and taught during student orientation in U.S. IHEs. As discussed in the second hypothesis and throughout all of the supporting case studies of this work, without a Victim Initiated Mitigation system, even the best-trained police response coupled with aggressive victim actions will fall short of an optimal response.

---

[234] Blair, "Response to Active Shooter Events."

[235] Texas State University, *Advanced Law Enforcement Rapid Response Training (ALERRT) Manual*, 1–23.

B. STANDARDIZATION OF ACTIVE SHOOTER RESPONSE

1. Victim Initiated Mitigation

With consideration to the holistic approach to mitigating the effects of Active Shooters in U.S. IHEs and HOFs, the crucial missing component to existing capabilities is a Victim Initiated Mitigation (VIM) system that incorporates automated control measures and complementary response protocols. After a comprehensive review of the most lethal case studies of Active Shooter incidents in U.S. IHEs, the only realistic means of reducing *Response Time* and *Incident Duration* for Active Shooter scenarios is the application of facility upgrades that are able to return some advantages to victims and potential victims in these situations. Similar to improvements made to fire response in the 1940s, where fire alarm activation initiates immediate active control measures including sprinkler systems, fire extinguishers, and automated alerts, effective Active Shooter mitigation in IHEs requires a similar victim initiated response coupled with active control measures.

a. System Components

A Victim Initiated Mitigation system should consist of five core components. First, a VIM system should include an emergency call box that is centrally located in all public areas of the university (i.e., classrooms, lecture halls, hallways, meeting rooms, outdoor areas, and offices). These emergency call boxes should be capable of initiating and maintaining two-way communications with a remotely located Incident Command Center (ICC) and be able to provide the ICC with real-time data regarding situational awareness of events within the Target Area. The second core component of a VIM system is electromagnetic door releases. All door releases in each building should be directly networked to all emergency call boxes within that particular building. Additionally, all door releases emplaced on the IHE should be directly networked to the ICC as well. These electromagnetic door releases would be able to be remotely deactivated resulting in door closure from either the emergency call boxes or the ICC. The third core component of a VIM system is the Incident Command Center. The ICC would consist of a remotely located hardened facility that is constantly staffed

and capable of receiving and maintaining two-way communications with all emergency call boxes. Additionally, the ICC should also have the capability to receive and monitor data received from activated call boxes that improves situational awareness within the Target Area. Furthermore, after a call is received, the ICC should be capable of validating the threat and, through a series of pre-programmed and planned response protocols, issue alerts and notifications to campus police, local Law Enforcement, Emergency Response Teams, as well as Fire and Rescue departments. Similar alerts should also be able to be sent from the ICC to students, staff and faculty through any networked media device alerting them to the nature of the incident and issuing initial guidance. Lastly, in the case of an emergency activation, the ICC should maintain the capability to activate other call boxes in order to gain situational awareness data and to remotely lockdown other adjacent buildings as well.

The fourth component of a VIM system should include a mobile situational awareness device. This device would consist of a handheld unit that is capable of being directly networked to any emergency call box located within the IHE. These mobile situational awareness devices should be capable of receiving the same real-time data as the ICC that increases situational awareness within the Target Area. These devices would be issued to first responders, thereby placing this high level of situational awareness at the tactical level and in the hands of the First Responders. Additionally, these devices would be able to establish and maintain two-way communications with the activated emergency call box. Lastly, the fifth core component of a VIM system is RFID key fobs and prox readers. Key fobs should be issued to all First Responders with capacity to respond to an emergency on the issuing IHE's campus. Likewise, every door on the IHE would have to be equipped with a prox reader that would unlock the door and allow for ingress of First Responders.

b. System Concept Flow

A VIM system consisting of the components listed above can immediately notify Law Enforcement while simultaneously ***c****ontaining* the threat utilizing facility lockdown and mass alert protocols. With a VIM system, upon threat identification by any

member of the IHE population; students, staff, or faculty are able to initiate the emergency call via the closest emergency call box. This action would result in two simultaneous actions. First, the Threat Area would be immediately locked down as the activation of the emergency call box would deactivate all electromagnetic door locks located on all doors within the building. This would result in all doors closing to locked position. As each door is equipped with a U.S. Fire Code compliant breaker bar or equivalent handle, a locked door would entail locked from ingress and not egress. This feature would prevent capture of potential victims in disadvantageous positions and afford them the freedom to make decisions that are most advantageous to their own survival. For instance, locking doors is a proven 100% effective countermeasure to Active Shooters thus far, as no active shooter incident has had a shooter to breach a looked door and inflict injuries.[236] However, the Active Shooter problem is an evolving threat and certain threats persist, such as fire that may require potential victims to make a decision to exit the room or facility in order to better facilitate their own survival. Any proposed system must preserve this freedom of choice for potential victims regarding decisions of survivability.

The second simultaneous action that occurs upon activation of an emergency call box is establishment of two-way communications with the ICC. After the call has been received by the ICC and two way communications have been established with the activated emergency call box, the threat can be verified by the ICC. At this stage of the VIM system concept flow, the Threat Area has been locked down and through the process of separating potential victims from the shooter, the threat has been effectively contained. After the ICC has validated the threat, through a series of pre-programmed and planned alerts, the ICC is able to dispatch campus police, local Law Enforcement, and all other relevant emergency response personnel. Additionally, in a simultaneous manner, all Affected Personnel within the IHE population to include students, staff, and faculty are able to receive pre-programmed and approved notifications via any networked media device (i.e., cell phone, and any networked TV, computer, tablet, and other video display

[236] Blair, "Response to Active Shooter Events."

systems). Furthermore, at this point in the VIM system concept flow, the ICC has the capability to lock down adjacent buildings within the Affected Area either selectively, by zone, or with a complete lock down of the entire campus.

With facility lock down complete, First Responders are able to respond more rapidly and to a more controlled environment. For instance, after facility lock down has been initiated, if an Active Shooter exits the room he was in, he will not be able to re-enter that room or enter any other rooms. Therefore, First Responders are more likely to know prior to entering the facility that the shooter is either in the Target Area identified by the ICC, or in a hallway. As a result, valuable time is not wasted clearing rooms that only contain potential victims. Additionally, population control measures, such as instructional messages can be delivered to all persons within the building by the ICC in order to better facilitate the Law Enforcement response. First Responders are able to gain access to the Threat Zone via individually issued key fobs that unlock the door associated with each proximity reader. If needed, First Responders will also be able to employ their handheld mobile situational awareness devices in order to gain more situational awareness inside of the Target Area prior to entering the room and neutralizing the threat, or, if the incident transitions to a hostage or barricade scenario, they will have the capability to initiate and maintain two way communication with the Target Area and the shooter.

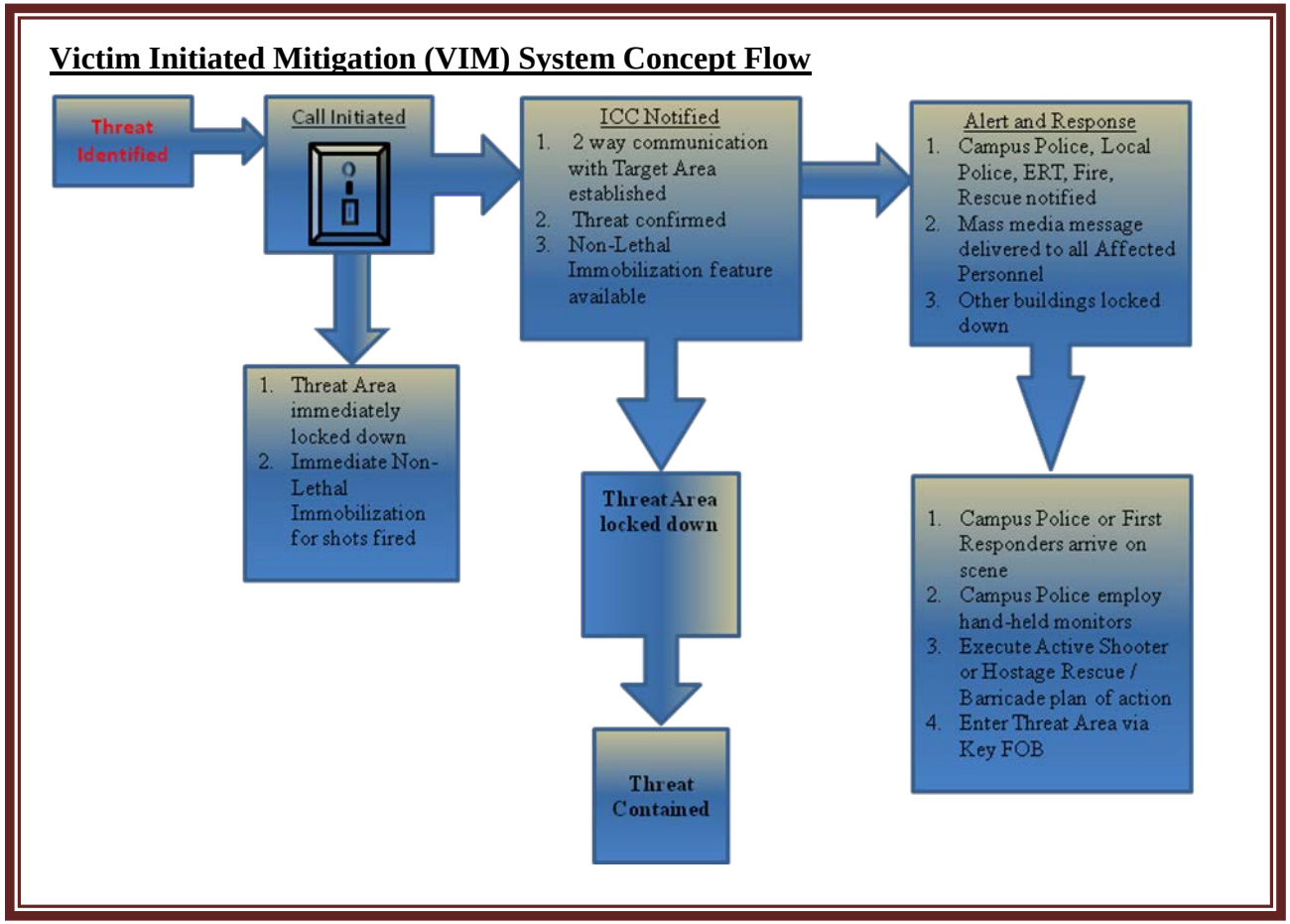


Figure 11. Victim Initiated Mitigation (VIM) System Concept Flow Demonstrating the Sequence of Events from Threat Identification through First Responder Response in Active Shooter Scenarios

c. System Upgrades

The preceding components encompass all of the core components of the VIM system. However, as part of the scalable proposal for the VIM system, additional components can also be added. One such additional component that adds a fundamental utility upgrade is the addition of shot recognition software. Shot recognition software is capable of detecting gunfire with extremely low failure rates and we believe that integration of this capability with the proposed VIM system would greatly enhance system capabilities. The VIM system incorporates shot recognition software as an alternate to VIRAL activation. In Active Shooter instances where shots are fired, IHEs equipped with the VIM system and shot recognition upgrade would benefit from a Shooter Initiated Response and Automated Lockdown (SIRAL). In these instances, the VIM system would recognize gunfire and initiate the automated lockdown procedures just as if a potential victim had activated an emergency call box. The shooter-initiated lockdown represents a fundamental change in Active Shooter response. With this proposed upgrade to the VIM system, the shooter's own actions would also initiate mitigation. In addition to the shot recognition upgrade, we are also proposing a non-lethal mitigation upgrade as well. In response to gunfire, this non-lethal upgrade would temporarily incapacitate Active Shooters. We are only proposing this upgrade to be included in conjunction with the shot recognition upgrade. This stipulation recognizes that these measures are extreme and must only be employed in dire circumstances. The only negative aspect to this proposed upgrade is that these non-lethal measures would have to be area weapons, meaning that the non-lethal effects would affect everyone in that particular room. However, we feel that in response to gunfire through the use of shot recognition software, the temporary discomfort of non-lethal measures is a much preferred alternative to additional casualties. With these two additions to the core components of the VIM system, although we would never claim to prevent the first shot in Active Shooter situations, we could effectively claim to be able to prevent the second shot.

By hardening IHE facilities through the implementation of a Victim Initiated Mitigation system, universities will be able to impose the 5C's in an immediate or timely manner. The Victim Initiated Response and Automated Lockdown (VIRAL) offered by the VIM system will *contain* and *control* the Active Shooter threat via automated and selective lockdown of the Threat Zone and Affected Area within the IHE. These features will result in a marked decrease of control for the Active Shooter by denying his freedom of movement and limiting all movement within the IHE facility to egress only. Additionally, the Key Fob feature of the VIM system allows VIRAL activation to increase Law Enforcement and First Responder ***c****ontrol* during Active Shooter scenarios by permitting complete access to all areas of the facility through special access protocols. VIRAL initiation also greatly improves ***c****ommunication* during Active Shooter scenarios with the establishment of an immediate dialogue between the Incident Command Center and the Target Area. Additionally, the VIM system also affords the ICC the capability to issue an alert and give initial guidance to all students and faculty via prepared messages delivered through any emergency call box located on the IHE, as well as all networked and personally owned communication devices. Furthermore, VIRAL activation utilizing a VIM system allows the ICC to simultaneously *call* campus police, local Law Enforcement, Fire, Rescue and S.W.A.T. resources. Additionally, utilization of a VIM system affords First Responders with assets that greatly improve situational awareness and greatly assist in the ***c****reation of an Immediate Action Plan*, as well as facilitate a better coordinated and effective response. In an unpredictable and disadvantageous environment, such as an Active Shooter scenario, the automated and standardized features of a VIM system will afford IHEs the capability to significantly reduce the *Rate of Kill* by effectively removing potential victims from the crime scene as indicated by the Criminology Triangle. Through the process of providing immediate control measures and placing barriers between potential victims and the Active Shooter, IHEs will also be able to assert control over the Active Shooter thereby manipulating time as a variable. With potential victims secured behind locked doors and separated from the threat, incident duration is no longer a contributing factor to incident lethality.

2. Scalable System and Priority of Install

We recommend a scalable VIM system and also suggest a priority of installation for IHEs in their effort to mitigate Active Shooters. Recognizing that many universities will not be able to make the initial investment required to install the VIM system as recommended for optimal Active Shooter mitigation, we recommend the following scale of protection.

VIM System Levels of Protection	
Levels of Protection	**Components**
Level 1	Emergency Call Box Incident Command Center Door Releases Mobile Situational Awareness Devices Key Fobs / Prox. Readers
Level 2	Emergency Call Box Incident Command Center Door Releases Mobile Situational Awareness Devices Key Fobs / Prox. Readers Shot Recognition Software
Level 3	Emergency Call Box Incident Command Center Door Releases Mobile Situational Awareness Devices Key Fobs / Prox. Readers Shot Recognition Software Non-Lethal Measures

Table 21. VIM System Levels of Protection

For optimal protection, we strongly recommend installation of the VIM system in every room throughout the IHE excluding private rooms (i.e., dorm rooms and restrooms). However, if scaling the system components according to the proposed levels of protection is not sufficient to meet a university's budgetary constraints, we recommend the following priority of installation based on trends established throughout our case study research.

VIM System Priority of Installation	
Levels of Protection	**Protected Facilities**
Level 1	High Occupancy Classrooms Lecture Halls
Level 2	High Occupancy Classrooms Lecture Halls Administrative Facilities
Level 3	High Occupancy Classrooms Lecture Halls Administrative Facilities Graduate / PhD Facilities
Level 4	All Classrooms Lecture Halls Administrative Facilities Graduate / PhD Facilities All hallways within the IHE All public congregation areas

Table 22. VIM System Priority of Installation

3. Standard Operations for Automated Response (S.O.A.R.)

The last recommendation of this thesis regarding Active Shooter mitigation in IHEs and HOFs is a proposal for a national standard regarding threat reduction. At the foundation of this standard would be the Victim Initiated Mitigation system. The VIM system would be supported by the preceding recommendations regarding the holistic approach. Finally, the proposed national standard should evaluate and compare IHEs regarding their vulnerability to Active Shooter threats. This vulnerability assessment would be conducted by an objective government agency and advertised much like food sanitation scores thereby affording potential customers with the information required to make a decision to patron an establishment or not. The proposed Standard Operations for Automated Response (S.O.A.R) would encompass three components (prevention and preemption measures, Law Enforcement readiness, and Victim Initiated Mitigation system implementation) and would rate each IHE according to the following criteria in order to establish a Safe School Rating.

a. Level 1: Prevention and Preemption Measures

1. A culture of safety is promoted
2. Threat Assessment Team is established
3. Threat Assessment Team is capable of evaluating threats
4. Threat Assessment Team is capable of initiating threat assessment investigations with local authorities
5. Students, staff, and faculty are trained to identify and report students and coworkers of concern to the Threat Assessment Team.
6. A central point of contact is established for the reporting of potential threats.
7. All reports of potential threats are perceived as credible until otherwise dismissed.
8. Feedback is issued to the reporting individual

b. Level 2: Law Enforcement Readiness

1. All Campus police and local Law Enforcement are trained in Active Shooter response from an accredited training institution.
2. IHE conducts an Active Shooter response practical exercise involving campus police, local Law Enforcement and all relevant emergency response agencies annually.
3. Campus police and local Law Enforcement are state accredited Police Departments
4. Local Law Enforcement has S.W.A.T. or ERT capability
5. Campus police communications and Standard Operating Procedures are integrated with all local emergency response agencies.
6. IHE has an Active Shooter response plan of action and this plan is integrated with all local emergency response agencies.

c. Level 3: Victim Initiated Mitigation

1. Entire IHE population has received A.D.D. training from an accredited instructor.
2. IHE has a VIM system installed and regularly tested.
3. Annual Active Shooter response practical exercises incorporate VIM system activation.

4. Safe School Rating

In accordance with the S.O.A.R. evaluation of U.S. IHEs, colleges and universities will be evaluated for vulnerability to Active Shooter threats and graded utilizing the following proposed criteria.

Safe School Rating (IAW S.O.A.R. Evaluation Criteria)			
Levels of Readiness	**A**	**B**	**C**
Level 1: **Prevention / Preemption Measures**	Culture of Safety	Culture of Safety	Culture of Safety
	Threat Assessment Team	Threat Assessment Team	Threat Assessment Team
	Threat Evaluation Capability	Threat Evaluation Capability	Threat Evaluation Capability
	Threat Investigative Capability	Threat Investigative Capability	Threat Investigative Capability
	Threat Reporting	Threat Reporting	Threat Reporting
	Central Point of Contact	Central Point of Contact	Central Point of Contact
Level 2: **Law Enforcement Readiness**	Campus Police Trained in Active Shooter Response	Campus Police Trained in Active Shooter Response	Campus Police Trained in Active Shooter Response
	Local Law Enforcement Trained in Active Shooter Response	Local Law Enforcement Trained in Active Shooter Response	Local Law Enforcement Trained in Active Shooter Response
	Annual Active Shooter Response Training Conducted	Annual Active Shooter Response Training Conducted	Annual Active Shooter Response Training Conducted
	Campus Police are State Accredited	Campus Police are State Accredited	Campus Police are State Accredited
	Local Law Enforcement is State Accredited	Local Law Enforcement is State Accredited	Local Law Enforcement is State Accredited
	S.W.A.T or ERT Capability	S.W.A.T or ERT Capability	S.W.A.T or ERT Capability
	Integrated Communications and SOPs	Integrated Communications and SOPs	Integrated Communications and SOPs
	Active Shooter Plan of Action	Active Shooter Plan of Action	Active Shooter Plan of Action
Level 3: **Victim Initiated Mitigation**	IHE Population is A.D.D. Trained	IHE Population is A.D.D. Trained	IHE Population is A.D.D. Trained
	VIM System	VIM System	VIM System
	Annual VIM System In-Service Training Conducted	Annual VIM System In-Service Training Conducted	Annual VIM System In-Service Training Conducted
Resulting Score			

Table 23. Safe School Rating IAW S.O.A.R Evaluation Criteria Taken from Recommendation Made As Part of the Holistic Approach to Active Shooter Mitigation in IHEs

The Safe School Rating outlined above articulates our proposal for evaluation criteria by which we believe IHEs can be scored according to their vulnerability to an Active Shooter incident. We also propose that this evaluation be conducted by an objective government agency and the results should be made available to the public. This would allow potential students and parents of potential students to make a better informed decision regarding university preference. Currently, no such rating exists and, as a result, students and parents select universities based on criteria excluding security considerations and the IHE's capacity to protect its students, staff, and faculty. The proposed Safe Schools Rating should be a required item displayed on every IHE's homepage and marketing media with intended distribution to potential students and parents. This display should simply consist of a letter grade of A, B, or C. When a prospective parent or student inquires about the meaning of this grade, a hyperlinked Safe Schools Rating report would explain an IHE's successes and failures on the university's homepage. This information could also be made readily available to inquiring prospective parents and students via other informative means as well. If implemented, the Safe School Rating would fundamentally change the manner in which prospective parents and students shop for universities and it would greatly improve the consumer's knowledge regarding such a large and important investment.

C. DETERRENT EFFECT

A VIRAL activation of the VIM system would have powerful deterrent effects as well. An individual's will to conduct acts of extreme violence, such as an Active Shooter incident is comprised of his motivations and the level of conviction he possesses in order to fulfill his motivations. Usually through a series of circumstances or events individuals become disaffected with other members of their IHE population. As demonstrated by the included case studies, when this occurs, these circumstances and intense feelings may become so great that an individual is compelled to act violently. In most cases, this decision to act was a result of a cost versus benefit analysis conducted by the individual. When an individual reasons that the expected cost of performing violent action is relatively low and the expected benefit of the action is relatively high, the individual is compelled to act violently. Likewise, an individual who is contemplating violent action is

also likely to perform an act of violence when the expected cost of not acting violently is relatively high. While this cost versus benefit analysis is not usually based on rational thought concerning Active Shooters, it does provide valuable insight into the thought process of these individuals leading up to the incident and it helps us to better focus deterrent measures.

An individual's motivation for becoming an Active Shooter has to be overwhelming. Indeed, an individual willing to conduct these types of heinous actions must have achieved their breakpoint. An Active Shooter's breakpoint is thus defined as the value assigned to the decision point where action, multiplied by the difference of the expected cost versus benefit of conducting the act compared with inaction, multiplied by the difference of the expected cost versus benefit of not conducting the act is greater than the perceived consequences that the IHE is capable of imposing.[237] Only when an individual's situation has eroded to the point where action outweighs inaction despite the cost associated with the perceived consequences, has that individual reached his breakpoint.

Active Shooter Breakpoint Formula

$$BP(x) = A(EB - EC) - I(EB - EC) > PC$$

$BP(x)$: Breakpoint is a function of

A : Action

I : Inaction

EB : Expected Benefit

EC : Expedted Cost

PC : Perceived Consequences

Figure 12. Active Shooter Breakpoint Formula Demonstrating the Cost vs. Benefit Analysis Conducted by Potential Active Shooters Prior to Conducting an Act of Extreme Violence

While the term *compellence* is not recognized by the modern American Dictionary, the root word, compel means, "to force, drive, or constrain; to necessitate or

[237] Dr. Michael Jaye, interview by author, Monterey, CA, February 23, 2011.

pressure by force."[238] The principal difference between deterrence and compellence is that deterrence induces inaction, while compellence makes someone perform against his will.[239] In short, deterrence is forced inaction, while compellence is forced action. The Active Shooter breakpoint occurs within the continuum between deterrence and compellence. When the Active Shooter feels he is compelled to act despite the perceived consequence of deterrent measures, extreme violent action results. Likewise, through careful application of deterrent measures, such as the VIRAL response as part of the VIM system, IHEs could potentially manipulate the breakpoint for potential Active Shooters and deter their planned violence on their campus.

Manipulation of the Active Shooter breakpoint can be accomplished through changing variables within the breakpoint formula. For instance, by increasing the perceived consequences that can be imposed by the IHE and decreasing the expected benefit of conducting the violent act, this equation can result in favor of the IHE. As the perceived consequence that the IHE is capable of imposing increases, a potential Active Shooter's perception of expected benefit of conducting the act will decrease. For IHEs that choose to adhere to the aforementioned recommendations and implement a VIM system, potential Active Shooters may perceive accomplishment of their intended goals for conducting their extreme violence as less achievable on that particular campus. Therefore, this combination of variable changes will result in manipulation of the Active Shooter's breakpoint. This manipulation will not delete the breakpoint, or the associated causal factors contributing to the individual's motivation to conduct the violent act. Instead, these variable adjustments will allow IHEs to better deter acts of violence on their campus.

This concept of Active Shooter breakpoint manipulation can be demonstrated by adjusting variables within the breakpoint formula. By assigning values ranging from one to five for each of the respective variables, one being the lowest and five being the highest, breakpoint manipulation becomes apparent. As demonstrated throughout the case studies and Active Shooter profiles included in this research, most Active Shooters

---

[238] Houghton Mifflin Company, *The American Heritage Dictionary*, 388.

[239] Lawrence Freedman, *Deterence* (Polity Press, 2004), 26–29.

contemplated their actions for a considerable amount of time prior to conducting their act of extreme violence. Likewise, many of these incidents required prior planning and were premeditated. These factors highlight that there is a period of time prior to most Active Shooter events where the shooter can be influenced or deterred from conducting their act of extreme violence. For most potential Active Shooters contemplating conducting an act of extreme violence, values of three for action, expected benefit of conducting the act and expected cost of inaction are appropriate. Values of two for cost of conducting the act, inaction, and the expected benefit of inaction are also appropriate. Maintaining moderate levels of perceived consequence, this breakpoint formula below demonstrates that the difference of expected benefit and expected cost for these individuals is relatively small. This explains the latent phase where many potential Active Shooters contemplate violent actions but do not act on their impulses until a circumstance or event provides additional motivation and skews their breakpoint formula to the point where the expected benefit of conducting the act greatly outweighs the expected cost despite the perceived consequences that the IHE is capable of imposing.

Potential Active Shooter Breakpoint Formula :

$$BP(x) = A(EB - EC) - I(EB - EC) > PC$$
$$BP(x) = 3(3-2) - 2(2-3) > 3$$
$$BP(x) = 3 + 2 > 3$$
$$BP(x) = 5 > 3$$

Figure 13. Potential Active Shooter Breakpoint Formula Including Simulated Values for Breakpoint Variables

Manipulated Potential Active Shooter Breakpoint Formula :

$$BP(x) = A(EB - EC) - I(EB - EC) > P$$
$$BP(x) = 3(3-3) - 2(3-3) > 4$$
$$BP(x) = 0 + 0 > 4$$
$$BP(x) = 0 > 4$$

Figure 14. Manipulated Active Shooter Breakpoint Formula Including Adjusted Simulated Values for Breakpoint Variables

When IHEs implement the recommendations presented in this thesis, immediate automated and standardized responses coupled with reduced response time and freedom of movement adjust variables within the potential Active Shooter breakpoint formula and manipulate the breakpoint of individuals contemplating acts of extreme violence. For instance, by slightly increasing the perceived consequences that the IHE is capable of imposing, the causal effects on other variables manipulate the breakpoint of potential Active Shooters and acts of extreme violence are thereby deterred. The deterrent effects of a VIRAL activation capability facilitated by a VIMs system in IHEs would greatly improve campus security by limiting potential Active Shooter's expected benefit for conducting their act of extreme violence. For individuals contemplating conducting these acts, the immediate environmental control imposed through a VIRAL activation would greatly reduce a potential Active Shooter's expectations that he would be able to accomplish his goals through violence.

D. CONCLUSION

Troubled by the discrepancy between average duration of Active Shooter incidents in IHEs and average response time of campus and local Law Enforcement to these incidents, we have conducted our research and analysis and made recommendations with the sole intent of increasing advantages to potential victims and First Responders who find themselves in these situations. With over 6,500 U.S. IHEs containing 17.8 million students and 3.6 million faculty and staff members, this is a contemporary threat that we could not ignore. Although currently no state or federal agency presents a viable plan for effectively mitigating the effects of Active Shooters, we explored all relevant literature pertaining to this issue from each agency and explored three unique hypotheses in order to present a series of objective recommendations. Although prevention and preemption measures are a crucial component to Active Shooter mitigation plans for IHEs, many factors preclude this approach from being an effective autonomous means of mitigation. This assertion was evidenced by exploring the qualified personnel requirements and privacy act concerns associated with this approach. Furthermore, if the extensive Active Shooter profiles included in Appendix C demonstrate anything at all to the readers of this research, it should demonstrate that there is no profile of an Active

Shooter. Although we do feel that preventative and preemptive measures are integral components of a holistic plan for Active Shooter response, the obstacles associated with this strategy makes it imprudent to recommend this approach as a viable means of autonomous Active Shooter mitigation.

Likewise, as we considered Law Enforcement capacity to interdict Active Shooters in IHEs, the case studies included in this research demonstrated the many obstacles and constraints that also preclude this from being a viable autonomous strategy for mitigating the effects of Active Shooters in IHEs. As demonstrated in each of the case studies included in this thesis, regardless of incident duration, campus police and local Law Enforcement cannot respond in time to interdict the Active Shooter or to reduce the Rate of Kill during these events. Considering the limitations of our first two hypotheses, and the many advantages to advocating victim actions during these events, we proposed our recommendations for a holistic approach to Active Shooter mitigation while emphasizing our third hypothesis that supports the implementation of a Victim Initiated Mitigation system.

In order to test these hypotheses, we carefully selected our case studies based on their incident lethality rating and compared each of these universities regarding their vulnerability to Active Shooter incidents by assigning a vulnerability rating to each IHE. The analytical comparison of these cases overwhelmingly supported implementation of a VIM system and supported the holistic approach to Active Shooter mitigation recommended in this thesis. The U.S. Department of Education presented its guidance for mitigating violence in schools in their publication entitled "Early Warning, Timely Response: A Guide to Safe Schools." Although this document is supported by a litany of educational organizations, it lacks a tangible plan for crisis response. In this document, the DOE recommends that crisis intervention plans include provisions for immediate, planned, and long-term, post-crisis intervention including evacuation procedures, effective communication, and external Law Enforcement support. Additionally, the DOE recommends training for staff and faculty, as well as standardization and rehearsal of

response measures to Active Shooter incidents.[240] We believe that the recommendations presented in this thesis provide the tangible plan that is currently lacking in all state and federal recommendations regarding the Active Shooter problem. Furthermore, the VIRAL response and VIM system recommended here is able to re-prioritize the Crisis Procedure Checklist recommended by the DOE and accomplish 12 of the 13 required items immediately.[241]

The recommendations included in this thesis are in keeping with guidance issued by the National Clearinghouse for Educational Facilities for Crime Prevention through Environmental Design (CPTED) regarding access control measures.[242] These recommendations also adhere to directives issued by the National Incident Management System (NIMS) regarding preparedness, interoperability, standardization of communications and capabilities of Incident Command Centers, as well as emergency response protocols. The discussions and recommendations made in this thesis attend to preparedness questions raised by DHS of, *how prepared do we need to be*, *how prepared are we*, and *how do we prioritize efforts to close the gap*? Additionally, much effort was placed into recommendations that encompass DHS guidance for strategic, tactical, support, and public address communications. Attention given to these considerations has produced a proposed system that offers a flexible core mechanism for coordinated and collaborative incident management incorporating common terminology and facilitates an integrated response.[243] As the primary focus of this research is aimed at reducing the *Rate of Kill* of Active Shooters in U.S. IHEs, we feel that the recommendations made in this thesis resulting from our case study analysis of factors which contribute to IHE vulnerability, if implemented, could have the same notable impact to Active Shooter mitigation as implementation of the fire alarm and current fire code has had on preventing fire related casualties.

---

[240] Dwyer, Osher, and Warger, *Early Warning, Timely Response: A Guide to Safe Schools*, 27.

[241] Dwyer, Osher, and Warger, *Early Warning, Timely Response: A Guide to Safe Schools*, 29.

[242] Tod Schneider, *CPTED 101: Crime Prevention through Environmental Design—The Fundamentals for Schools* (Washington, DC: National Clearinghouse for Educational Facilities at the National Institute of Building Sciences, 2010), 1.

[243] Michael Chertoff, *National Incident Management System* (Washington, DC: U.S. Department of Homeland Security, 2008), 9–43.

APPENDIX A. LETHALITY RATING

A. LETHALITY RATING OF SELECTED CASE STUDIES

1. Lethality General Incident Information Worksheet

General Incident Information						
General Information				Location		
Incident	**Date**	**Name of Shooter**	**Time of Day**	**Location of Campus (State)**	**Location of Campus (City)**	**Location of Incident**
Virginia Tech	16 April, 2007	Seung Hui Cho	7:15:00 AM & 9:40:00 AM	Virginia	Blacksburg	1. West Ambler Johnston Dormitory (Room 4040) 2. Norris Hall (Rooms 206, 207, 205, 211, 204)
University of Texas	1 August, 1966	Charles Whitman	11:48:00 AM	Texas	Austin	UT Tower
Cal State Fullerton	12 July, 1976	Edward Allaway	8:30:00 AM	California	Fullerton	Polack Library
University of Iowa	1 November, 1991	Gang Lu		Iowa	Iowa City	1. Van Allen Hall 2. Administrative Building
Simon's Rock College of Bard	14 December, 1992	Wayne Lo	10:20:00 PM	Massachusetts	Great Barrington	1. School Security Area 2. Library
San Diego State University	15 August, 1996	Frederick Davidson	2:00:00 PM	California	San Diego	Engineering Building
Appalachian School of Law	16 January, 2002	Peter Odighizuwa	1:00:00 PM	Virginia	Grundy	1. Office of Dean Anthony Sutin 2. Office of Professor Blackwell
University of Arizona	28 October, 2002	Robert Flores	8:35:00 AM	Arizona	Tucson	School of Nursing
Duquesne University	17 September, 2006	1. Derrick Lee 2. William Holmes	2:00:00 AM	Pennsylvania	Pittsburg	Student Union Ballroom
Louisiana Technical College	8 February, 2008	Latina Williams	8:36:00 AM	Louisiana	Baton Rouge	Classroom
Northern Illinois University	14 February, 2008	Steven Kazmierczak	3:05:00 PM	Illinois	DeKalb	Cole Hall

General Incident Information						
General Information				Location		
Incident	**Date**	**Name of Shooter**	**Time of Day**	**Location of Campus (State)**	**Location of Campus (City)**	**Location of Incident**
University of Central Arkansas	27 October, 2008	1. Kawin Brockton 2. Kelsey Perry 3. Mario Tony 4. Brandon Wade	9:00:00 PM	Arkansas	Conway	Alley between a dormitory and the Snow Fine Arts Center
University of Alabama, Huntsville	12 February, 2010	Amy Bishop	4:00:00 PM	Alabama	Huntsville	Shelby Center
Ohio State University	9 March, 2010	Nathaniel Brown	3:30:00 PM	Ohio	Columbus	Office Building

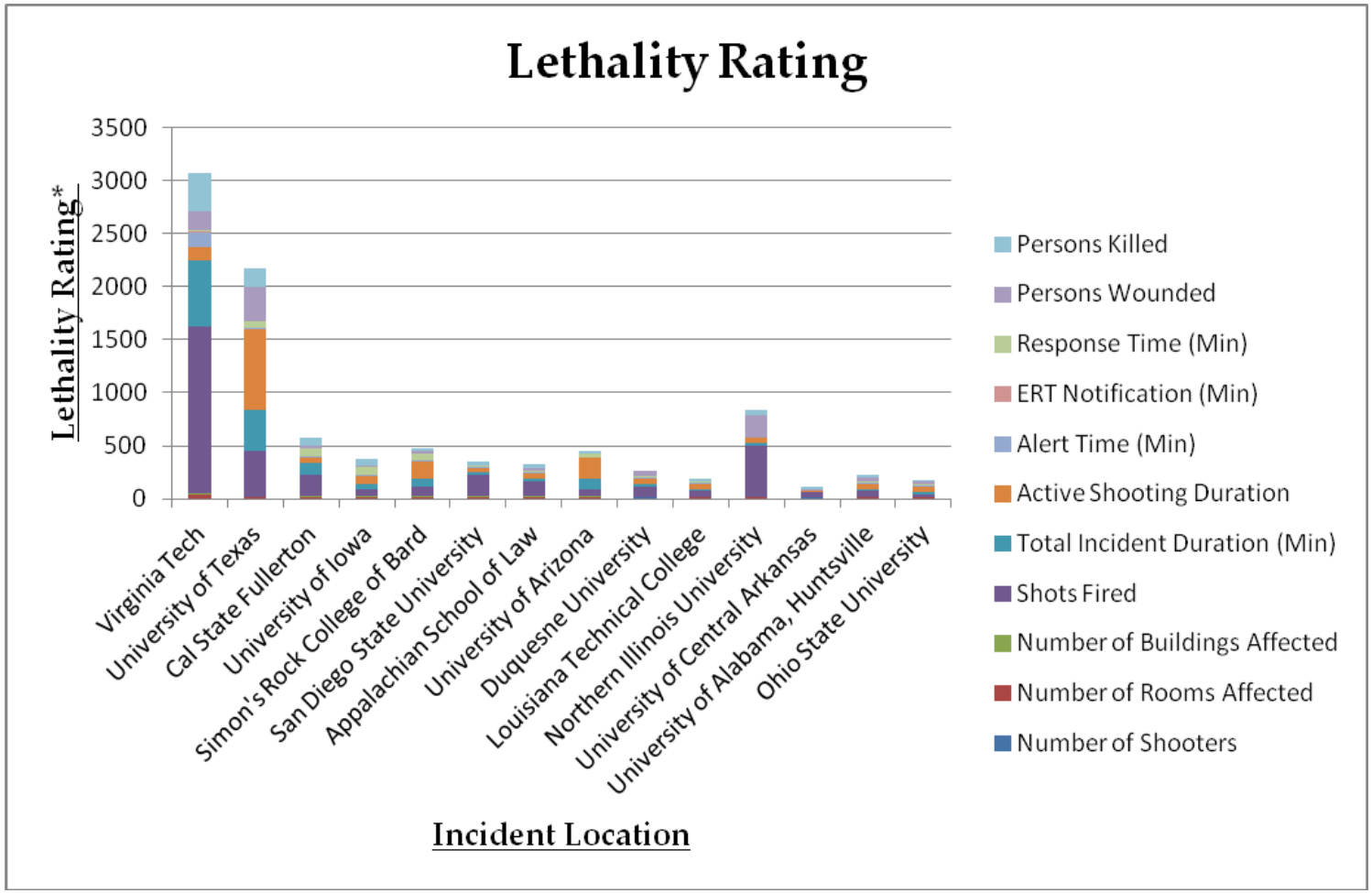
Table 24. Lethality Rating Spreadsheet Depicting General Incident Information

2. Lethality Incident Effects Worksheet

Incident Effects																							
	Incident Scope								Incident Time				Incident Response						Active Shooter Effects				
Selected Case Study Universities	Number of Shooters	Ordinal Value	Number of Rooms Affected	Ordinal Value	Number of Buildings Affected	Ordinal Value	Shots Fired	Ordinal Value	Total Incident Duration (Min)	Ordinal Value	Active Shooting Duration	Ordinal Value	Alert Time (Min)	Ordinal Value	ERT Notification (Min)	Ordinal Value	Response Time (Min)	Ordinal Value	Persons Wounded	Ordinal Value	Persons Killed	Ordinal Value	Incident Lethality
Virginia Tech	1	5	5	35	2	12	174	1566	156	624	16	128	71	142	3.5	3.5	7.5	22.5	17	170	33	363	3071
University of Texas	1	5	1	7	1	6	48	432	96	384	96	768	5	10	0	0	20	60	32	320	16	176	2168
Cal State Fullerton	1	5	2	14	1	6	23	207	28	112	5	40	5.5	11	0	0	28	84	2	20	7	77	576
University of Iowa	1	5	2	14	2	12	7	63	10	40	10	80	5.5	11	0	0	25	75	1	10	6	66	376
Simon's Rock College of Bard	1	5	2	14	2	12	9	81	20	80	20	160	5.5	11	0	0	20	60	3	30	2	22	475
San Diego State University	1	5	2	14	1	6	23	207	5	20	5	40	5	10	0	0	5	15	0	0	3	33	350
Appalachian School of Law	1	5	2	14	1	6	16	144	5.5	22	5.5	44	5.5	11	0	0	5.5	16.5	3	30	3	33	325.5
University of Arizona	1	5	2	14	1	6	7	63	25	100	25	200	2.2	4.4	0	0	9	27	0	0	3	33	452.4
Duquesne University	2	10	0	0	0	0	12	108	5.5	22	5.5	44	5.5	11	0	0	5.5	16.5	5	50	0	0	261.5
Louisiana Technical College	1	5	1	7	1	6	6	54	5.5	22	5.5	44	5.5	11	0	0	4	12	0	0	2	22	183
Northern Illinois University	1	5	1	7	1	6	54	486	6.11	24.44	5.5	44	1	2	0	0	0.33	0.99	21	210	5	55	840.43
University of Central Arkansas	4	20	0	0	0	0	5	45	1.1	4.4	1.1	8.8	0.45	0.9	0	0	0.45	1.35	1	10	2	22	112.45
University of Alabama, Huntsville	1	5	1	7	1	6	6	54	5.5	22	5.5	44	5.5	11	0	0	5.5	16.5	3	30	3	33	228.5
Ohio State University	1	5	1	7	1	6	3	27	5.5	22	5.5	44	5.5	11	0	0	5.5	16.5	2	20	1	11	169.5

Table 25. Lethality Rating depicting variables of Incident Effects and associated ordinal values assigned based on their propensity to contribute to Active Shooter incident lethality.

3. Lethality Rating Chart



*Lethality Rating is a numerical value assigned to each university as a result of Utility Theory application.

Figure 15. Lethality Rating Chart Depicting Relative Incident Lethality Utilizing Utility Theory to Compare All Selected IHEs Meeting the Perimeters of the Refined Research Scope.

APPENDIX B. VULNERABILITY RATING

A. INITIAL VULNERABILITY RATING (IVR) WORKSHEET

University Initial Vulnerability Rating														
		Emergency Response Capability		University Environmental Factors			Local Environmental Factors							
	Shooter Profile	Campus LE	Local LE	Violent Crime	Other Crime	Univ. Dem.	Violent Crime	Other Crime	Local Dem	Facility Comp.	Victim Lethality	Ballistic Lethality	Incident lethality	**Total Initial Vulnerability Rating**
Virginia Tech	18115.32	-944	-1037.9	277	399	200	5473	0	3985.3	49179	272	7024	960	83902.724
Northern Illinois University	14668	-883	-483.2	641	948	198	1598	1075	266.12	35967	70	2400	1461	57925.92
Louisiana Technical College	20	-578	-1318	123	168	200	47587	2308	293.51	2105	70	152	150	51280.51
Cal State Fullerton	17	-851	-4174	824	405	200	7682	288	10217	35312	136	832	447	51335
University of Iowa	63	-451	-3051.3	1327	4347	200	5490	846	10160.93	47011	206	704	491	67343.63
Simon's Rock College of Bard	11	-340	-367	0	147	200	125	353	10201.97	2340	210	1232	966	15078.97
San Diego State University	0	-814	-30737	1254	6645	187	180192	12025	10209.6	36157	103	952	191	216364.6
Appalachian School of Law	3317.083	-237	-144.434	0	0	199	0	0	10186.99	563	136	672	372	15064.6388
University of Arizona	7706	-809	-593	176	1890	200	168005	80619	10226	50569	103	448	263	318803
Duquesne University	0	-885	-14776.9	101	105	200	49346	40212	10182.67	12084.5	0	424	222	97215.27
University of Central Arkansas	0	-706	-740.5	156	1939	200	3346	0	10168.76	15398	37	776	110	30684.26
University of Alabama, Huntsville	3321	-520	-6231.5	180	338	200	87223	590	10189.94	6058	70	512	104	102034.44
Ohio State University	3306	-1262	-9599	728	1094	200	228	0	10193.6	127144	70	464	-65	132501.6
University of Texas	75	-997	-5296.4	50	63	200	71326	17675	10792.21	60766	70	2080	8049	164852.81

Table 26. University Initial Vulnerability Rating Depicting Assigned Vulnerability Ratings to Selected Case Study Universities Prior to the Active Shooter Incident.

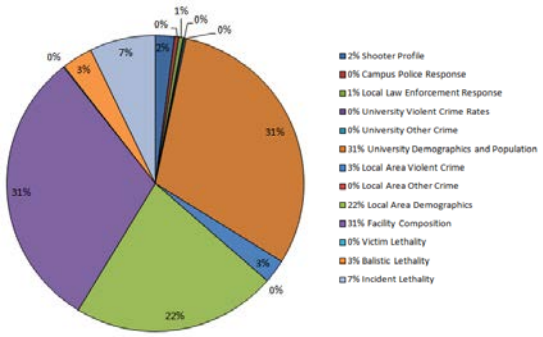
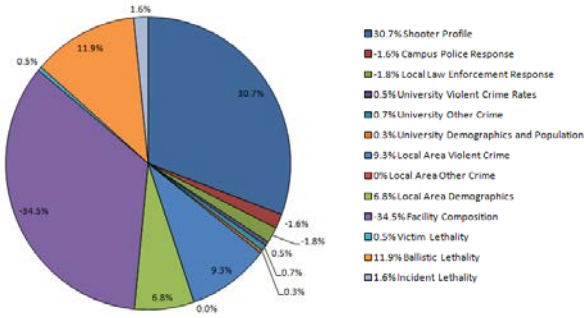
B. PREDICTED VULNERABILITY RATING (PVR) WORKSHEET

University Predicted Vulnerability Rating with VIMS														
		Emergency Response Capability		University Environmental Factors			Local Environmental Factors							
	Shooter Profile	Campus LE	Local LE	Violent Crime	Other Crime	Univ. Dem.	Violent Crime	Other Crime	Local Dem.	Facility Comp.	Victim Lethality	Ballistic Lethality	Incident lethality	**Total Vuln. with VIMS**
Virginia Tech	18115.32	-944	-1037.9	277	399	200	5473	0	3985.3	-20869	272	7024	960	13854.724
Northern Illinois University	14668	-883	-483.2	641	948	198	1598	1075	266.12	-19821	70	2400	1461	2137.92
Louisiana Technical College	20	-578	-1318	123	168	200	47587	2308	293.51	-987	70	152	255	48293.51
Cal State Fullerton	17	-851	-4174	824	405	200	7682	288	10217	-24920	136	832	622	-8722
University of Iowa	63	-451	-3051.3	1327	4347	200	5490	846	10160.93	-9949	206	704	771	10663.63
Simon's Rock College of Bard	11	-340	-367	0	147	200	125	353	10201.97	1172	210	1232	1666	14610.97
San Diego State University	0	-814	-30737	1254	6645	187	180192	12025	10209.6	-24803	103	952	331	155544.6
Appalachian School of Law	3317.083	-237	-144.434	0	0	199	0	0	10186.99	31	136	672	1112	15272.6388
University of Arizona	7706	-809	-593	176	1890	200	168005	80619	10226	-15839	103	448	438	252570
Duquesne University	0	-885	-14776.9	101	105	200	49346	40212	10182.67	-6275.5	0	424	292	78925.27
University of Central Arkansas	0	-706	-740.5	156	1939	200	3346	0	10168.76	-5546	37	776	145	9775.26
University of Alabama, Huntsville	3321	-520	-6231.5	180	338	200	87223	590	10189.94	-1182	70	512	314	95004.44
Ohio State University	3306	-1262	-9599	728	1094	200	228	0	10193.6	35944	70	464	180	41546.6

Table 27. University Predicted Vulnerability Rating Depicting Assigned Vulnerability Ratings to Selected Case Study Universities with Victim Initiated Mitigation System.

C. CASE STUDY VULNERABILITY COMPARISON

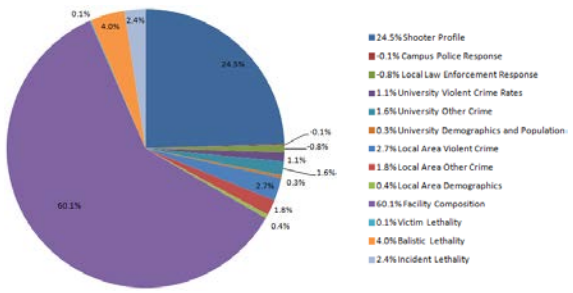
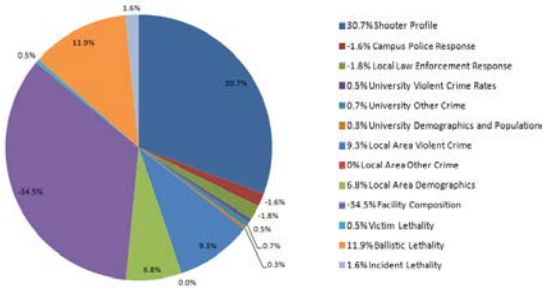
1. Virginia Tech University

Virginia Tech University Vulnerability Comparison	
Virginia Tech University Initial Vulnerability Rating Chart	**Virginia Tech University Predicted Vulnerability Rating with VIM System**
	
Initial Vulnerability Rating: 83,902.72	Predicted Vulnerability Rating: 13854.72

	% Decrease in IHE Vulnerability: 84%	
Initial Cost	Annual Security Fee Income	Payoff Estimate
$39,900,000.00	$5,730,000.00	6 Yr, 8 Mo.
	Annual Residual Security Fee Income	
	$5,730,000.00	

Figure 16. Virginia Tech University Vulnerability Comparison Charts

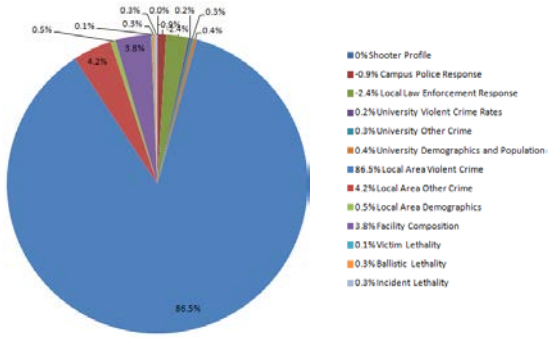
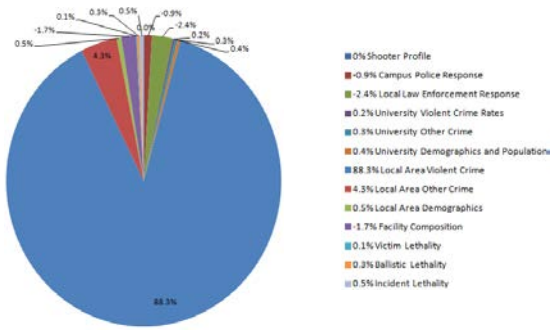
2. Northern Illinois University

Northern Illinois University Vulnerability Comparison	
Northern Illinois Initial Vulnerability Rating Chart	**Northern Illinois University Predicted Vulnerability Rating with VIM System**
	
Initial Vulnerability Rating: 57925.92	Predicted Vulnerability Rating: 2137.92

	% Decrease in IHE Vulnerability: 97%	
Initial Cost	Annual Security Fee Income	Payoff Estimate
$19,200,000.00	$5,527,600.00	3 Yr,4 Mo.
	Annual Residual Security Fee Income	
	$5,527,600.00	

Figure 17. Northern Illinois University Vulnerability Comparison Charts

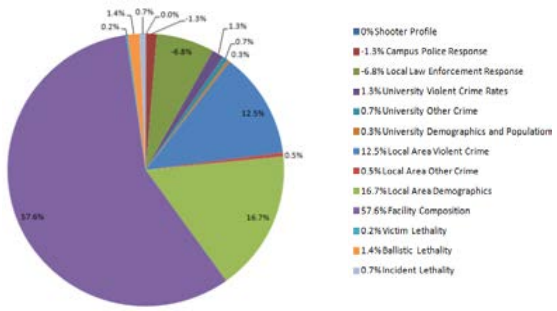
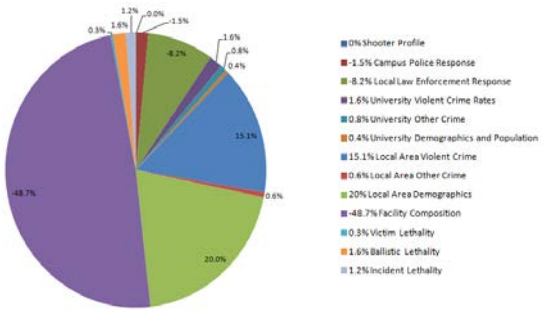
3. Louisiana Technical College

Louisiana Technical College Vulnerability Comparison	
Louisiana Technical College Initial Vulnerability Rating Chart	**Louisiana Technical College Predicted Vulnerability Rating with VIM System**
	
Initial Vulnerability Rating: 51280.51	Predicted Vulnerability Rating: 48293.51

	% Decrease in IHE Vulnerability: 6%	
Initial Cost	Annual Security Fee Income	Payoff Estimate
$4,200,000.00	$298,000.00	14Yr, 1Mo.
	Annual Residual Security Fee Income	
	$298,000.00	

Figure 18. Louisiana Technical College Vulnerability Comparison Charts

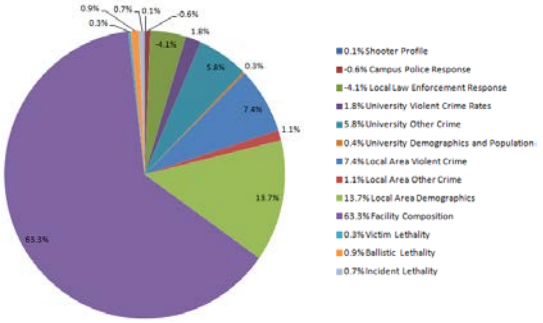
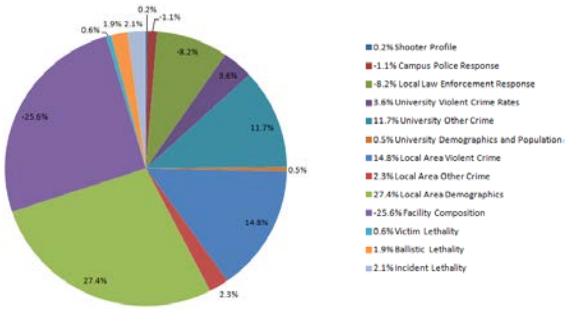
4. California State Fullerton

California State Fullerton University Vulnerability Comparison	
California State Fullerton University Initial Vulnerability Rating Chart	**California State Fullerton University Predicted Vulnerability Rating with VIM System**
	
Initial Vulnerability Rating: 51335	Predicted Vulnerability Rating: (8722)

	% Decrease in IHE Vulnerability: 117%	
Initial Cost	Annual Security Fee Income	Payoff Estimate
$8,700,000.00	$6,522,200.00	1Yr, 4Mo.
	Annual Residual Security Fee Income	
	$6,522,200.00	

Figure 19. California State Fullerton Vulnerability Comparison Charts

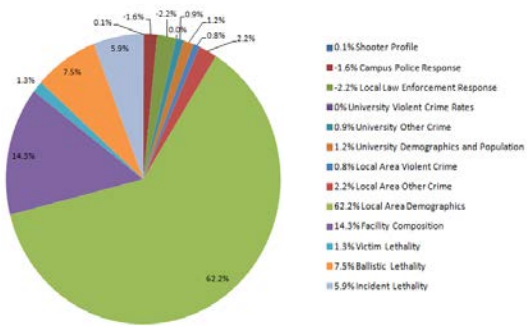
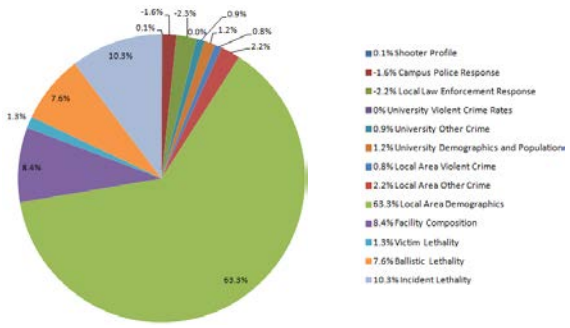
5. University of Iowa

University of Iowa Vulnerability Comparison	
University of Iowa Initial Vulnerability Rating Chart	**University of Iowa Predicted Vulnerability Rating with VIM System**
	
Initial Vulnerability Rating: 67343.63	Predicted Vulnerability Rating: 10663.63

	% Decrease in IHE Vulnerability: 85%	
Initial Cost	Annual Security Fee Income	Payoff Estimate
$36,000,000.00	$6,100,000.00	5Yr, 8Mo.
	Annual Residual Security Fee Income	
	$6,100,000.00	

Figure 20. University of Iowa Vulnerability Comparison Charts

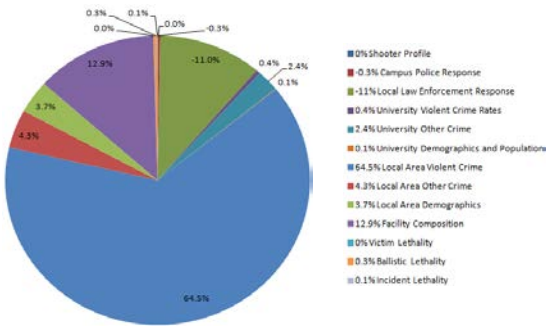
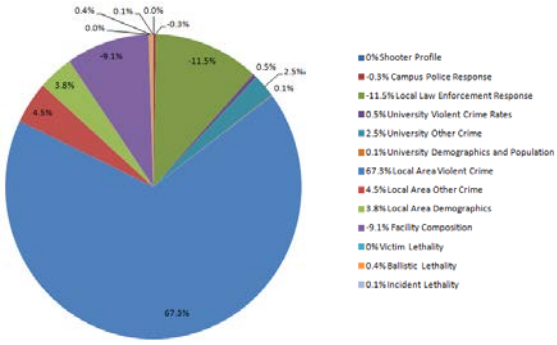
6. Simon's Rock College of Bard

Simon's Rock College of Bard Vulnerability Comparison	
Simon's Rock College of Bard Initial Vulnerability Rating Chart	**Simon's Rock College of Bard Predicted Vulnerability Rating with VIM System**
	
Initial Vulnerability Rating: 15078.97	Predicted Vulnerability Rating: 14610.97

	% Decrease in IHE Vulnerability: 3%	
Initial Cost	Annual Security Fee Income	Payoff Estimate
$13,800,000.00	$80,000.00	172Yr, 6Mo.
	Annual Residual Security Fee Income	
	$80,000.00	

Figure 21. Simon's Rock College of Bard Vulnerability Comparison Charts

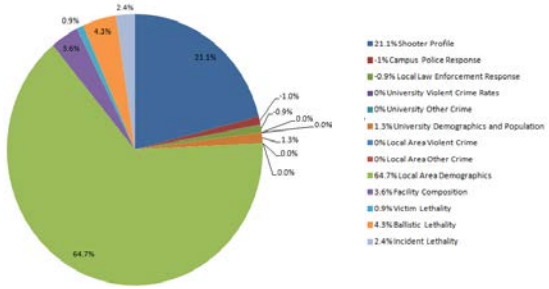
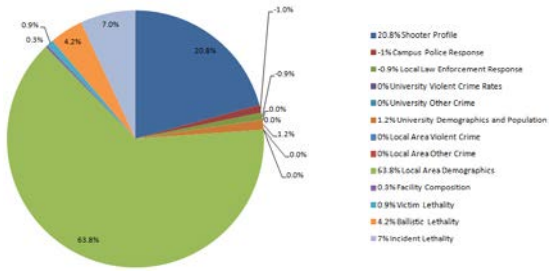
7. San Diego State University

San Diego State University Vulnerability Comparison	
San Diego State University Initial Vulnerability Rating Chart	**San Diego State University Predicted Vulnerability Rating with VIM System**
	
Initial Vulnerability Rating: 216364.6	Predicted Vulnerability Rating: 155544.6

	% Decrease in IHE Vulnerability: 29%	
Initial Cost	Annual Security Fee Income	Payoff Estimate
$36,000,000.00	$6,563,400.00	5Yr, 4Mo.
	Annual Residual Security Fee Income	
	$6,563,400.00	

Figure 22. San Diego State University Vulnerability Comparison Charts

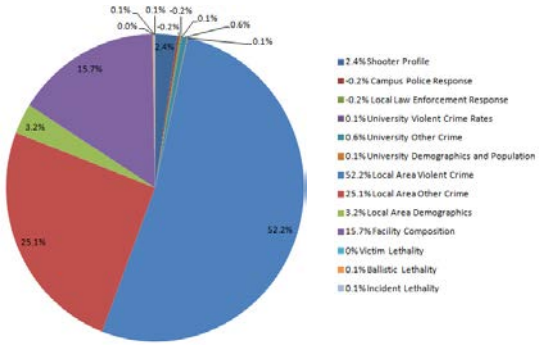
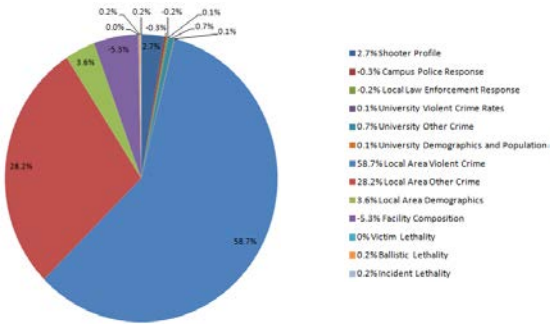
8. Appalachian School of Law

Appalachian School of Law Vulnerability Comparison	
Appalachian School of Law Initial Vulnerability Rating Chart	**Appalachian School of Law Predicted Vulnerability Rating with VIM System**
	
Initial Vulnerability Rating: 15064.64	Predicted Vulnerability Rating: 15272.64

	% Decrease in IHE Vulnerability: (1)%	
Initial Cost	Annual Security Fee Income	Payoff Estimate
$1,200,000.00	$70,000.00	17Yr, 2Mo.
	Annual Residual Security Fee Income	
	$70,000.00	

Figure 23. Appalachian School of Law Vulnerability Comparison Charts

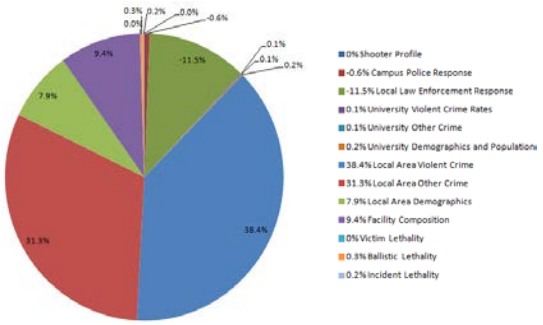
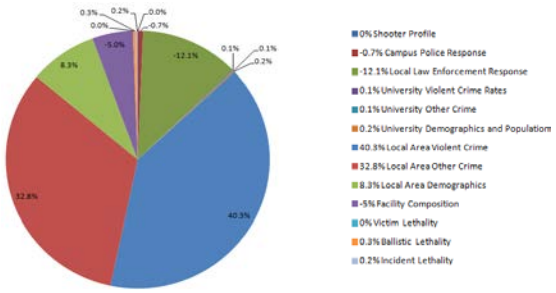
9. University of Arizona

University of Arizona Vulnerability Comparison	
University of Arizona Initial Vulnerability Rating Chart	**University of Arizona Predicted Vulnerability Rating with VIM System**
	
Initial Vulnerability Rating: 318803	Predicted Vulnerability Rating: 252570

	% Decrease in IHE Vulnerability: 21%	
Initial Cost	Annual Security Fee Income	Payoff Estimate
$52,800,000.00	$7,149,400.00	7Yr, 3Mo.
	Annual Residual Security Fee Income	
	$7,149,400.00	

Figure 24. University of Arizona Vulnerability Comparison Charts

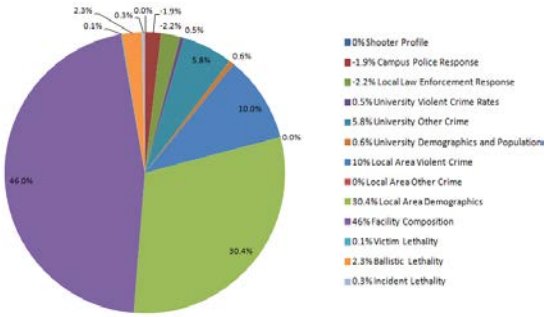
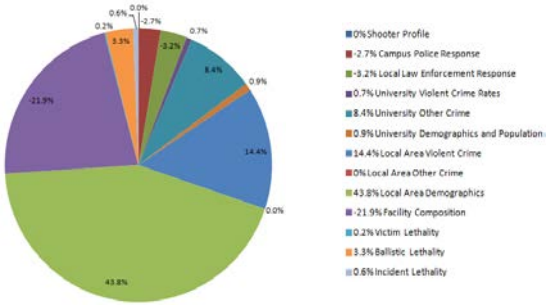
10. Duquesne University

Duquesne University Vulnerability Comparison	
Duquesne University Initial Vulnerability Rating Chart	**Duquesne University Predicted Vulnerability Rating with VIM System**
	
Initial Vulnerability Rating: 97215.27	Predicted Vulnerability Rating: 78925.27

	% Decrease in IHE Vulnerability: 19%	
Initial Cost	Annual Security Fee Income	Payoff Estimate
$13,500,000.00	$2,059,200.00	6Yr, 5Mo.
	Annual Residual Security Fee Income	
	$2,059,200.00	

Figure 25. Duquesne University Vulnerability Comparison Charts

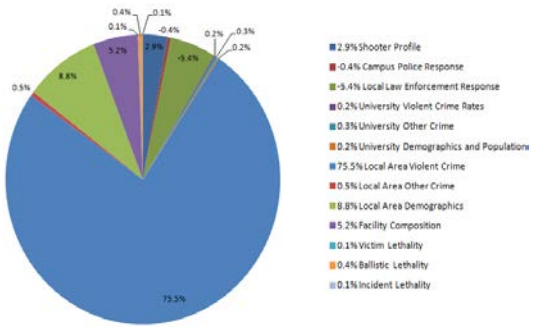
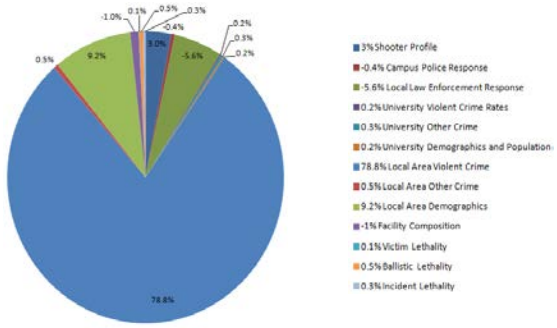
11. University of Central Arkansas

University of Central Arkansas Vulnerability Comparison	
University of Central Arkansas Initial Vulnerability Rating Chart	**University of Central Arkansas Predicted Vulnerability Rating with VIM System**
	
Initial Vulnerability Rating: 30684.26	Predicted Vulnerability Rating: 9775.26

	% Decrease in IHE Vulnerability: 68%	
Initial Cost	Annual Security Fee Income	Payoff Estimate
$35,400,000.00	$2,363,400.00	14Yr, 8Mo.
	Annual Residual Security Fee Income	
	$2,363,400.00	

Figure 26. University of Central Arkansas Vulnerability Comparison Charts

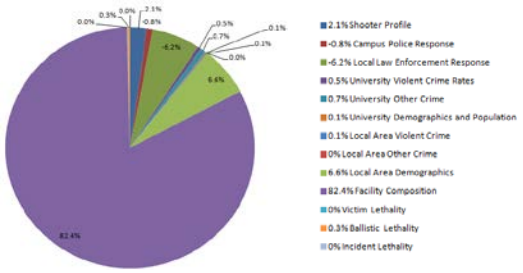
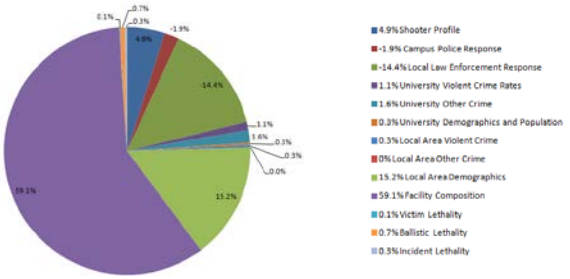
12. University of Alabama, Huntsville

University of Alabama, Huntsville Vulnerability Comparison	
University of Alabama, Huntsville Initial Vulnerability Rating Chart	**University of Alabama, Huntsville Predicted Vulnerability Rating with VIM System**
	
Initial Vulnerability Rating: 102034.44	Predicted Vulnerability Rating: 95004.44

	% Decrease in IHE Vulnerability: 7%	
Initial Cost	Annual Security Fee Income	Payoff Estimate
$9,000,000.00	$1,520,000.00	5Yr, 8Mo.
	Annual Residual Security Fee Income	
	$1,520,000.00	

Figure 27. University of Alabama, Huntsville Vulnerability Comparison Charts

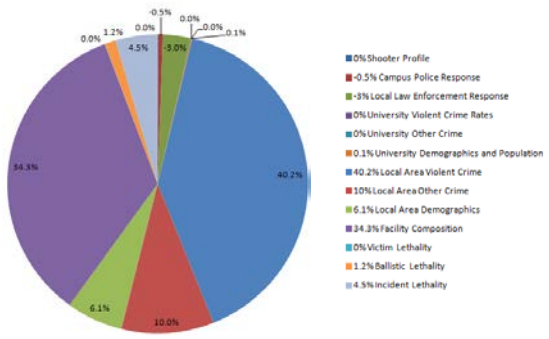
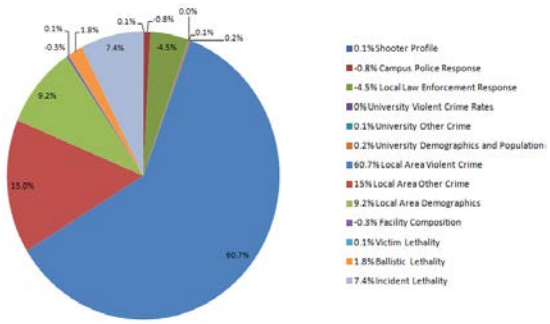
13. Ohio State University

Ohio State University Vulnerability Comparison	
Ohio State University Initial Vulnerability Rating Chart	**Ohio State University Predicted Vulnerability Rating with VIM System**
	
Initial Vulnerability Rating: 132501.6	Predicted Vulnerability Rating: 41546.6

	% Decrease in IHE Vulnerability: 69%	
Initial Cost	Annual Security Fee Income	Payoff Estimate
$270,000,000.00	$12,600,000.00	21Yr, 4Mo.
	Annual Residual Security Fee Income	
	$12,600,000.00	

Figure 28. Ohio State University Vulnerability Comparison Charts

14. University of Texas, Austin

University of Texas, Austin Vulnerability Comparison	
University of Texas, Austin Initial Vulnerability Rating Chart	**University of Texas, Austin Predicted Vulnerability Rating with VIM System**
	
Initial Vulnerability Rating: 164852.81	Predicted Vulnerability Rating: 102217.81

	% Decrease in IHE Vulnerability: 38%	
Initial Cost	Annual Security Fee Income	Payoff Estimate
$165,000,000.00	$6,800,000.00	24Yr, 2Mo.
	Annual Residual Security Fee Income	
	$6,800,000.00	

Figure 29. University of Texas, Austin Vulnerability Comparison Charts

APPENDIX C. PROFILE OF AN ACTIVE SHOOTER

Although the U.S. Secret Service utilized the *School Shooter Profile* developed by the FBI and the *Classroom Avenger profile* developed by McGee and Debernardo to construct their template for an Active Shooter profile, through the course of our case study research and compilation of additional Active Shooter summaries we have concluded that there is no discernible or definable profile by which Active Shooters can be identified. The following Active Shooter summaries, which include select examples from our case studies as well as other contemporary profiles, validate this assertion.

A. SEUNG HUI CHO

Seung Hui Cho was born in Korea on January 18, 1984 to parents; Sung-Tae Cho and Hyang Im Cho. Although Korean culture views quietness and calmness as desired attributes, Cho's introverted personality was so extreme even at a young age that his family was concerned.[244]

Figure 30. Seung Hui Cho Pictured in the Manifesto Video he mailed to NBC News.

In 1992, the Cho family moved to the United States and Seung Hui's withdrawn and isolated mannerisms increased as his early development continued to be characterized by physical illness and inordinate shyness.[245] The continuation and

[244] Virginia Tech Review Panel, *Mass Shootings at Virginia Tech*, 31.

[245] Virginia Tech Review Panel, *Mass Shootings at Virginia Tech*, 33.

worsening of these characteristics and mannerisms led Cho's family to seek therapy for him at the Center for Multicultural Human Services (CMHS) which is a mental health services facility offering mental health treatment and psychological evaluations to low-income and immigrant individuals. As a result of the ensuing testing and counseling performed at the CMHS, Cho was diagnosed with severe *Social Anxiety Disorder*.[246] According to the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) *Social Anxiety Disorder* is the more common title for *Anxiety Disorder 300.23 Social Phobia*. "*Social Phobia* is characterized by clinically significant anxiety provoked by exposure to certain types of social or performance situations, often leading to avoidance behavior."[247]

In March of 1999, Cho's therapists identified symptoms of depression and shortly after the April 1999 shooting at Columbine High School, he was recorded as expressing homicidal and suicidal thoughts and tendencies even stating that he desired to repeat the Columbine massacre. These events prompted an evaluation by the CMHS where he was seen by doctors from George Washington University Hospital and was diagnosed with *Selective Mutism*, and *Major Depression*, and was prescribed the antidepressant Paroxetine 20mg which Cho took for the next year. *Other Disorder of Infancy, Childhood, or Adolescence, 309.21Selective Mutism*, is defined as, "the persistent failure to speak in specific social situations where speaking is expected, despite speaking in other situations."[248] *Depressive Disorder, 296.32 Major Depression* is defined as, "a clinical course that is characterized by one or more *Major Depressive Episodes* without a history of *Manic, Mixed, or Hypomanic Episodes*."[249] A *Major Depressive Episode* is defined as, "a period of at least two weeks during which there is either depressed mood or

---

[246] Virginia Tech Review Panel, *Mass Shootings at Virginia Tech*, 34.

[247] American Psychiatric Association, *Diagnostic and Statistical Manual of Mental Disorders Fourth Edition Text Revision (DSM-IV-TR)* (Washington, DC: Office of Publishing Operations, American Psychiatric Association), 429.

[248] American Psychiatric Association, *Diagnostic and Statistical Manual of Mental Disorders Fourth Edition Text Revision (DSM-IV-TR)*125.

[249] American Psychiatric Association, *Diagnostic and Statistical Manual of Mental Disorders Fourth Edition Text Revision (DSM-IV-TR)*, 369.

the loss of interest or pleasure in nearly all activities."[250] The antidepressant medication Cho received as a result of these diagnoses, Paroxetine, is used to treat *Major Depression, Obsessive-Compulsive Disorder, Panic Disorder, Social Anxiety,* and *Generalized Anxiety Disorder* in adult outpatients.[251] At the conclusion of this year of treatment, Cho's doctors reevaluated him and elected to remove Cho from his antidepressant medication based on his mental health improvements and improved mood.[252]

As Cho entered High School in the fall of 1999, his extremely introverted characteristics continued. He achieved high scholastic marks from his teachers and was viewed as a shy but diligent student. However, serious deficiencies in Cho's speech were noticed by his teachers. In October of 2000, Westfield High School's Screening Committee determined that Cho was eligible for the Special Education Program for Emotional Disabilities and Speech Language. As a result, he was afforded special accommodations and assistance in order to help him succeed in class without frustration and intimidation.[253] With this combination of counseling and academic accommodation, Cho's performance in school was exemplary and he achieved high grades and placement in honors classes. Despite the positive feedback Cho received, he chose to discontinue his therapy at CMHS when he turned 18.[254]

Cho was accepted to Virginia Tech for attendance in the fall of 2003 based on his GPA of 3.52 and his combined SAT score of 1160. Despite the urging of Cho's guidance counselor, who talked to both Cho and his family and strongly recommended that he attend a smaller college close to home, Cho chose to attend Virginia Tech.[255] Additionally, as Cho entered Virginia Tech, due to patient confidentiality, none of his

---

[250] American Psychiatric Association, *Diagnostic and Statistical Manual of Mental Disorders Fourth Edition Text Revision (DSM-IV-TR)*, 349.

[251] Martin A. Katzman, "Current Considerations in the Treatment of Generalized Anxiety Disorder," *CNS Drugs* 23, no. 2 (February 1, 2009): 103–120.

[252] Virginia Tech Review Panel, *Mass Shootings at Virginia Tech*, 35.

[253] Virginia Tech Review Panel, *Mass Shootings at Virginia Tech*, 36.

[254] Virginia Tech Review Panel, *Mass Shootings at Virginia Tech*, 37.

[255] Virginia Tech Review Panel, *Mass Shootings at Virginia Tech*, 37.

preceding mental health history was transferred to Virginia Tech or included in any of his documents as an incoming student.[256] However, despite Cho's obvious social difficulties, he continued to excel in school during his first year at Virginia Tech receiving an overall GPA of 3.00.[257] Unfortunately, as academic requirements increased in difficulty, Cho's scholastic performance declined as well. In the fall semester of 2005, the unobserved and non-medicated Cho would become known among students and faculty not only for his extremely withdrawn, and shy behavior, but also for his hostile, even violent writings and threatening behavior.[258] This behavioral trend continued as Cho was removed from his Creative Writing class for disruptive behavior and the incident was reported to the Chair of the English Department, Dr. Roy. After reviewing the circumstances surrounding the incident, Dr. Roy notified the Dean of Student Affairs, Tom Brown, the Cook Counseling Center, and the College of Liberal Arts with regards to Cho's behavior and disturbing writings.[259] Although Cho was encouraged to seek counseling and was provided with private tutoring as an alternative to his Creative Writing class, no further mental health referrals or disciplinary actions were taken at this time.[260]

At the continued request of his professor, Dr. Roy, Cho finally sought counseling on November 30, 2005 and spoke with Dr. Betzel on December 12. No diagnosis was made and no referral was given for follow-up services at this time. Later that same day, December 12, the Virginia Tech Police Department received a complaint from a female sophomore student regarding harassing messages received from Cho, who had previously stabbed the carpet in her room with a knife and was currently sending harassing instant messages and Facebook posts to her. On December 13, a campus police officer met with Cho and instructed him to have no further contact with the female student. While this was not the first time Cho had been warned by the campus police to refrain from harassing

---

[256] Virginia Tech Review Panel, *Mass Shootings at Virginia Tech*, 38.

[257] Virginia Tech Review Panel, *Mass Shootings at Virginia Tech*, 40.

[258] Virginia Tech Review Panel, *Mass Shootings at Virginia Tech*, 41.

[259] Virginia Tech Review Panel, *Mass Shootings at Virginia Tech*, 43.

[260] Virginia Tech Review Panel, *Mass Shootings at Virginia Tech*, 44.

female students, no criminal charges were filed.[261] Later that same day Cho sent a message to one of his suitemates indicating that he may commit suicide as a response to the day's earlier events. This communication was reported to the Virginia Tech Police and they returned to Cho's room around 7:00 pm to question him about the communication. The officers then took Cho to the Virginia Tech Police Department in order to conduct an assessment and pre-screen evaluation by a Licensed Clinical Social Worker (LCSW). As a result of this pre-screening, Cho was found to be mentally ill, and an imminent danger to himself and others, but was not willing to be treated voluntarily. At this point, the screening LCSW was left with no choice other than to involuntarily commit Cho to the St. Albans Behavioral Health Center of the Carilion New River Valley Medical Center. Cho was admitted by 11:00 pm, 13 December and through a series of administrative and professional mistakes, he was discharged at 2:00 pm, the following day, December 14, with no further treatment planned.[262] After Cho's hospitalization, his alarming and aggressive behavior continued as he wrote a detailed account of a fictional character that went on a shooting rampage in a school. On April 17, 2006 (one school year prior to the mass shooting incident) Cho was challenged by his professor about his writing for its alarming theme and lack of literary quality. After this discussion, Cho followed his professor to his office and screamed at him.[263] While this incident was alarming, it was not uncommon for Cho whose odd behavior, aggressive and violent tendencies were becoming well known among both students and faculty members.

The list of shortfalls and failings regarding the evaluation and treatment of Seung Hui Cho was extensive and included lack of information sharing between academic, administrative, and public safety entities at Virginia Tech. Additionally, concerns that were raised by fellow students, Resident Advisors, and professors were discounted. Cho's abnormal and alarming behavior characterized by multiple complaints regarding harassing activities, along with police warnings and hospitalization, highlight some of the

[261] Virginia Tech Review Panel, *Mass Shootings at Virginia Tech*, 46.

[262] Virginia Tech Review Panel, *Mass Shootings at Virginia Tech*, 49.

[263] Virginia Tech Review Panel, *Mass Shootings at Virginia Tech*, 50.

systemic failings and errors in judgment that surround the Cho case.[264] As these repeated incidents of threatening behavior, disturbing writing, and extensive mental health history, which should have prompted further preventative actions demonstrate; prevention and preemptive measures remain insufficient to reduce the *Rate of Kill* in Active Shooter incidents. This case further validates our first hypothesis and provides a contemporary that proves that an effective mental health focused prevention and preemption strategy for Active Shooter mitigation is impractical for an already overburdened aspect of student health.

B. ANDERS BEHRING BREIVIK

Anders Breivik represents a growing unrest in Western Europe. Although not affiliated with any one terrorist group, Breivik's motivations were fueled by the Aryan, Christian nationalistic movement which is sweeping across the male youth in countries like England, France, Sweden, Finland and Norway. Breivik's perspective, which included an extreme hatred for Muslims, perceived loss of national identity, influence of right wing nationalist authors and skewed personal values, motivated him to conduct one of the worst terrorist acts in Norwegian history.

Figure 31. Anders Breivik (Oslo/Utoya Island, Norway Shooter)

This event reminded the world that extremism, at its darkest and lowest levels, is not limited in its scope, its duration or its targeted victims. Although Breivik was an extreme right wing Christian, a similar event of the same magnitude could have easily

[264] Virginia Tech Review Panel, *Mass Shootings at Virginia Tech*, 53.

been carried out by a Muslim or any other extremist group. Breivik's story is a twisted one of hate and discontent. His actions in Oslo and on Utoya Island demonstrate an innate ability to cut into the softest portion of a nation with surgical calculability and damage its most valuable resource. Breivik's youthful connections to Muslim gangs in Norway validated his perception that these gangs were seeking to degrade Norwegian culture.[265]

1. Background and Lead Up to the Attack on Norway

Anders Behring Breivik was born in 1979 in Norway. The first year of his life was spent in London until his parents divorced and he moved back to Norway with his mother. He visited his father and stepmother often in France as a young boy and has been cited as criticizing his mother for making him too feminine as he grew up. At the age of 15, he began to show signs of rebellion and was arrested for placing graffiti on government property. This sparked his father to never speak to him again and they have not spoken since Breivik was 16. During his teenage years, he began to become more extreme in his views about how government should be involved in the lives of its citizens and became very critical of politics. He was especially focused on the increasing Islamic influence throughout Europe.[266] A childhood Muslim friend of Breivik, Arsalan, is credited with inciting much Breivik's hate for Islam. Breivik developed these feelings as a teenager after witnessing Arsalan's actions while participating in a Pakistani Youth gang in Norway.[267]

---

[265] Andrew Berwick, *2083: A Declaration of European Independence* (London: 2011), 1389.

[266] Su Thet Mon, "Synes Ikke Selv at Han Bør Strafes," *Nyheter*, July 24, 2011, http://www.nrk.no/nyheter/norge/1.7724994.

[267] Berwick, *2083: A Declaration of European Independence*, 1389.

Figure 32. Anders Breivik Shortly Before his Attack on Oslo and Utoya Island

Counter to initial reports following the attack, which stated that military training and experience enabled Breivik's actions, he did not receive any training from the Norwegian Army. In fact, Breivik was found unfit for military service during the conscript process at age 18 and was subsequently denied the ability to serve. According to reports listed in the New York Times, Breivik lost over 300,000 dollars in the stock market one year after being rejected from military service. Likely feeling depressed after these two incidents, he began to show more signs of racism, particularly towards members of the Islamic community. Breivik was disturbed by the opportunities offered to Muslim men throughout Europe. At 21 years old, he had plastic surgery to his chin and forehead in an effort to appear more Aryan. Shortly after this, he acquired employment with a customer service department where he was described by his employers as a great employee. However, other co-workers observed that he maintained a very arrogant demeanor and was easily irritated with Middle Eastern and South Asian customers.[268]

In late 2001 and early 2002, Breivik joined an anti-Islamic subsidiary group to the English Defense League, as well as a Freemason group. Although he only attended four meetings at each union, he utilized his loose affiliation with the two groups to justify portions of his manifesto and set the stage for his proposed development of a Knights

[268] Michael Swirt and Matthew Saltmarsh, "Oslo Suspect Cultivated Parallel Life to Disguise 'Martyrdom Operation,'" *New York Times*, July 25, 2011, A6, http://www.nytimes.com/2011/07/25/world/europe/25breivik.html?_r=1&src=un&feedurl=http%3A%2F.

Templar. Breivik envisioned the organization as one designed to combat the spread of Islam throughout Europe and he referred to himself as a "one man cell" in this organization.[269]

In 2002, Breivik began planning his bombing of the Prime Minister's office and shooting of Utoya Island. He founded a computer internet company in order to provide a legitimate surrogate by which he could finance his expected nine years of plans and operations in preparation for the attack. During this time he rented a small farm outside of Oslo which he used as a cover to obtain explosive fertilizer mixtures. His detailed planning in renting this farm included purchasing fertilizer that could not be used as an explosive in order to alleviate any potential scrutiny during large volume purchases. However, after receiving his shipment of fertilizer, Breivik's attack preparation included a test fire of the explosives. In early 2011, he purchased a small amount of an explosive primer in Poland and, although his name was passed to the Police Directorate, after the attacks the police would make a statement implying that nothing out of the ordinary was observed in Breivik's case prior to the attacks.[270]

Breivik's initial plan for weapons procurement included a trip to Prague in 2010, where he thought it would be simple and cheap to buy weapons of any type. He soon realized that it was significantly more difficult for a non-citizen to gain access to weaponry and that it would be equally difficult to smuggle it back to Norway. In response, he hollowed out the back seat of his Hyundai hoping to bring back an AK-47, Glock pistol, hand grenades and a rocket propelled grenade launcher. After multiple attempts to obtain access to the weapons he desired in Prague, he decided to return to Norway and apply for weapons legally. As Breivik stated after his arrest, this proved to be the first and only "setback" to his operation.[271]

---

[269] Peter Walker and Matthew Taylor, "Far Right on Rise in Europe, Report Says," *The Guardian*, November 6, 2011, http://www.guardian.co.uk/world/interactive/2011/nov/06/europe-far-right-nationalist-populist-interactive.

[270] "Norwegian 'MI5' Had Massacre Suspect on List," *Skynews*, July 25, 2011, http://news.sky.com/home/world-news/article/16036733.

[271] Chris Johnstone, "Oslo Killer Sought Weapons From Prague's Underworld," *Foreign Affairs*, July 25, 2011, http://www.ceskapozice.cz/en/news/society/oslo-killer-sought-weapons-prague%E2%80%99s-underworld.

After returning to Norway, Breivik was able to purchase a handgun through legal channels because Norwegian law permitted it based on his membership to a pistol club. Gun ownership is very difficult in Norway but if citizens are willing to endure the extensive administrative process and prove proficiency, over time a citizen, such as Breivik with no criminal history is afforded the opportunity to purchase a firearm. After several trips to the pistol club, where he demonstrated his proficiency, Breivik was approved to buy a Glock pistol. His rifle, a Ruger Mini-14 was much easier to procure because Breivik had already carried a hunting license for many years. He also owned a Benneli shotgun that he purchased seven years prior. These factors helped to establish Breivik's good standing and facilitate his rifle purchase. Although he never received any formal tactical training with these weapons, Breivik claims that he used the video game *Call of Duty: Modern Warfare 2* as a simulator that aided him in carrying out his attacks.[272]

During his planning and preparation period, Breivik wrote a manifesto that he entitled *2083: A European Declaration of Independence*. The work drew upon the prejudices and hate of extreme, right wing Christian organizations against Islam. He called for Christians to help force the Muslims out of Europe and equated these actions to the Christian Crusades of the 11th, 12th and 13th centuries. Breivik believed that expulsion of Muslims from Europe would require a war and that it would not end until 2083 and would require great amounts of violence. The attacks on the Norwegian Prime Ministers' office, as well as Utoya Island were intended to start this war and begin the forced withdrawal of Muslims from Europe.[273]

The choice of targets for Breivik's massacre was explained during the Police Directorate dissection of Breivik's manifesto interrogation after the incident. Norwegian Prime Minister, Jens Stoltenberg, is a member of the Norwegian Labor Party, a social-democratic party that seeks a strong welfare state. The extreme right wing views of Breivik are completely counter to this belief system and Breivik felt that these principles were weakening Norway. The car bomb which Breivik detonated outside of the Prime

[272] Johnstone, "Oslo Killer Sought Weapons From Prague's Underworld."

[273] Berwick, *2083: A Declaration of European Independence*.

Minister's office building was largely symbolic but also provided a feint and cover for action for his attack on Utoya Island. Utoya became a target because of its affiliation to the Labor Party, the geographic isolation of the island itself, its lack of security and its population density of unarmed campers. Breivik strategically chose the time of year for his attack to incorporate the highest number of campers on the island, which is estimated at over 600 on the day of the shooting. Breivik's extensive planning period and much avoidance of Norwegian government control measures further validates our first hypothesis that claims that prevention and preemption measures are insufficient to reduce the *Rate of Kill* in Active Shooter incidents.

C. BILL PHILLIPS

Bill Phillips was a 60-year-old employee at the Johnson Space Center in Houston, Texas who responded to an unfavorable Performance Review on April 20, 2007 by killing one colleague and taking another hostage until the incident culminated with Phillip's suicide. Although the company had no plans to terminate Phillip's employment, on the day he received his performance evaluation, he brought a .38 caliber revolver and 20 hollow point bullets to work. Described as a loner, and someone whose life revolved around his work, the poor evaluation sent Phillips into a mad rage that resulted in one death and a three-hour hostage situation.[274] This unfortunate incident further validates our second hypothesis that states that Law Enforcement interdiction of the shooter remains insufficient to reduce the *Rate of Kill* in Active Shooter incidents.

[274] Mayhugh, "Active Shooters: Behavior, Conditions, and Situations."

Figure 33. Bill Phillips (Johnson Space Center Shooter)

D. AMY BISHOP

Amy Bishop was an associate professor at the University of Alabama–Huntsville who responded to her denial of academic tenure by killing three people and injuring another three on the University campus on February 12, 2010. Bishop, who killed her brother in 1986, had a history of disproportionate and occasionally violent reactions to workplace stress. She was formally investigated for a bomb threat and was also arrested for assault at an International House of Pancakes restaurant. Bishop was described by her colleagues as swinging from feelings of rage to feelings of empathy for her students and seemed always "ready to explode."[275] However, despite her alarming and criminal behavior, hypothesis one is again validated by this case as prevention and preemption measures remained ineffective to reduce the *Rate of Kill* for this Active Shooter incident as well.

[275] Mayhugh, "Active Shooters: Behavior, Conditions, and Situations."

Figure 34. Amy Bishop (University of Alabama–Huntsville Shooter)

E. OMAR THORNTON

Omar Thornton was a 34-year-old employee of Hartford Distributors in Manchester, CT. who blamed his termination due to stealing on racial discrimination and responded by killing eight people and injuring another two before he took his own life. The incident finally culminated with a 10-minute suicide call to his mother along with a call to 911 from Thornton. Although his girlfriend declared that Thornton's actions were in response to workplace racism, it is more likely that Thornton was angered by his recent termination due to steeling company property.[276] While Thornton had no previous mental health history, this brief example further validates hypothesis two that states that Law Enforcement interdiction of the shooter remains insufficient to reduce the *Rate of Kill* in Active Shooter incidents.

[276] Mayhugh, "Active Shooters: Behavior, Conditions, and Situations."

Figure 35. Omar Thornton (Hartford Distributors Shooter)

F. SULEJMAN TALOVIC

Sulejman Talovic was a Bosnian immigrant who, on February 12, 2007 killed five people and injured another four people in the Trolley Square Mall in Salt Lake City, UT before being shot by responding police officers. Talovic lived with his mother, father and three sisters. The mall was the only place he visited as a child and, as he became older, he often ate his lunch in his car in the mall parking lot. Although his motive remains largely unclear to both his family and police, Talovic stated in 2001 that he was "going to kill white people like Serbs." No indication was given for his selection of the mall as the scene of his shooting spree. Witnesses during the shooting stated that Talovic remained totally calm and expressionless as he gunned down innocent patrons in the mall with his .38 caliber revolver and shotgun. When he was finally killed by responding police officers, his intentions to inflict as much harm as possible were revealed when police discovered the backpack he was carrying that was full of additional ammunition.[277] In this case, Law Enforcement interdiction of the shooter did result in decreasing the *Rate of Kill* for this Active Shooter incident. However, five people were killed and four

[277] Mayhugh, "Active Shooters: Behavior, Conditions, and Situations."

additional mall patrons were injured before First Responders could interdict the shooter. Additionally, although Talovic made threatening remarks prior to the shooting, no preventative action was taken.

Figure 36. Sulejman Talovic (Tolley Square Mall Shoooter)

G. ROBERT A. HAWKINS

Robert Hawkins was a depressed 19 year old who responded to the recent loss of his job and girlfriend on December 5, 2007 by killing eight people and injuring another four in Omaha, NE at the Westroads Shopping Mall. Hawkins was estranged from his brother and lived with some of his friends and their mother. Hawkins also had a troubled past of adolescent depression and criminal activity. He was diagnosed with depression by age six and received medication and therapy. By age 14, Hawkins had threatened to kill his stepmother with an axe and had a criminal history consisting of felony drug charges and homicidal threats. On the day of his shooting, Hawkins wrote a suicide letter to his mother indicating that he intended to kill and harm other people before committing suicide himself. His mother was able to give the letter to police one hour prior to

Hawkins assault on the Westroads Shopping Mall with an AK-47 Assault Rifle.[278] This case further validates hypothesis one, which states that prevention and preemption methods are insufficient to reduce the *Rate of Kill* for Active Shooter incidents.

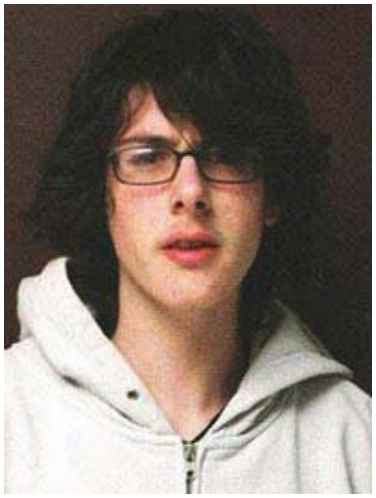


Figure 37. Robert Hawkins (Westroads Mall Shooting)

H. JAMES VON BRUNN

James Von Brunn was an 88 year old white supremacist and anti-Semite who, on June 10, 2009, acted on his racist views by killing one person and wounding another in the Holocaust museum located in Washington, DC. Prior to this incident; Brunn, who was upset about current interest rates and economic turmoil, served six and a half years in prison after being arrested in 1981 outside of a Federal Reserve Board meeting with a shotgun, revolver, and a knife. Brunn's wife stated that his hatred was eating him like cancer. Brunn, who was a U.S. Navy veteran, finally acted on this hatred by killing the security guard of the Holocaust Museum who was attempting to open the door for him. Brunn died in a prison hospital on January 5, 2010.[279] Although Brunn's associations with violent organizations and feelings of extreme hate were known to his family

[278] Mayhugh, "Active Shooters: Behavior, Conditions, and Situations."

[279] Mayhugh, "Active Shooters: Behavior, Conditions, and Situations."

members, this violent act was not prevented. These circumstances also further validate hypothesis one, which states that prevention and preemption measures remain insufficient to reduce the *Rate of Kill* for Active Shooter scenarios.

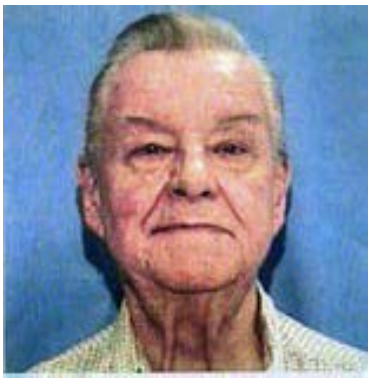


Figure 38. James Von Brunn (Holocaust Memorial Museum Shooter)

I. JARED LEE LAUGHNER

Jared Lee Laughner was a 22-year-old anti-government and conspiracy theorist who, on January 8, 2011, acted on his views by killing six people and injuring another 14 before his arrest at Gabrielle Gifford's event in Tucson, AZ. Laughner was described as a "normal kid" by his family and friends until middle school. After being fired from a job for changes in his personality, Laughner became mentally distorted with drugs and alcohol as he transitioned between normal teenaged activities and obsessions with the occult and government conspiracies fueled by his increasing nihilistic views. After becoming obsessed with Rep. Gifford's answer to his question of, "What is Government if words have no meaning," he decided to act on his views by killing her and other attendees of her event in Tucson, AZ.[280] Although Laughner's associations with violent organizations and irrational feelings were known to his family and friends, this violent act was not prevented. These circumstances also further validate hypothesis one, which states that prevention and preemption measures remain insufficient to reduce the *Rate of Kill* for Active Shooter scenarios.

[280] Mayhugh, "Active Shooters: Behavior, Conditions, and Situations."

Figure 39. Jared Lee Laughner (Rep. Gabrielle Gifford's Shooter)

J. NIDAL HASAN

Nidal Hasan was a 39-year-old Islamic Army Major assigned to Fort Hood military installation in Ft. Hood, TX. Hasan, who had made repeated unsuccessful attempts to avoid deployments and terminate his Army service due to his ideological opposition of Operations Iraqi Freedom and Enduring Freedom, finally resorted to violent actions on November 5, 2009. Nidal Hasan's Jihadist actions were encouraged through multiple supportive and encouraging emails with his Imam. In preparation for his Jihad, Hasan began practicing at a local shooting range and distributed his personal items to his neighbors shortly before his attack. Hasan killed 13 people and injured another 30 during his attack on Ft. Hood before he was finally shot and detained by responding base security officers.[281] Although Hasan had demonstrated cowardice and refused to fulfill his obligations as an Amy officer during a time of combat based on his radical ideology, his associations with an extremist religious leader and feelings of extreme hate, although known to family and co-workers, were ignored and this violent act was not prevented. These circumstances also further validate hypothesis one, which states that prevention and preemption measures remain insufficient to reduce the *Rate of Kill* for Active Shooter scenarios.

[281] Mayhugh, "Active Shooters: Behavior, Conditions, and Situations."

Figure 40. Nadal Hasan (Ft. Hood Shooter)

Active Shooter Profile Matrix		
Shooter	**Contributing Category**	**Contributing Factors**
Bill Phillips	Workplace	• Provided self esteem and identity • Received poor evaluation • Loner • Wrote "People call me stupid," on a white board at work.
	Community	• No data
	Finances	• No data
	Social Network / Religion	• No data
	Health / Wellness	• No data
	Home / Family	• No data
Amy Bishop	Workplace	• Demanding • Conflict with peers and manager • Unsuccessful meeting goal of tenure • Unsatisfactory quality of work
	Community	• Conflicts with children / youth • Arrested for violence • Investigated for bomb threat • Case reopened for killing of her brother
	Finances	• No negative data
	Social Network / Religion	• Conflict with social contacts
	Health / Wellness	• Anger • Hostility • Frustration • Resentment • No resilience • Mood swings • Volatility

Active Shooter Profile Matrix		
Shooter	**Contributing Category**	**Contributing Factors**
	Home / Family	• Support of husband • Killing of brother
Omar Thornton	Workplace	• Felt Racial discriminated against
	Community	• No Data
	Finances	• No Data
	Social Network / Religion	• No Data
	Health / Wellness	• No Data
	Home / Family	• Made 10 minute suicide call to mother
Sulejman Talovic	Workplace	• No Data
	Community	• Bosnian Immigrant
	Finances	• No Data
	Social Network / Religion	• Hated Serbs, wanted to kill white people, loner
	Health / Wellness	• No Data
	Home / Family	• Lived with mother, father and 3 sisters
Robert Hawkins	Workplace	• Recently lost his job
	Community	• Criminal record
	Finances	• No Data
	Social Network / Religion	• Recently lost his girlfriend, estranged from his parents, lived with friends and their mother
	Health / Wellness	• Treated for depression, history of violent intentions.
	Home / Family	• No Data
James Von Brunn	Workplace	• Retired
	Community	• Prior arrest for threatening actions against Federal Reserve
	Finances	• Fixed income
	Social Network / Religion	• White supremacist, Anti-Semite
	Health / Wellness	• Extreme hatred
	Home / Family	• Wife was fearful about Brunn's hatred
Jared Lee Laughner	Workplace	• Recently fired from Quiznoes • High School Drop-out (2006) • Fired from dog walking job
	Community	• Isolated • 5 college police incidents (2010) • Arrested twice
	Finances	• No Data
	Social Network / Religion	• Obsessed with the Occult • Maintained regular friendships until break-up with girlfriend

Active Shooter Profile Matrix		
Shooter	**Contributing Category**	**Contributing Factors**
		• Atheist • Nihilist • Anti-government, Conspiracy theorist • Made frequent comments about terrorism and baby killing
	Health / Wellness	• Mental distortion due to drug and alcohol abuse. • Severe anger reactions • Use of hallucinogens • Paranoid thinking • Obsessed with lucid dreaming • Personality change • Conspiracy thinking
	Home / Family	• Lived with parents • Only child
Nidal Hasan	Workplace	• Obligations as a soldier conflicted with his religious ideology • Felt discriminated against • Felt pressure and "no way out"
	Community	• Isolated • Harassed • Felt discriminated
	Finances	• No Data
	Social Network / Religion	• Increased Muslim religious activities • Jihadist intentions were supported by religious authorities • Received supportive guidance from Islamic Imam for Jihadist actions
	Health / Wellness	• Depression • Frustration • Anger • Fear • Anxiety
	Home / Family	• Loss of father • Living alone

Table 28. Active Shooter Profile Matrix depicting U.S. Department of Homeland Security personality analysis for Personal Interactions with Multiple Conditions in Multiple Situations for Active Shooters[282]

[282] Mayhugh, "Active Shooters: Behavior, Conditions, and Situations."

THIS PAGE INTENTIONALLY LEFT BLANK

APPENDIX D. OSLO AND UTOYA ISLAND, NORWAY

A. ACKNOWLEDGEMENTS

As part of our case study research regarding the Oslo bombing and attack on Utoya Island which occurred on July 22, 2011 in Norway, we requested access to the responding officers and personnel affiliated with the emergency response in order to accurately portray the events of this incident and make useful recommendations for how to mitigate future similar attacks. The response and cooperation we received from our newfound Norwegian friends and counterparts was not only impressive, but humbling as well and deserves special acknowledgment. This research was initially facilitated by the Norwegian Special Operations Forces (NORSOF) located in Oslo, Norway. LTC Knut Simen Skaret, NORSOF LNO, at the NORSOF and NORSOCOM Headquarters facilitated many aspects of this research trip, as well as introduced us to the Commander and Deputy Commander of the Norwegian Counter-Terror Unit (DELTA) that is the primary unit responsible for the emergency response to the events of July 22, 2011. LTC Skaret's unrelenting support of this trip was crucial to the overall success of this research. Additionally the welcome and informal meeting with the NORSOCOM Commander, BG Geratru was another wonderful demonstration of support and hospitality that we greatly appreciated.

To the Commander of the Norwegian Counter-Terror Unit (DELTA), Anders Snortheimsmoen, his Deputy Commander, Assault Team Leaders and the brave men which comprise DELTA; we have never met a more professional and organized unit. Your openness and candor in support of our research was truly humbling and we are extremely grateful. Your unit's high esprit décor is direct reflection of its impeccable competence and professionalism. In order to facilitate our research we were afforded access to and conducted interviews with the Commander of the Joint Operation Center, Joint Operational Section Superintendent, as well as dispatch personnel from the Joint Operational Center, Tactical Flight Officer from the Police Helicopter Service, Police Superintendent for the Norwegian Bomb Squad, Lead Instructor for Counter Terror Unit Training, and On Scene Commander for the response to the Oslo bombing. Additionally,

we were granted access to the Oslo courthouse in order to witness testimony of the shooter, Anders Behring Breivik. Finally, our research was further supported with a guided tour of Utoya Island given by the DELTA Deputy Commander and one other DELTA officer. This level of support was unparalleled and has no equal to anything we have ever experienced in the past. Lastly, we would be remiss without acknowledging the support we have received from the Asymmetric Warfare Group, specifically CSM Dan Hendrex and COL(P) Robert Karmazin. Thank you for your support and friendship.

This horrific attack on the city of Oslo and Utoya Island was conducted by a ruthless and deranged killer named Anders Behring Breivik who is attempting to utilize his actions on July 22, 2011 to promote his manifesto. In a small effort to deny the recognition he so greatly desires for conducting these brutal actions we will only refer to him as "ABB" for the remainder of this case study.

B. INTRODUCTION

On a rainy summer day in downtown Oslo, Norway, a car bomb ripped through the H Block of the government district killing eight people and injuring another 98. An hour and 26 minutes later, a peaceful island named Utoya, which translates to mean Utopia and was considered by many to be the safest place on Earth, was the scene of a bloody massacre of young teenage children at a youth summer camp where 69 children were killed and an additional 60 were wounded.[283] These were not the actions of an occupying army or an insurgent force consisting of 100 or more soldiers. Instead, they were the actions of a single or "lone wolf" gunman and unfortunately will be regarded as not only another successful Active Shooter incident, but also as an example of an emerging and dynamic threat of "Solo Terrorism". The events that occurred on July 22, 2011 will be forever etched in the minds of the Norwegian people. The viciousness of ABB's political statement which he made in the form of a powerful car bomb detonated in downtown Oslo followed by the ruthless massacre of dozens of school aged children on nearby Utoya Island conjured up images in the U.S. of the Virginia Tech massacre, the

[283] Commander Anders Snortheimsmoen and Deputy Commander Torgrim Solberg of the Norweigian National Counter Terrorism Unit, interview by COL(P) Robert Karmazin, MAJ Chuck Ergenbright, and MAJ Sean Hubbard; National Police Directorate Headquarters, Oslo, Norway, June 5, 2012.

University of Texas Tower shooting and the Columbine High School shooting. This event reminded the world that violent extremism is not limited in its scope, its duration or its targeted victims and is not bound by borders or religious profiles.

Initial media response to this incident was extremely harsh and critical of the Norwegian emergency response to this incident. The Norwegian National Counter Terror unit, known as DELTA, received criticism for its *Response Time* and selection of infiltration methods utilized to reach the island. Norwegian political leadership and supervisory police leadership also drew criticism based on their decisions to have key personnel on leave prior to the incident, as well as for decisions made during the incident itself. However, over the course of this case study, the authors were given the rare opportunity through the support of the Norwegian Police Directorate to visit Norway and receive firsthand accounts of the events of July 22, 2011. As a result, almost every instance of negative media attention or criticism was negated by the firsthand accounts of the incident and most importantly through the thorough documentation of training and preparedness applied by the Norwegian Police Directorate well before 22 July. This case study will outline the Norwegian police organization, actions taken by the Norwegian Police to prepare for a similar incident, police actions in Oslo and on Utoya as told by the men and women who participated, and their after action analysis of actions they would do differently. Finally, this case study will conclude with the author's recommendations for improvement of existing policies and infrastructure capable of mitigating potential future attacks, as well as highlight areas in which the Norwegian police forces should sustain current operational procedures.

C. NORWEGIAN POLICE ORGANIZATIONAL DESIGN

The Norway National Police Directorate is composed of approximately 13,000 peace officers with varying degrees of specialties. At the district level, 27 regional police districts are designated to provide Law Enforcement guardianship to rural and semi urban cities and towns throughout Norway. These regional police departments provide the officers responsible for daily security of Norwegian citizens. Within this organization, several different agencies within the police contribute to its overall readiness. Specialists

in fields, such as Counter-Terror, bomb disposal, VIP security, helicopter operations and others help keep Norway safe on a daily basis. Norway is credited with a low crime rate, as well as relative peace and security despite being an unarmed force.[284] In fact, the only police officers who are authorized to carry firearms at all times are those classified as VIP security, responsible for the movement of Norwegian and international dignitaries. Although the Norwegian police are not faced with the rate of complex environmental factors that many of the larger U.S. police forces are faced with almost every day, perhaps a better metric by which to evaluate the Norwegian police is the consistent and extremely low crime rate in a population of almost 5 million. From 2004 to 2009, the number of violent crimes reported did not surpass 25,000 incidents each year.[285] This compares to New York City, with a total population of over 8 million, which experienced over 100,000 incidents per year from 2000 to 2010 of major, violent felony offenses. The remaining police forces outside of special VIP police must obtain permission from the Police Directorate to arm themselves. Even the National Counter Terrorism Unit, known as DELTA, must obtain permission to arm themselves for deliberate and sharp missions around the country. In most cases, officer weapons are easily accessible to the police. However, this organization and difference in policy represents a sharp contrast to most police units around the world.[286]

Police in Norway must attend a national police academy. Regardless of the specialty that a police officer may pursue later in his or her career, all officers receive the same baseline training and this facilitates common language and standard operations among all police departments.[287] After a police officer graduates the basic police academy, the average basic police officer receives an annual 40 hours of training to reinforce the academy training and provide periodic updates in training and doctrine that are published through the police academy.[288]

---

[284] Interview with Head of CTU Training, Police Headquarters, Oslo, Norway, June 7, 2012.

[285] National Police Directorate, "The Politiet," 9.

[286] Snortheimsmoen and Solberg, interview.

[287] Interview with Head of CTU Training.

[288] Interview with Head of CTU Training.

Among the 27 police districts in Norway, additional training is given to members of the police who volunteer and meet the criteria to become the Emergency Response Team personnel. ERTs derived out of the Cold War threat from the Soviet Union as a more military structured unit designed to combat or manage more complex attacks.[289] These ERTs have since evolved into a team of trained police officers capable of responding to any crisis in their respective district. Incidents outside of their outlined capabilities can be delegated to the Norwegian military or to DELTA. In addition to their annual police training, ERTs receive an additional 120 hours of training throughout the year.

Under the umbrella of the Ministry of Justice and the Police, which is the highest department within the Norwegian police organization, the National Police Directorate concentrates all national assets capable of responding to national crises within the Oslo Police District. These assets include the National Counter Terrorism Unit (DELTA), Crisis and Hostage Negotiator Service, Helicopter Service, Bomb Disposal Team, and Specially Trained Dogs. The National Counter Terrorism Unit is utilized as a special intervention unit to counter threats associated with acts of terror, sabotage, hostage situations, and organized crime. The Crisis and Hostage Negotiator Service is utilized to conduct hostage negotiation during situations involving terrorism, hostages, and kidnappings. The Helicopter Service provides continuous support to Norwegian Law Enforcement for a wide variety of missions. The Bomb Disposal Team provides continuous national level support with explosives detection dog teams, and explosives experts trained with special equipment to mitigate bomb threats, suspicious objects, and explosives. The Specialty Trained Dogs service provides dogs utilized for general patrols as well and cadaver dogs utilized in avalanche and collapsed structure environments.[290] On July 22, 2011, all of these national assets were utilized first during the response to the bomb detonation at the Oslo government center and later at Utoya Island in response to

[289] Interview with Head of CTU Training.

[290] National Police Directorate, Norway "Police Emergency Preparedness System, Part 1: Norway, Emergency Management Manual," Oslo, Norway, 2007, 67.

the mass shooting. Due to the nature and scope of the Norwegian Counter Terrorist Unit's mission and capabilities, they became the first police responders to the Utoya Island shooting and are also the force that ultimately detained ABB.[291]

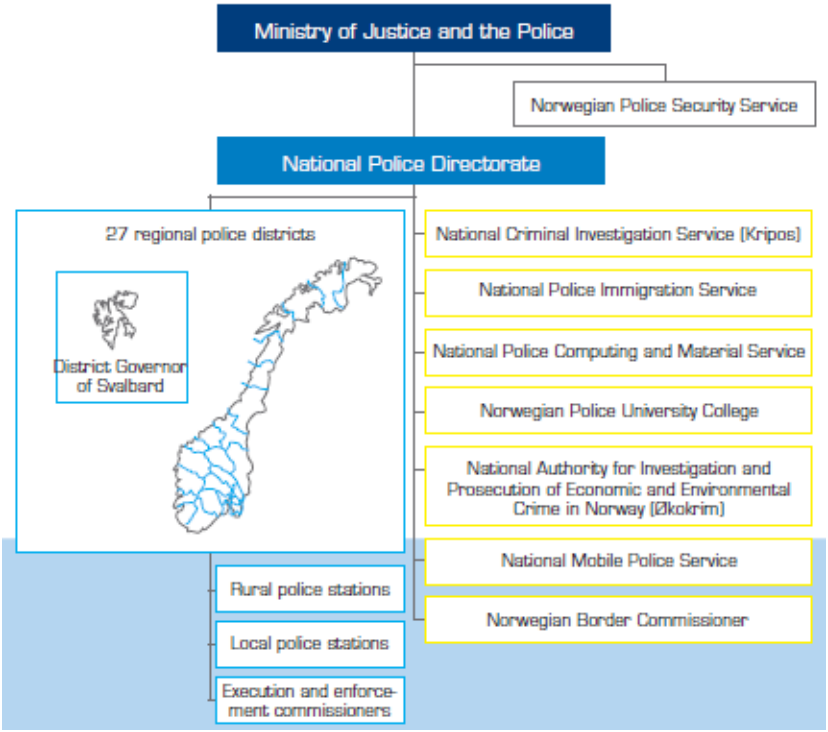


Figure 41. Norway Police Organization[292]

The strategy, or mission of the Norwegian Police Directorate, is to establish and develop the police force, export its resources to the lowest level, as well as manage the police training and readiness, all in an effort to prevent and react to crimes and criminal behavior that threaten the citizens of Norway.[293] This mission is outlined in the department pamphlet from June 2010 for the public to educate themselves on the various roles and responsibilities of the Norwegian police force. The general theme presented in this pamphlet is that the Norwegian police force assumes a professional bureaucracy

[291] Snortheimsmoen and Solberg, interview.

[292] National Police Directorate, "The Politiet," 3.

[293] National Police Directorate, "The Politiet," 7.

model and highlights for the Norwegian citizens the high degree of proficiency, professionalism and autonomy possessed by the Norwegian police regarding daily operations and crisis situations.

The National Counter Terrorism Unit known as DELTA is the most highly trained and proficient police organization within the Norwegian Police Directorate and is considered a national asset with the capability of responding from Oslo to any location throughout Norway. In order apply for service within DELTA, candidates must first complete the basic police academy and possess a good service record. DELTA selection is comprised of 8 weeks of intense physical and mental training. If candidates pass, they receive advanced training facilitated by team leaders, followed by a one year probationary service period in the unit itself. Once a member reaches the probationary status within the team, the attrition rate is almost reduced to zero. This is a true testament to the selection of the Counter Terrorist officers.[294]

DELTA officers are armed with the latest equipment and conduct detailed planning and rehearsals for crisis scenarios. The most famous incident in which this unit was known for prior to the Utoya Island shooting was the hostage crisis in the Sandefjord Airport that took place in 1994.[295] This event took place when armed gunmen took two police officers and two civilian's hostage, prompting the deployment of DELTA. The hostages were rescued and one of the hostage takers was killed. It is the only time in Norwegian police history that police officers were given the order to shoot to kill.

This type of accuracy and precision regarding tactical action is also expressed in their standard operating procedures for active shooter response. As part of a nationwide Threat and Vulnerability Assessment for Norway, DELTA developed a robust action plan

[294] Commander Anders Snortheimsmoen, interview, Utoya Island, Norway, June 8, 2012.

[295] "Special Organization," *Norway Police Department*, 2008, https://www.politi.no/om_politiet/organisasjon/sarorganer/.

for active shooter response. Because DELTA is a national asset, it was able to be disseminated nationwide and contained the common police language facilitated by a national police academy.[296]

In addition to DELTA, other specialty teams are also organized under the National Police Directorate for response to incidents throughout Norway. The Command and Control element of each Norway's 27 districts is known as the Joint Operations Center, or JOC. The JOC, located at Police Headquarters, is in charge of receiving and distributing emergency call data and also to facilitate Command and Control of emergency incidents. Norway's police emergency number is 112, the equivalent to the U.S. emergency number of 911. Throughout Norway, 112 calls received by JOCs are routed directly to an initial switchboard. The trained dispatchers at the Oslo switchboard receive an average of 12,000 calls per month. Of those calls, approximately 80% terminate at the switchboard because they are determined to be prank, accidental, or non-emergency calls. The remaining 20% of emergency calls are routed to the JOC for dispatch to appropriate emergency responders. Additionally, Norwegian citizens can call specific numbers in response to specific threats, such as fire and medical numbers, 110 and 113 respectively.[297] Once the JOC receives an emergency notification, the JOC Commander uses prewritten Standard Operating Procedures for the incident. In larger instances, such as the 22 July shooting, the Police Chief and his staff will occupy the JOC in order to make decisions regarding the. For example, the Police Chief may choose to exercise authority by directing the JOC to conduct certain actions or to reallocate assets. In addition to its core duties, the JOC must also consider additional assets required for particular emergencies. Assets ranging from DELTA, to K9 units, to the Helicopter Service unit can be tasked to support an incident and the management of each unit rests with the JOC.[298]

---

[296] National Police Directorate, "Police Emergency Preparedness System, Part 1," Emergency Management Manual, 2007, 67.

[297] Interview with JOC Commander, Oslo Police Headquarters, June 6, 2012.

[298] Interview with JOC Commander.

In addition to emergency response calls, the JOC in Oslo maintains a crisis plan for every university and school within the Oslo Police District. These plans outline emergency response procedures for the university and the district police. The plans outline linkup procedures, maps of the campus, infil routes by police and locations for triage and medical evacuation. During the course of our case study interview, JOC personnel demonstrated the process and the ease of communicating these pre-planned actions to universities and schools.[299] In the preceding 14 case studies explored as part of this research, prepared plans, such as this did not exist in any instance.

The Helicopter Service unit is comprised of two Euro-Copter 135s and four crews, and is responsible for helicopter support for missions throughout the entire country. This unit can receive a request from any district in Norway and can be rerouted based on priorities of events directed by Oslo Police Headquarters. The EC135 has a flight duration of approximately two hours with the ability to refuel at various sites all around the country.[300] The Helicopter Service unit does not maintain lift capability for other police forces and routinely helps to coordinate for military air lift assets when available or needed. Primary missions for the EC135s are then relegated to aerial search, surveillance, high risk operations, traffic surveillance, and transport of two man specialists to remote areas, such as bomb squad.[301] As a highly sought after asset in Norway, the aircraft and flight crews log approximately 1200 flight hours per year. Accordingly, the Helicopter Service unit has requested the Norwegian government to provide additional airframes and increase crew support in order to meet increasing mission demands.[302] The most prominent and contemporary example which illustrates the need for additional airframes occurred on July 22, 2011 as circumstances and poor scheduling of limited assets precluded Helicopter lift support until 2108, over two hours after the incident had ended.

---

[299] Interview with JOC Commander.

[300] Interview with Police Air Services, Police Headquarters, Oslo, Norway, June 7, 2012.

[301] Interview with Police Air Services.

[302] Interview with Police Air Services.

A unique component of Norwegian police service is the establishment of the On Scene Commander Section. The OSC is a group of seasoned police officers chosen to be the overall tactical commander of a crisis scene. The OSC reports to the district JOC and has command and control over all response services on scene, to include the fire and medical response.[303] They operate under three preparedness principles: responsibility, subsidiary control and similarity. Responsibility refers to the charge of all responders to account for their actions and act responsible no matter how the event unfolds. Subsidiary control refers to allowing the subordinate responders to do their job after the scene has been organized by the OSC. Finally, similarity refers to the responsibility of the OSC to speak common languages to all of the responding personnel and organize them properly under one common goal.[304]

The OSC operate under 27 different crisis SOPs, mostly designed in accordance with U.S. guidance for post September 11, 2001 operations. The OSCs have twice-yearly leader forums between fire and medical personnel to discuss, update and educate each other on evolving tactics and procedures.[305] In addition to active shooter scenario training, the Oslo police district conducted a complex bomb exercise in 2006. All departments responded to the exercise incident and it helped develop the response SOP that was ultimately utilized on July 22. In 2011, prior to the bombing in July, OSCs educated all subordinate units on updates regarding bomb response and conducted training in support of the changes.[306] The OSC is an extremely professional section of the police and are capable of executing extremely complex tasks.

However, the OSC is not ultimately responsible for managing an active shooter scenario. The OSC can contain such an incident with first responders, but the SOP requires DELTA to be the prosecuting unit if such an incident should occur. Although first responding police officers may challenge and interdict an active shooter, Norwegian

---

[303] Interview with Oslo Bombing On Scene Commander, Oslo District Courthouse, Oslo, Norway, June 6, 2012.

[304] Interview with Oslo Bombing On Scene Commander.

[305] Interview with Oslo Bombing On Scene Commander.

[306] Interview with Oslo Bombing On Scene Commander.

SOP prefers the skills of the designated National Counter Terrorist unit over the average police officer.[307] Unfortunately, as demonstrated by all of the preceding case studies, many active shooter scenarios are complete before specialized forces can arrive. The OSC section, as well as the police academy, has made efforts to educate first responders on how to neutralize active shooter events in the absence of DELTA or ERT assets.[308] These efforts to mitigate the potential effects of Active Shooters were extensive and thoughtful and were in practice prior to the events of July 22 and remain a core task in the police academy for new police officers.[309]

The police bomb squad is an integral piece to every crisis that Norway has to respond to. The organization is small and consists of 10 personnel responsible for the entire country. The squad also consists of nine trained bomb dogs. For such a small organization, the squad responded to 1200 calls in 2010 and 976 in 2011.[310] The bomb squad was integral on 22 July in clearing the government building and then subsequent searches of Utoya Island, the shooters farmhouse and the shooters mother's house.[311] In the case of 22 July, like many other calls the bomb squad receives over each year, military support from Explosive Ordnance Disposal can be requested to assist in clearance. This helps to augment the large number of calls to the low number of bomb squad personnel.[312]

The Norwegian Police Directorate and its subordinate units are a highly trained and professional organization. They operate within a professional bureaucracy model and have implemented key standard operating procedures that far surpass many police organizations that have been analyzed as part of our case study research. This model

---

[307] Interview with Oslo Bombing On Scene Commander

[308] Interview with Head of CTU Training.

[309] Interview with Head of CTU Training.

[310] Interview with Bomb Squad, Police Headquarters, Oslo, Norway, June 7, 2012.

[311] Interview with Bomb Squad.

[312] Interview with Bomb Squad.

proves to be very efficient and although the organization received initial criticism for 22 July, there were very few mistakes made at the tactical level and operational level and the responding forces should be recognized for their adaptability and flexibility.

D. BACKGROUND AND LEAD UP TO THE ATTACK ON NORWAY

1. Law Enforcement Preparation

The Norwegian National Counter Terrorist (DELTA) was established in 1976 in order to respond to National Crises. The unit is located in Oslo and is regarded as a national asset under the National Police Directorate. Comprised of 72 personnel including 60 officers and 12 staff members incorporating 10 trained crisis negotiators, DELTA is divided into four divisions including Assault, Ropes and Snipers, Combat divers and Boat crews, and Breachers. The DELTA motto is, "to serve the public when it is most needed." Although DELTA is a national asset and is utilized for high risk missions, it also maintains a 24 hour presence of one patrol car and 2 personnel are roving at all times. The Royal Air Force provided dedicated air assets for Delta prior to September 11, 2001. However, as a result of frequent deployments to Afghanistan in support of Operation Enduring Freedom, the Royal Air Force (RAF) no longer has the necessary airframes to continue this support. Although support to the DELTA response on July 22nd was not denied, the RAF could not facilitate rotary lift support within the requested time period due to these constraints. The RAF supported DELTA, but arrived at Utoya at approximately 1910 hrs. After July 22nd the RAF has been tasked by the Ministry of Defense to provide support to the police within a maximum of two hours from the time of request until time of departure. This support is to be provided consistently and at all hours of every day throughout the year. As a result, the only replacement helicopter assets available are provided by the Police Helicopter Service Unit. However, this asset is

mostly devoted to aerial reconnaissance. DELTA also maintains the ability to transport personnel and equipment via civilian aircraft; however this is based on pre-planned aircraft routes.[313]

In 2010 the Norwegian Police Security Service and Norwegian Defense Research Establishment conducted an Internt Grunnlagsdokument (Threat Vulnerability Assessment) in order to address security vulnerabilities within Norway and address contemporary threats. This assessment was initiated in 2009 and concluded in 2010 with the assessment that the most likely threats within the next five years to Norwigean security included IEDs such as suicide bombers and coordinated Active Shooter attacks with the primary targets of public communications assets. This report was supported by the office of the Minister of Justice who in turn tasked DELTA to match its capabilities and training to meet this projected threat. In response to this TVA and directive from the Minister of Justice, DELTA developed a weighted TVA of contributing threats to the identified general threats. Out of this prioritized list, DELTA identified that bombings and Active Shootings were to two highest threats to the citizens of Norway. In response, DELTA identified capability and resource shortfalls and made every effort to address them.[314]

2. Shooter Preparation

ABB was born in 1979 in Norway. The first year of his life was spent in London until his parents divorced and he moved back to Norway with his mother. He visited his father and stepmother often in France as a young boy and has been cited as criticizing his mother for making him too feminine as he grew up. At the age of 15, he began to show signs of rebellion and was arrested for placing graffiti on government property. This caused his father to never speak to him again and they have not spoken since ABB was

---

[313] Snortheimsmoen, Anders; Solberg, Torgrim; Commander and Deputy Commander of Norweigian National Counter Terrorism Unit, *Interview conducted by COL(P) Robert Karmazin, MAJ Chuck Ergenbright, MAJ Sean Hubbard*; Location: National Police Directorate Headquarters, Oslo, Norway; 5 June, 2012.

[314] Snortheimsmoen, Anders; Solberg, Torgrim; Commander and Deputy Commander of Norweigian National Counter Terrorism Unit, *Interview conducted by COL(P) Robert Karmazin, MAJ Chuck Ergenbright, MAJ Sean Hubbard*; Location: National Police Directorate Headquarters, Oslo, Norway; 5 June, 2012.

16. During his teenage years, he began to become more extreme in his views about how government should be involved in the lives of its citizens and became very critical of politics. He was especially focused on the increasing Islamic influence throughout Europe.[315] A childhood Muslim friend of ABB, Arsalan, is credited with inciting much of his hate for Islam. ABB developed these feelings as a teenager after witnessing Arsalan's actions while participating in a Pakistani Youth gang in Norway.[316]

Counter to initial reports following the attack, which stated that military training and experience enabled ABB's actions; he did not receive any training from the Norwegian Army. In fact, ABB was found unfit for military service during the conscript process at age 18 and was subsequently denied the ability to serve. According to reports listed in the New York Times, ABB lost over 300,000 dollars in the stock market one year after being rejected from military service. Likely feeling depressed after these two incidents, he began to show more signs of racism, particularly towards members of the Islamic community. ABB was disturbed by the opportunities offered to Muslim men throughout Europe. At 21 years old, he had plastic surgery to his chin and forehead in an effort to appear more Aryan. Shortly after this, he acquired employment with a customer service department where he was described by his employers as a great employee. However, other co-workers observed that he maintained a very arrogant demeanor and was easily irritated with Middle Eastern and South Asian customers.[317]

In late 2001 and early 2002, ABB joined an anti-Islamic subsidiary group to the English Defense League, as well as a Freemason group. Although he only attended four meetings at each union, he utilized his loose affiliation with the two groups to justify portions of his manifesto and set the stage for his proposed development of a Knights

---

[315] Su Thet Mon, "Synes Ikke Selv at Han Bør Strafes," *Nyheter*, July 24, 2011, http://www.nrk.no/nyheter/norge/1.7724994.

[316] Berwick, *2083: A Declaration of European Independence*, 1389.

[317] Michael Swirt and Matthew Saltmarsh, "Oslo Suspect Cultivated Parallel Life to Disguise 'Martyrdom Operation,'" *New York Times*, July 25, 2011, A6, http://www.nytimes.com/2011/07/25/world/europe/25breivik.html?_r=1&src=un&feedurl=http%3A%2F.

Templar. ABB envisioned the organization as one designed to combat the spread of Islam throughout Europe and he referred to himself as a "one man cell" within this organization.[318]

In 2002, ABB began planning his bombing of the Prime Minister's office and attack of Utoya Island. He founded a computer internet company in order to provide a legitimate surrogate by which he could finance his expected nine years of plans and operations in preparation for the attack. During this time he rented a small farm outside of Oslo which he used as a cover to obtain explosive fertilizer mixtures. His detailed planning in renting this farm included purchasing non-explosive grade fertilizer in order to alleviate any potential scrutiny during large volume purchases. However, after receiving his shipment of fertilizer, ABB's attack preparation included processing the fertilizer and adding additional ingredients required to create explosive grade fertilizer. Later he also conducted a test fire of his homemade explosives. In early 2011, he purchased a small amount of an explosive primer in Poland and, although his name was passed to the Police Directorate, after the attacks the police would make a statement implying that nothing out of the ordinary was observed in ABB's case prior to the attacks.[319]

ABB's initial plan for weapons procurement included a trip to Prague in 2010, where he thought it would be simple and cheap to buy weapons of any type. He soon realized that it was significantly more difficult for a non-citizen to gain access to weaponry and that it would be equally difficult to smuggle it back to Norway. In response, he hollowed out the back seat of his Hyundai hoping to bring back an AK-47, Glock pistol, hand grenades and a rocket propelled grenade launcher. After multiple

---

[318] Peter Walker and Matthew Taylor, "Far Right on Rise in Europe, Report Says," *The Guardian*, November 6, 2011, http://www.guardian.co.uk/world/interactive/2011/nov/06/europe-far-right-nationalist-populist-interactive.

[319] "Norwegian 'MI5' Had Massacre Suspect on List," *Skynews*, July 25, 2011, http://news.sky.com/home/world-news/article/16036733.

attempts to obtain access to the weapons he desired in Prague, he decided to return to Norway and apply for weapons legally. As ABB stated after his arrest, this proved to be the first and only "setback" to his operation.[320]

After returning to Norway, ABB was able to purchase a handgun through legal channels because Norwegian law permitted it based on his membership to a pistol club. Gun ownership is very difficult in Norway but if citizens are willing to endure the extensive administrative process and prove proficiency, over time a citizen, such as ABB with no criminal history is afforded the opportunity to purchase a firearm. After several trips to the pistol club, where he demonstrated his proficiency, ABB was approved to buy a Glock pistol. His rifle, a Ruger Mini-14 was much easier to procure because he had already carried a hunting license for many years. He also owned a Benneli shotgun that he purchased seven years prior. These factors helped to establish ABB's good standing and facilitate his rifle purchase. Although he never received any formal tactical training with these weapons, ABB claims that he used the video game *Call of Duty: Modern Warfare 2* and World of Warcraft as simulators which aided him in carrying out his attacks.[321]

During his planning and preparation period, ABB wrote a manifesto that he entitled *2083: A European Declaration of Independence*. The work drew upon the prejudices and hate of extreme, right wing Christian organizations against Islam. He called for Christians to help force the Muslims out of Europe and equated these actions to the Christian Crusades of the 11th, 12th and 13th centuries. ABB believed that expulsion of Muslims from Europe would require a war and that it would not end until 2083 and would require great amounts of violence. The attacks on the Norwegian Prime Ministers' office, as well as Utoya Island were intended to start this war and begin the forced withdrawal of Muslims from Europe.[322]

---

[320] Chris Johnstone, "Oslo Killer Sought Weapons From Prague's Underworld," *Foreign Affairs*, July 25, 2011, http://www.ceskapozice.cz/en/news/society/oslo-killer-sought-weapons-prague%E2%80%99s-underworld.

[321] Johnstone, "Oslo Killer Sought Weapons From Prague's Underworld."

[322] Berwick, *2083: A Declaration of European Independence*.

The choice of targets for ABB's massacre was explained during the Police Directorate dissection of ABB's manifesto interrogation after the incident. Norwegian Prime Minister, Jens Stoltenberg, is a member of the Norwegian Labor Party, a social-democratic party that seeks a strong welfare state. The extreme right wing views of ABB are completely counter to this belief system and he felt that these principles were weakening Norway. The car bomb which ABB detonated outside of the Prime Minister's office building was largely symbolic but also provided a feint and cover for action for his attack on Utoya Island. Utoya became a target because of its affiliation to the Labor Party, the geographic isolation of the island itself, its lack of security and its population density of unarmed campers. ABB strategically chose the time of year for his attack to incorporate the highest number of campers on the island, which is estimated at over 600 on the day of the shooting.

E. THE ATTACK

1. Oslo Bombing

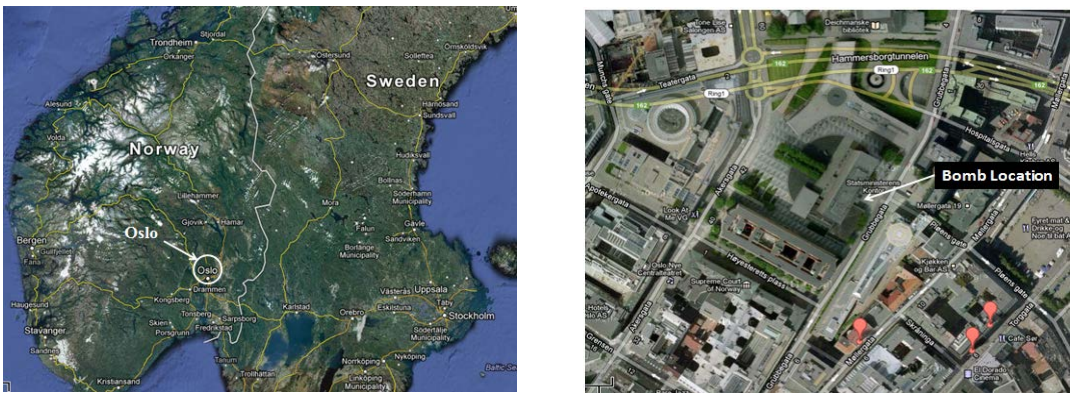


Figure 42. Satellite Imagery Depicting Location of Oslo, Norway (Left), Satellite Imagery Depicting Location of Bombsite within the Oslo City Center.

ABB's extensive planning and preparation culminated with his attack on the Norwegian Prime Minister's building located in H Block of the Oslo city center on July 22, 2011 where he killed eight people and wounded an additional 98 others in an explosion that rocked the entire city. This attack was purposefully conducted during Norway's summer months that are typically regarded as the safest time of year throughout Norway, which is already regarded as one of the world's safest and most

stable societies. As a result of this well-known statistic of extremely low crime rates during this time, most of the police administration was placed on leave during the month of July. Accordingly, with consideration to the historically low crime rates experienced in Oslo and fiscal benefits gained by not operating air assets during this time, the Police Air Support Unit was also placed on three weeks of leave during July.[323] Additionally, Law Enforcement, and response agencies throughout Norway were operating at reduced security postures as they took advantage of this predictable period of slow operational tempo to rest their forces. Although a retrospective view of these administrative decisions in light of the events of July 22, 2011 creates negative speculation regarding administrative decisions regarding police and emergency service readiness; it is important to remember that this had been standard practice for many years and was based on historical crime data.[324]

Prior to initiating the Oslo bombing, ABB prepositioned a midsize grey van in close proximity to the government office buildings located in the Oslo city center. On July 22, ABB entered the Oslo city center and approached the Oslo government offices from the south traveling north east along Grubbegata until he reached the service vehicle entrance to the H Block building and parked his rented Volkswagen Crafter van at the base of the building adjacent to the cafeteria. Fortunately, an unknown grey car was illegally parked where ABB intended to emplace his Vehicle Born Improvised Explosive Device (VBIED). This sub-optimal placement could have potentially prevented the explosion from acting as a shaped charge and causing even more extensive damages. After emplacing his VBIED, ABB ignited the fuse, exited the van, and proceeded north east along Grubbegata to his prepositioned secondary vehicle which was a midsized grey van.[325] At this time, ABB was disguised as a Norwegian police officer and began driving extremely erratically from the bomb sight towards the Utoya ferry site. As a result, a

[323] Tactical Flight Officer, Police Air Support Unit, Oslo Police District, Norway, Norwegian Counter Terrorist Unit (DELTA) Compound, interview by COL(P) Robert Karmazin, MAJ Chuck Ergenbright, and MAJ Sean Hubbard, June 6, 2012.

[324] Chief of Joint Operations Center, Oslo, Oslo Police District, Norway, interview by COL(P) Robert Karmazin, MAJ Chuck Ergenbright, and MAJ Sean Hubbard, Joint Operations Center, Oslo, June 6, 2012.

[325] Interview with Bomb Squad.

concerned citizen called 112 and provided a vehicle description, license plate number and description of concerning behavior to the Joint Operations Center (JOC) approximately 20 minutes prior to the explosion.[326]

At approximately 1527 hours, on July 22, 2011, ABB's VBIED consisting of a homemade mixture of fertilizer and gas amounting to 900 kilograms (estimated 2000 lbs) of explosives concealed in his rented large white Volkswagen Crafter detonated in downtown Oslo, Norway, at the base of the Prime Minister's office building. Damages resulting from this explosion were extensive and were experienced throughout a 4-5 block radius. From the bomb crater, the explosion severely damaged the Prime Minister's building causing massive structural damage to this building, as well as four other adjacent buildings. Lesser damage including heavy debris and broken windows was experienced throughout the 4–5 block radius and the blast was felt much further as well. As a result, the JOC received multiple 112 calls reporting multiple explosions and this generated further confusion about the origin of the explosions.

DELTA was notified of the attack at 1530 and responded immediately with the two patrolling officers on duty at that time. The initial On-Scene Commander, who was an experienced police officer with prior DELTA background and first hand exposure to previous car bomb explosions, correctly identified this explosion as a car bomb and potential terrorist attack in his initial request for DELTA support. Although they were not the first police officers on scene, these DELTA officers were able to begin to relay on site information back to the DELTA HQ that was crucial in development of an Immediate Action Plan. As a result, DELTA leadership began to prioritize incident response with consideration to potential follow-on attacks.[327] This tactic is in keeping with 2010 TVA and Police Emergency Preparedness System, Part III SOP.[328] From 1530 to 1630, 22 DELTA officers were recalled and were deployed to the bombsite in order to begin clearing the building. Of the 22 operators, six remained back at the DELTA HQ as a QRF

---

[326] Chief of Joint Operations Center, Oslo, Oslo Police District, Norway, interview.

[327] Snortheimsmoen and Solberg, interview.

[328] National Police Directorate, "Police Emergency Preparedness System, Part 1 Norway," *Police Emergency Management Manual*, 2007, 67.

for additional potential threats. The district police immediately arrived on scene and began to cordon the area. Law Enforcement ensured the arrival of medical personnel, as well as the continuing operation of public and private transportation on egress routes away from the central blast location.

As DELTA's bomb squad, along with other police bomb squads, arrived to the bombsite, reports of two additional bombs further complicated the response and resulted in a temporary evacuation of forces. The DELTA bomb squad cleared the H Block Building and the adjacent building to the south with the helicopter-landing pad on the roof. Clearing these buildings of potential explosives became an enormous and extremely cumbersome task for the collective bomb units. The buildings were cleared according to priority: H Block (Building 1) was cleared first, followed by (Building 2), followed by the helo pad building (Building 3), followed by the "Y" building (Building 4) and concluding with (Building 5). A fire on one of the top floors of the helo pad building ignited and the Oslo Fire Department promptly responded. However, before the fire department could gain access to the building, a front-end loader had to be utilized to clear the street of debris in order to create a path for the Fire Engine to drive on. As responding bomb squads cleared surrounding buildings of potential explosives and police responded to reports of a sniper in a church tower, victims requiring medical treatment were transported to the Youngstorget where casualties were able to be triaged and the police established their Emergency Operations Center (EOC). From here, a security perimeter was established around the Affected Area and approximately 1½ hours after the explosion police permitted limited press coverage of the bomb site in order to illuminate false or speculative reports generated by private citizens with mobile media devices.[329]

The blast in downtown Oslo killed eight people and injured an additional 90. While the sub-optimal timing of the blast, which coincided with a lull in street traffic and many government employees on summer vacation, the explosion did cause extensive damage and focus all of the Law Enforcement attention on Oslo. This aspect of ABB's

[329] Anders Snortheimsmoen, (Politiinspektør/Avsnittssjef, Oslo politidistrikt-Beredskapstroppen), Commander of Norwegian National Counter Terrorist Unit (DELTA), DELTA Headquarters, Oslo, Norway, case study research interview by COL(P) Robert Karmazin, MAJ Chuck Ergenbright, and MAJ Sean Hubbard, June 5, 2012.

operation would allow him to move to his final objective, Utoya Island and would also further complicate police response to the events which would soon unfold on the island as all city assets were obligated to the bombsite.

2. Utoya Island Shooting

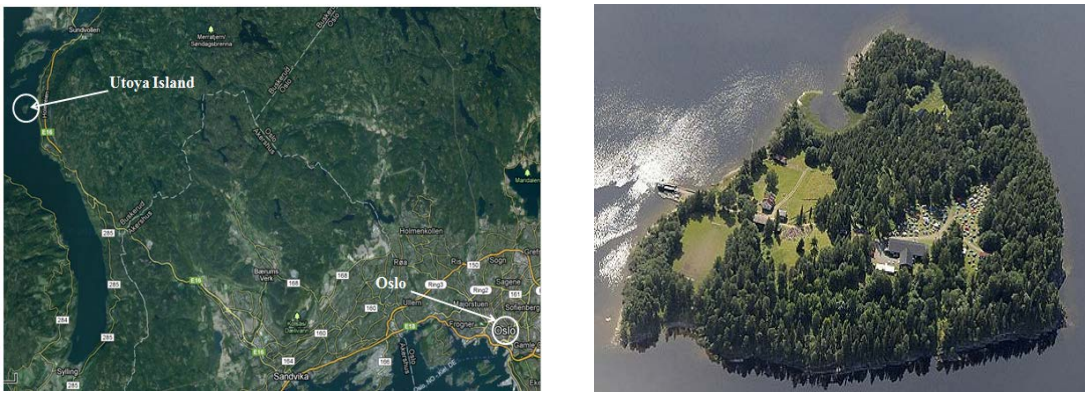


Figure 43. Satellite Imagery Depicting The Distance And Geographical Relationship Between Oslo and Utoya Island (Left), Aerial Photo Utoya Island (Right).

Utoya Island is located approximately 42 kilometers northwest of the Oslo city center on the beautiful Tyriforden Lake. The island is owned by the Norwegian Labor Party (Arbeidernes Ungdomsfylking (AUF)) and is utilized as a summer retreat for children of Labor Party members. The beautiful and tranquil Tyriforden Lake and surrounding mountains contribute to the beauty and peacefulness of Utoya Island where Labor Party Youths have been able to enjoy memorable summer retreats for many years prior to the shooting. Before the events of July 22, 2011, Utoya Island was considered to be the "safest place on earth," for its remote location and peaceful surroundings.[330]

[330] Anders Snortheimsmoen, (Politiinspektør/Avsnittssjef, Oslo politidistrikt-Beredskapstroppen), Commander of Norwegian National Counter Terrorist Unit (DELTA), DELTA Headquarters, Oslo, Norway, case study research interview by COL(P) Robert Karmazin, MAJ Chuck Ergenbright, and MAJ Sean Hubbard, June 5–8, 2012.

Figure 44. Utoya Island Main Facilities, Numbered for Identification[331]

a. Terrorist Actions

On July 22, 2011 ABB utilized a Mini Ruger .223 caliber rifle and a Glock 19 9mm pistol to kill 69 innocent children and seriously injure an additional 60. ABB prepared for his attack on Utoya Island for nine years. In addition to the preparations he made for the Oslo bombing, he also purchased firearms, obtained counterfeit police badges, uniforms and credentials from the internet and acquired tactical equipment in order to facilitate his attack. The first phase of ABB's plan for his attack on Utoya was the diversionary bombing of the Oslo Government District in the city center which resulted in concentrating Law Enforcement reaction in Oslo, as well as provided a cover for action for his impersonated police security check on Utoya.[332] After detonating the VBIED in the Oslo city center, ABB traveled by vehicle to the ferry landing site for

[331] Chuck Ergenbright, Utoya Island, Norway, case study research interview and Utoya Island debrief with DELTA Operators by COL(P) Robert Karmazin, MAJ Chuck Ergenbright, and MAJ Sean Hubbard, June 8, 2012.

[332] Swirt and Saltmarsh, "Oslo Suspect Cultivated Parallel Life to Disguise 'Martyrdom Operation.'"

Utoya Island and boarded the Utoya ferry wearing a police uniform with his weapons, additional ammunition, magazines, and tactical supplies in a large duffle bag. He was initially questioned by the ferry operator who asked for another form of identification before being allowed on the ferry. After providing sufficient credentials as a police officer; the ferry operator, who was the husband of Monica Bosei (also known as the, "Mother of Utoya") assisted ABB with loading his equipment into the ferry. Once he arrived on the island, ABB was again assisted by the ferry operator with unloading his equipment and was introduced to Mrs. Bosei and an off-duty police officer (Trond Berntsen). At this time ABB explained that he had arrived to Utoya Island in order to inform the campers and staff located on the island of the events which had transpired in Oslo and to conduct a routine security check. Although it is believed that Mrs. Bosei and Mr. Berntsen were immediately skeptical of ABB's non-standard uniform and credentials, the request for campers to meet at the main building was honored and disseminated throughout the island and children began to congregate in ABB's vicinity.

At 1653 hours, once he had gathered a large number of children in his vicinity, ABB fired his first shots from the trail intersection between the Main Building (Building 1), Conference Center (Building 2) and Barn (Building 3), killing Mrs. Bosei and Mr. Berntsen first before killing and wounding dozens more children in the first minute of his barrage.[333] Although the exact route that ABB took is unclear and will not be officially divulged until his trial is complete, after inflicting his initial casualties in vicinity of the Conference Center, trails ABB utilized and the locations where he inflicted casualties have been confirmed by this research. From the trail intersection between buildings 1, 2, and 3, ABB proceeded up the hill located behind the barn towards the Cafeteria (Building 6). When he arrived at the entrance to the cafeteria, ABB was fearful that he could be overwhelmed by the campers if they attempted to swarm him. In order to mitigate this, he transitioned to his pistol (Glock 19) for better mobility prior to entering through the front door. Once inside, ABB went from room to room down the hallway and

[333] Anders Snortheimsmoen, (Politiinspektør/Avsnittssjef, Oslo politidistrikt-Beredskapstroppen), Commander of Norwegian National Counter Terrorist Unit (DELTA), DELTA Headquarters, Oslo, Norway, case study research interview by COL(P) Robert Karmazin, MAJ Chuck Ergenbright, and MAJ Sean Hubbard, June 8, 2012.

finally into the main eating hall killing innocent children ruthlessly and without remorse throughout the entire building. In many instances, children were executed as they clung to each other for security and comfort.

Figure 45. Location Where ABB Fired His First Shots and Killed the Initial Utoya Island Victims[334]

[334] Ergenbright, case study research interview and Utoya Island debrief.

Figure 46. Front Entrance to the Cafeteria Where ABB Entered and Killed Labor Party Children As They Clung to Each Other[335]

From the cafeteria, AAB is believed to have proceeded to the Campsite where he continued to kill and injure innocent victims. The campsite is a large open field which afforded the victims located in this area no cover or concealment and created easy targets. One of these victims was shot in the head by ABB with his rifle. Although his injuries were very serious, this young man survived until members of DELTA arrived and were able to treat and MEDEVAC him to the nearest hospital. Unfortunately, despite great resiliency on behalf of the victim and great courage on behalf of the DELTA officers, this young man died in the company of his family shortly after arriving to the hospital. From the campsite, it is believed that ABB continued through the extensive trail network of Utoya Island to the Bath House (Building 5), proceeding down *Lover's Path* to the Pump House (Building 7) killing victims and inflicting injuries along his way to include executing a group of children who were hiding behind the Pump House. From the Pump House, ABB did not follow a systematic route around the island. However, we

[335] Ergenbright, case study research interview and Utoya Island debrief.

have confirmed that he continued along the waterfront trail connecting the Pump House to the Camp Site where he shot victims as they appeared to him to include another large group of children huddled together along this trail. This particular trail is extremely narrow with heavy vegetation on the southern side and steep 50–100 foot cliffs on the northern side that lead directly into the shallow water below. As ABB continued along this trail, many children attempted to negotiate the steep cliffs in order to avoid a deadly confrontation with ABB. Some were stranded on the rock face when DELTA arrived; one broke his neck and died instantly attempting to dive directly into the water below and others were shot by ABB as they attempted to hide or flee. ABB continued along the many trails on Utoya Island inflicting further casualties as he proceeded.

During ABB's attack, victims on the island did everything they could to survive. Many of the victims attempted to play dead as Breivik moved passed them, only to be shot and killed later as he walked by and placed what he thought were second shots into their heads. The median age of victims on Utoya Island was 18. Although many victims attempted to escape by jumping into the water in order to swim away, ABB utilized this circumstance as a means to kill more students as they were slowed down by the cold water and unable to take cover. A scene from one of the circling news helicopters shows ABB on the shore taking aim at a victim that appears to be pleading for their life while treading water 20 feet from the shooter. ABB did spare at least two victims during the incident. An 11-year-old boy stood up against ABB and exclaimed that he was too young to die after the boy had witnessed the murder of his own father. Another victim spared by ABB was a 22-year-old male who reportedly begged for his life and was bypassed.[336]

Again, although his exact route is not confirmed at this time, we do know that he was recorded by news helicopters killing and wounding victims as they attempted to swim to safety and begged for their lives along the east shore. This site is also in close

[336] Williams, "Deadly, Cruel Lesson from Norway."

proximity to the location where ABB was apprehended. In total, ABB continued his attack on the innocent children of Utoya Island for one hour and two minutes before he surrendered to DELTA officers at 1832.

Figure 47. Summary of Most Significant Casualty Locations Inflicted by ABB on Utoya Island.[337]

b. Emergency Response

Initial 112 calls from Utoya, the equivalent of the U.S. 911 emergency number, came from campers that reported shooting on the other side of the island. Although the Joint Operations Center (JOC) handles an average volume of 12,000 calls per month, when the initial 112 calls from Utoya were received, every available resource within the JOC was obligated. Furthermore, the Oslo based JOC received these calls because children on Utoya were calling their parents who lived in Oslo and relayed the emergency messages to the Oslo JOC. Given the extreme circumstances of the Oslo

[337] Ergenbright, case study research interview and Utoya Island debrief.

bombing and the fact that Utoya Island is located in the Buskerud district, which is two districts removed from standard Oslo police responsibility, these initial calls were redirected to the Buskerud emergency dispatch center. After confirming initial reports with the Buskerud emergency dispatch center and gaining further awareness of the scope of the problem on Utoya Island, the Oslo JOC dispatched DELTA at 1738.[338]

One of these emergency calls came from the daughter of the Police Directorate's liaison to DELTA. Unable to connect with the overloaded 112 emergency dispatch centers in Oslo and Buskerud, this brave young lady called her father who, in turn, provided DELTA with their first alert and authority to respond to the Utoya Island shooting at 1728. Without hesitation or official dispatch from the Oslo JOC, the 21 DELTA operators who were currently conducting clearing as well as search and rescue operations throughout the Oslo Government Center, reorganized and began movement by vehicle towards Utoya Island at 1730. The official 112 dispatch of DELTA forces to Utoya was given eight minutes later and was relayed to the already enroute convoy of DELTA operators. Although DELTA had already requested helicopter lift support for the Oslo bombing and again in support of their response to the Utoya shooting, this request was delayed both times due to unavailability of air assets as a result of summer leave schedules. However, the first rotary wing assets arrived on station at the Storøya HLZ at approximately 1910. Another important fact regarding the RAF rotary wing support for this operation is that current police airframes do not have the necessary lift capacity to transport more than two officers per lift.

Contrary to many initial media reports, Utoya Island was not the summer retreat for most Norwegian youths. Instead the summer activities hosted on Utoya were reserved only for the Labor Party's Youth Organization. As a result, the exact location of this tiny island was unknown to responding DELTA officers. Without an initial dispatch from the Oslo JOC, DELTA's initial movement was guided by a general consensus of

[338] Anders Snortheimsmoen, (Politiinspektør/Avsnittssjef, Oslo politidistrikt-Beredskapstroppen), Commander of Norwegian National Counter Terrorist Unit (DELTA), Oslo, Norway, case study research interview and Oslo Joint Operations Center (JOC) debrief with JOC Chief and dispatchers on duty for July 22, 2011 response by COL(P) Robert Karmazin, MAJ Chuck Ergenbright, and MAJ Sean Hubbard, Oslo Joint Operations Center, June 8, 2012.

approximate location of the island which was later confirmed by GPS directions retrieved by DELTA operators on their personal phones. These directions were later confirmed by the JOC. After driving the exact route which DELTA operators utilized in response to the Utoya dispatch, the response time achieved by these operators is truly amazing and deserving of special recognition. With helicopter lift support unavailable, the decisive and correct decision to initiate response via vehicular movement initiated a complex route out of the congested city center eventually traveling on divided highway E18 and later merging onto divided highway E16 which later becomes a two lane winding road along the Tyriforden Lake. The standard travel time for this route is 45 minutes. In a final effort to reduce travel *Response Time* and increase effectiveness on the objective, DELTA operators submitted coordinates for an enroute HLZ to the JOC in order to facilitate an air infil, but this final request was denied as well due to unavailability of aircraft.

Continuing their movement by vehicle, this response was further complicated by the loss of digital communication at the Buskerud / Akershus district boundary line. At this point all police communication transitioned from digital to analog infrastructure that presented significant degradation to DELTA's ability to communicate among each other, with adjacent units and with higher headquarters. As a result, DELTA responders were unable to notify the Buskerud Police Department of their response progress or to confirm a meeting place for transition to boat operations. In fact, adjacent unit coordination with the Buskerud Police Department was made so difficult with the poor communication infrastructure that one of the DELTA officers who lived in the Buskerud district had to call his wife on his cell phone in order to have her relay a message to the local police to call the DELTA responders in order to affect link-up. However, despite all of the challenges encountered by the DELTA responders complicated by traffic congestion associated with the Oslo bombing and heavy rain which increased as the responders neared Utoya, these skillful responders reached the Utoya ferry landing site at 1800. With consideration to the high traffic volume and deteriorating weather conditions, the fact that DELTA responders reached the Utoya ferry-landing site within 30 minutes of departing Oslo is truly amazing. However, as a result of DELTA's inability to communicate with the Buskerud Police Department;

confusion ensued. As DELTA responders arrived at the Utoya ferry-landing site an impressive 30 minutes after departure from Oslo, they learned that the Buskerud Police Department had established the actual meeting site 3.9 kilometers further north at the base of the Storoya Bridge. Furthermore, the Utoya ferry was unavailable because it had been utilized by escaping victims from the island. These circumstances required the convoy of DELTA responders to leave the Utoya ferry landing site located only 680 meters east of Utoya Island and within audible distance of the ongoing attack in progress and travel an additional 3.9 kilometers north to the actual meeting place.

Figure 48. Route Taken by DELTA Responders from the Oslo City Center to Utoya Island with Enroute and Emergency HLZs Identified[339]

After arriving at the actual meeting place, DELTA responders affected link-up with the Buskerud Police Boat Unit, loaded equipment and personnel into the

[339] Anders Snortheimsmoen, (Politiinspektør/Avsnittssjef, Oslo politidistrikt-Beredskapstroppen), Commander of Norwegian National Counter Terrorist Unit (DELTA), DELTA Headquarters, Oslo, Norway, and Utoya Island, case study research interview and Utoya Island debrief with DELTA Operators by COL(P) Robert Karmazin, MAJ Chuck Ergenbright and MAJ Sean Hubbard, June 8, 2012.

boat, designated a nearby open field as an emergency HLZ and initiated boat movement towards Utoya Island. However, at the approximate halfway point between the departure site and Utoya Island, water began to mix with the fuel in the boat's engine causing it stall. This unfortunate circumstance most likely resulted from the heavy load of equipment and personnel coupled with the angle at which the boat was required to idle while the first team of DELTA responders boarded due to the shallow and unimproved boat ramp. Soon after the first boat stalled, two additional civilian boats were acquired by the two remaining teams of DELTA responders. These teams moved directly to the stranded boat, cross-loaded personnel and equipment between the other two boats and continued movement towards Utoya Island. As the two teams of DELTA responders neared the island, unsure about obstacles and water depths along the shoreline, the response team leader made the decision to disembark at the ferry-landing site instead of a non-standard location.[340]

Initial reports given to DELTA as they departed Oslo indicated that the threat they faced on Utoya Island consisted of three to five heavily armed shooters, wearing police uniforms, with scoped rifles actively engaged in continuous shooting. For this reason, the DELTA assault leader ordered his two teams to envelope the island in two different directions. The first DELTA team arrived by boat at the Utoya Island ferry landing site at 1826 followed by the second DELTA team arriving by a separate boat two minutes later. At approximately 1831 twenty one total DELTA officers were assembled on Utoya Island and initiated their assault. Team 1 responded to initial victim reports stating that the shooter was located on the north end of the island. In accordance with this information, Team 1 initiated their movement north from the ferry landing site. As Team 2 approached the ferry landing site, team members saw victims falling into the water and heard gunfire on the south end of the island. Accordingly, Team 2 initiated their

[340] Snortheimsmoen, case study research interview and Utoya Island debrief.

movement south along an unimproved trail along the eastern border of the field in front of the Main Building. Team 2 continued their movement down the improved trail towards the School House.[341]

As Team 2 approached the School House, 48 teenagers were huddled together inside, remaining quiet and calm. For this reason, it was not assumed that a shooter was located inside of the School House, so as Team 2 secured the exterior of the building and prepared for entry, the decision was made not to utilize diversionary devices. Prior to entering the School House, the team member located on the right side of the building noticed the distinctive white and black checkered pattern of the reflective tape worn at the mid-calf level on the legs of all Norwegian police uniforms in a cluster of trees located approximately 35 meters southeast of the School House. This individual alerted his assault team leader and the decision was made to maneuver on this location. At this time, ABB jumped to his feet and fled down the trail, discarded his rifle and returned towards the DELTA assault team with his arms in the air stating that he wished to surrender. As ABB appeared to the DELTA Team 2 members, he was wearing a tactical vest, which initially appeared to be a suicide bomb vest as all pockets were full and white wires were protruding out of the vest towards his collar. These circumstances combined with knowledge of the earlier Oslo bombing and initial reports stating that the attackers on Utoya Island were in possession of explosives validated the assaulters' initial suspicions that ABB was wearing a suicide vest. ABB was had his Glock 19 pistol holstered in a tactical thigh holder with the bolt slide-locked to the rear. As DELTA officers began to maneuver on ABB, he continued to move closer to the officers despite their demands for him to submit and assume a supine position. Just prior to firing on ABB, the DELTA EOD officer located on his flank identified that the wires were IPOD

[341] Snortheimsmoen, Anders (Politiinspektør/Avsnittssjef, Oslo politidistrikt-Beredskapstroppen), Commander of Norwegian National Counter Terrorist Unit (DELTA), *Case Study Research Interview and Utoya Island Debrief conducted on Utoya Island with DELTA Operators by COL(P) Robert Karmazin, MAJ Chuck Ergenbright and MAJ Sean Hubbard*, DELTA Headquarters, Oslo, Norway; June 8, 2012.

wires and alerted the other team members that ABB was not wearing a suicide vest. At this point, DELTA officers moved into ABB's position and subdued him at 1832, an hour and two minutes after initiating movement from Oslo.

After detaining ABB, DELTA officers moved him to the main building on Utoya and conducted a 2½-hour tactical interrogation. During this interrogation, ABB further complicated the response by claiming that he was one of three terrorist cells. ABB stated that the first cell was located in Oslo and was responsible for the bombing. The second cell was responsible for the attack on Utoya Island and the third cell was responsible for a "future attack that would be hell on police." At this point, the DELTA command team stated that ABB was willing to give more information in exchange for an expedient arrest and movement to jail. As a result of this information and the complexity of this response, the island was not rendered safe until the next morning and was the result of a thorough sweep utilizing search and rescue personnel and assets combined with thermal imaging. As the deliberate clearing of Utoya Island was being conducted, DELTA officers raided ABB's farm (Valstad Farm-Asta) located just south of Rena, Norway. Additionally, Delta officers also raided ABB's mother's residence at Hoffsveien 18, Oslo, Norway.

As the events of July 22, 2011 came to an end and the multiple operations conducted by the Norwegian Counter Terrorist Unit (DELTA) concluded in the early morning hours of July 23, 2011; the casualties were counted and damages were assessed from this terrible event. The resulting damage on the island was catastrophic for the Norwegian people. ABB had killed 69 campers, the youngest having just turned 14 and during his hour and a half rampage, he wounded another 60 more. ABB was ordered to solitary confinement by the Ministry of Justice and initially not allowed to have an open trial where media would be involved. ABB immediately requested to make a statement as a way to continue the message that he wanted to convey with his acts of terrorism. In a surprise move by the Norwegian government, he was denied access to anyone other than his lawyer and after four weeks of solitary confinement, he was ordered into another four weeks of solitary confinement. The Norwegian justice system drew harsh criticism regarding the treatment of ABB and many in the national media, as well as Norwegian

citizens felt that the conditions of his detainment and trial proceedings were too harsh and not in keeping with provisions of the Norwegian Justice System. The Prime Minister, despite having been a target of the attack, is quoted as saying, "the proper answer to violence is more democracy, more openness, but not naivety."[342] As a result of these criticisms and sentiments shared by members of the Norwegian government, ABB's trial is now very public and ABB is treated very humanely as he responds to questions and converses with judges in his tailored suit and unshackled hands as he appears much more like a businessman then a murderer of 77 innocent people. After attending the trial and witnessing ABB's testimony that is given in a courtroom specifically built to house this trial which is secured by some of the very officers that subdued him on Utoya Island and conducted search and rescue operations in Oslo, it is apparent that this situation is only advantageous to ABB. This current configuration of courtroom proceedings provides a world stage on which ABB is able to promote his ideology and encourage more violence.

F. NORWEGIAN POLICE AFTER ACTION ANALYSIS

The tragedy that occurred in Norway on July 22, 2011 affected every Norwegian citizen and generated an international outcry of sympathy. However, these events also generated tough questions, critical reviews, demands for emergency response improvements. In the analysis of this event conducted as part of the research, the National Counter Terrorism Unit (DELTA) believes that all police responders acted accordingly and as quickly as they could have. In this particular instance, the bombing that was intended as a diversion, actually decreased DELTA *Response Time* by placing 22 members of the Counter Terrorist unit in full kit and forward deployed to the bombsite. Without this circumstance, the DELTA response to Utoya may have been further delayed.

The DELTA initial evaluation contains recommendations to emplace dedicated helicopter lift assets within the DELTA compound and staff the crews in order sufficiently support 24-hour standby operations. Although call out time may have still been delayed; lift assets would have negated the need for procurement of civilian boats

[342] Stoltenberg, "Address by Prime Minister in Oslo Cathedral."

and reduced the risk of infiltration but utilizing a flyover and picking a landing zone or area for a fast rope insertion. In addition to this infiltration method, DELTA recommends a more robust boat patrol capability around populated islands or harbors. Just because the shooting took place on an island does not mean it will take place in the same location again. Police forces must be prepared to react to any area in Norway and must have the means to simply get them there.[343]

In addition to infiltration methods, DELTA recommends redundant communications and dispatch systems. Due to the blast at the Oslo Government Center, the central server was disabled and 112 calls were delayed or prevented from getting to the JOC. This, in turn, delayed critical dispatch information to all emergency responders. Although they do not have the technical expertise to recommend a new system, they recommend a backup server or a relocation of the current server to a more secure location.[344] Lastly, DELTA recommends an upgrade to existing map data devices for first responders. Many of the officers had iPhones or equivalent devices but did not have map datum uploaded. They believe with this upgrade or capability housed in a different device, the confusion in finding Utoya Island would have been eliminated and they could have reduced their response time further.[345]

The remainder of the DELTA actions and the remaining units deployed to support the bombing and shooting were in keeping with the SOPs already established by the Norway Police. Prior to both of these incidents, the Norwegian Police Directorate ordered a review of the active shooter program. They were tasked in 2006 to prepare the police services for such an attack and they made the police academy the main proponent for the training and evaluation. Active shooter techniques and response were added to Part II of the Police Emergency Preparedness System and all police forces went through training in 2009.[346] The entire training for active shooter response was standardized the same year

[343] Interview with Anders Snortheimsmoen, Police Headquarters, Oslo, Norway, June 7, 2012.

[344] Interview with Snortheimsmoen.

[345] Interview with Snortheimsmoen.

[346] Interview with Snortheimsmoen.

at the national police academy where all new recruits receive the training. In 2013, a national level active shooter exercise will commence that updates all districts on response and preparedness to these scenarios and will draw upon the events of 22 July.[347]

G. RECOMMENDATIONS

Although DELTA leadership stated that, given the particular circumstances and constraints of July 22, 2011, they do not believe that they could have reacted differently to the situation, and the authors agree with this assertion; a holistic recommendation including the proposed VIM system would greatly enhance emergency response to future similar incidents. As part of the holistic recommendation for Norway, certain immutable realities, as demonstrated in this case, as well as the preceding case studies must be addressed. First, these acts of extreme violence cannot be prevented despite a country's best effort to do so. Second, there will always be a delay between initiation of violence and Law Enforcement response. Third, in the time separating the first and last shots fired in Active Shooter incidents, the only individuals who have the capacity to react are the victims and potential victims. The fourth and final immutable reality of incidents, such as this is that with current security configurations within Norway, the only individual who is in control during an Active Shooter incident is the shooter himself. In an effort to counter this evolving threat, we feel that the following recommendation of a holistic approach including implementation of the proposed VIM system would greatly reduce Norway's vulnerability to threats, such as this. Although we do not postulate that we can prevent these incidents or to reduce the Active Shooter problem to a zero Rate of Kill, the accumulated research and analysis conducted as part of this project has confirmed that a holistic approach incorporating preventative measures and improvements in Law Enforcement response coupled with a Victim Initiated Mitigation system could drastically improve *Response Time* and decrease *Incident Duration.* Ultimately, these improvements, if implemented correctly, will reduce the *Rate of Kill* for potential Active Shooter incidents in Norway.

[347] Interview with Snortheimsmoen.

The first component of a holistic approach recommendation for Norwegian preparedness for future attacks similar to the events of July 22, 2011, includes prevention and preemption efforts capable of providing proper mental health care and attention required to identify and mitigate violent tendencies before they manifest into violent actions. Additionally, these efforts must also inform and integrate with a Threat Assessment infrastructure that is capable of evaluating threats across the threat assessment continuum from inquiry to investigation.[348] The second component of a holistic approach recommendation for Norwegian preparedness is a continued focus on maintaining a well-trained police force through standardized Active Shooter response training and common policies. Additionally, it is important to note that the authors believe that arming the Norwegian Police is a priority. It is imperative to a first responding law enforcement officer to have a weapon immediately available at the time of the incident. Not having a weapon only increases the *Response Time* at the most crucial time. In addition, a police officer who finds himself on the scene of an Active Shooter situation without a weapon is reduced to another potential victim rather than a trusted law enforcement officer. The authors of this research also recognize the cultural sensitivity to this recommendation and were are truly humbled to see how the Norwegian society operates without weapons in contrast to so many other countries around the world, and Norway should continue to be commended in its efforts to lower crime and violence in its current capacity.

The third component to a holistic approach recommendation for Norwegian preparedness is standardization for Active Shooter response through Victim Initiated Mitigation. With consideration to the preceding components of the holistic approach recommendation for mitigating the effects of Active Shooters in Norwegian IHEs and HOFs, the crucial missing component to existing capabilities is a Victim Initiated Mitigation (VIM) system that incorporates automated control measures and complementary response protocols. After a comprehensive review of the events of July 22, 2011, the only realistic means of reducing *Response Time* and *Incident Duration* for

[348] United States Secret Service, United States Department of Education, *Threat Assessment in Schools: A Guide to Managing Threatening Situations and to Creating Safe School Climates*, 12.

Active Shooter incidents within Norway is the application of facility upgrades which are able to return some advantages to victims and potential victims in these situations.

A Victim Initiated Mitigation system consisting of five core components as presented in the recommendation portion of this thesis would be capable of immediately notifying Law Enforcement while simultaneously ***c****ontaining* the threat utilizing facility lockdown and mass alert protocols. With a VIM system, upon threat identification by any member of the IHE or HOF population; students, staff, faculty or HOF employees or patrons are able to initiate the emergency call via the closest emergency call box. This action would result in two simultaneous actions. First, the Threat Area would be immediately locked down as the activation of the emergency call box would deactivate all electromagnetic door locks located on all doors within the building. This would result in all doors closing to locked position. As each door is equipped with a breaker bar or equivalent handle, a locked door would entail locked from ingress and not egress. This feature would prevent capture of potential victims in disadvantageous positions and afford them the freedom to make decisions that are most advantageous to their own survival.

The second simultaneous action that occurs upon activation of an emergency call box is establishment of two-way communications with the JOC. After the call has been received by the JOC and two-way communications have been established with the activated emergency call box, the threat can be verified by the JOC. At this stage of the VIM system concept flow, the Threat Area has been locked down and through the process of separating potential victims from the shooter, the threat has been effectively contained. After the JOC has validated the threat, through a series of pre-programmed and planned alerts, the JOC is able to dispatch Law Enforcement and all other relevant emergency response personnel. Additionally, in a simultaneous manner, all Affected Personnel within the IHE or HOF are able to receive pre-programmed and approved notifications via any networked media device (i.e., cell phone, and any networked TV, computer, tablet, and other video display systems). Furthermore, at this point in the VIM system concept flow, the JOC has the capability to lock down adjacent buildings within the Affected Area either selectively, by zone.

With facility lock down complete, First Responders are able to respond more rapidly and to a more controlled environment. For instance, after facility lock down has been initiated, if an Active Shooter exits the room he was in, he will not be able to re-enter that room or enter any other rooms. Therefore, First Responders are able to know prior to entering the facility that the shooter is either in the Target Area identified by the JOC, or in a hallway. As a result, valuable time is not wasted clearing rooms that only contain potential victims. Additionally, population control measures, such as instructional messages can be delivered to all persons within the Affected Area in order to better facilitate the Law Enforcement response. First Responders are able to gain access to the Threat Zone via individually issued key fobs that unlock the door associated with each prox reader. If needed, First Responders will also be able to employ their handheld mobile situational awareness devices in order to gain more situational awareness inside of the Target Area prior to entering the room and neutralizing the threat, or, if the incident transitions to a hostage or barricade scenario, they will have the capability to initiate and maintain two way communication with the Target Area and the shooter.

H. CONCLUSION

The culture of the Norwegian people and the fact that the Norwegian society enjoys such a simple and stable balance make the Norway shooting a much more difficult incident to cope with. Additionally, the whole of the Norwegian Police Directorate and National Counter Terrorism Unit are extremely well prepared to deal with Active Shooter threats. However, as demonstrated by this case, as well as all of the preceding case studies included as part of this research, there will always be a separation of time between the first and last shots fired in all Active Shooter incidents despite Law Enforcement capacity to respond. Therefore, flexible and adaptive recommendations focused on enabling Victim Initiated Mitigation of these types of threats is the only way Norway will be able to effectively mitigate and defeat future lone wolf attackers who desire to commit acts of Solo Terrorism.

THIS PAGE INTENTIONALLY LEFT BLANK

APPENDIX E. VIRGINIA TECH SUPPORTING FACTS

A. INCIDENT TIMELINE

The following timeline of events is abbreviated from the full timeline included in the *Virginia Tech Review Panel Report* to Governor Kaine. This timeline highlights the events immediately leading up to the incident and includes a detailed summary of events occurring during the shooting. The information included in this timeline was gained through numerous interviews, written sources and police reports that were compiled and analyzed by the Virginia Tech Review Panel.

Timeline of Events as Described by the Virginia Tech Review Panel Report	
Date (2007) / Time	**Event**
February 2	Cho orders a .22 caliber Walther P22 handgun online from TGSCOM, Inc.
February 9	Cho picks up the handgun from J-N-D Pawnbrokers in Blacksburg, across the street from the university.
March 12	Cho rents a van from Enterprise Rent-A-Car at the Roanoke Regional Airport, which he keeps for almost a month. (Cho videotapes some of his subsequently released diatribe in the van.)
March 13	Cho purchases a 9mm Glock 19 handgun and a box of 50 9mm full metal jacket practice rounds at Roanoke Firearms. He has waited the 30 days between gun purchases as required in Virginia. The store initiates the required background check by police, who find no record of mental health issues.
March 22	Cho goes to PSS Range and Training, an indoor pistol range, and spends an hour practicing.
	Cho purchases two 10-round magazines for the Walther P22 on eBay.
March 23	Cho purchases three additional 10-round magazines from another eBay seller.
March 31	Cho purchases additional ammunition magazines, ammunition, and a hunting knife from Wal-Mart and Dick's Sporting Goods. He buys chains from Home Depot.
April 7	Cho purchases more ammunition.
April 8	Cho spends the night at the Hampton Inn in Christiansburg, Virginia, videotaping segments for his manifesto-like diatribe. He also buys more ammunition.
April 13	Bomb threats are made to Torgersen, Durham, and Whittemore halls, in the form of an anonymous note. The threats are assessed by the VTPD; and the buildings evacuated. There is no lockdown or cancellation of classes elsewhere on campus. In retrospect, no evidence is found linking these threats to Cho's later bomb threat in Norris Hall, based in part on handwriting analysis.
April 14	An Asian male wearing a hooded garment is seen by a faculty member in Norris Hall. She later (after April 16) tells police that one of her students had told her the doors were chained. This may have been Cho practicing. Cho buys yet more ammunition.
April 15	Cho places his weekly Sunday night call to his family in Fairfax County. They report the conversation as normal and that Cho said nothing that caused them concern.

Timeline of Events as Described by the Virginia Tech Review Panel Report	
Date (2007) / Time	**Event**
April 16	
0500	In Cho's suite in Harper Hall (2121), one of Cho's suitemates notices Cho is awake and at his computer.
0530	One of Cho's other suitemates notices Cho clad in boxer shorts and a shirt brushing his teeth and applying acne cream. Cho returns from the bathroom, gets dressed, and leaves.
0647	Cho is spotted by a student waiting outside the West Ambler Johnston (WAJ) residential hall entrance, where he has his mailbox.
0702	Emily Hilscher enters the dorm after being dropped off by her boyfriend (the time is based on her swipe card record).
0715	Cho shoots Hilscher in her room (4040) at WAJ. He also shoots Ryan Christopher Clark, an RA. Clark, it is thought,most likely came to investigate noises in Hilscher's room, which is next door to his. Both of the victims' wounds prove to be fatal.
0717	Cho's access card is swiped at Harper Hall (his residence hall). He goes to his room to change out of his bloody clothes.
0720	The VTPD receives a call on their administrative telephone line advising that a female student in room 4040 of WAJ had possibly fallen from her loft bed. The caller was given this information by another WAJ resident near room 4040 who heard the noise.
0721	The VTPD dispatcher notifies the Virginia Tech Rescue Squad that a female student had possibly fallen from her loft bed in WAJ. A VTPD officer is dispatched to room 4040 at WAJ to accompany the Virginia Tech Rescue Squad, which is also dispatched (per standard protocol).
0724	The VTPD officer arrives at WAJ room 4040, finds two people shot inside the room, and immediately requests additional VTPD resources.
0725	Cho accesses his university e-mail account (based on computer records). He erases his files and the account.
0726	VT Rescue Squad 3 arrives on scene outside WAJ.
0729	VT Rescue Squad 3 arrives at room 4040.
0730	Additional VTPD officers begin arriving at room 4040. They secure the crime scene and start preliminary investigation. Interviews of residents find them unable to provide a suspect description. No one on Hilscher's floor in WAJ saw anyone leave room 4040 after the initial noise was heard.
0730–0800	A friend of Hilscher's arrives at WAJ to join her for the walk to chemistry class. She is questioned by detectives and explains that on Monday mornings Hilscher's boyfriend would drop her off and go back to Radford University where he was a student. She tells police that the boyfriend is an avid gun user and practices using the gun. This leads the police to seek him as a "person of interest" and potential suspect.
0740	VTPD Chief Flinchum is notified by phone of the WAJ shootings.
0751	Chief Flinchum contacts the Blacksburg Police Department (BPD) and requests a BPD evidence technician and BPD detective to assist with the investigation.
0757	Chief Flinchum notifies the Virginia Tech Office of the Executive Vice President of the shootings. This triggers a meeting of the university's Policy Group.
0800	Classes begin. Chief Flinchum arrives at WAJ and finds VTPD and BPD detectives on the scene and the investigation underway. A local special agent of the state police has been contacted and is responding to the scene.
0810–0925	Chief Flinchum provides updated information via phone to the Virginia Tech Policy Group regarding progress made in the investigation. He informs them of a

Timeline of Events as Described by the Virginia Tech Review Panel Report	
Date (2007) / Time	**Event**
	possible suspect, who is probably off campus.
0811	BPD Chief Kim Crannis arrives on scene.
0813	Chief Flinchum requests additional VTPD and BPD officers to assist with securing WAJ entrances and with the investigation.
0815	Chief Flinchum requests the VTPD Emergency Response Team (ERT) to respond to the scene and then to stage in Blacksburg in the event an arrest is needed or a search warrant is to be executed.
0816–0924	Officers search for Hilscher's boyfriend. His vehicle is not found in campus parking lots, and officers become more confident that he has left the campus. VTPD and BPD officers are sent to his home; he is not found. A BOLO (be on the lookout) report is issued to BPD and the Montgomery County Sheriff's Office for his vehicle. Meanwhile, officers continue canvassing WAJ for possible witnesses. VTPD, BPD, and the Virginia State Police (VSP) continue processing the room 4040 crime scene and gathering evidence. Investigators secure identification of the victims.
0819	Chief Crannis requests BPD ERT to respond for the same reason as the VTPD ERT.
0820	A person fitting Cho's description is seen near the Duck Pond on campus.
0825	The Virginia Tech Policy Group meets to plan on how to notify students of the homicides.
0852	Blacksburg public schools lock their outer doors upon hearing of the incident at WAJ from their security chief, who had heard of the incident on police radio.
0900	The Policy Group is briefed on the latest events in the ongoing dormitory homicide investigation by the VTPD.
0901	Cho mails a package from the Blacksburg post office to NBC News in New York that contains pictures of himself holding weapons, an 1,800-word rambling diatribe, and video clips in which he expresses rage, resentment, and a desire to get even with oppressors. He alludes to a coming massacre. Cho prepared this material in the previous weeks. The videos are a performance of the enclosed writings. Cho also mails a letter to the English Department attacking Professor Carl Bean, with whom he previously argued.
0905	Classes begin for the second period in Norris Hall.
0915	Both police ERTs are staged at the BPD in anticipation of executing search warrants or making an arrest.
0915–0930	Cho is seen outside and then inside Norris Hall, an engineering building. He chains the doors shut on the three main entrances from the inside. No one reports seeing him do this.
0924	A Montgomery County, Virginia deputy sheriff initiates a traffic stop of Hilsher's boyfriend off campus in his pickup truck. Detectives are sent to assist with the questioning.
0925	A VTPD police captain joins the Virginia Tech Policy Group as police liaison and provides updates as information becomes available.
0926	Virginia Tech administration sends e-mail to campus staff, faculty, and students informing them of the dormitory shooting.
0931–0948	A VSP trooper arrives at the traffic stop of the boyfriend and helps question him. A gunpowder residue field test is performed on him and the result is negative.
0940–0951	Cho begins shooting in room 206 in Norris Hall, where a graduate engineering class in Advanced Hydrology is underway. Cho kills Professor G. V. Loganathan and other students in the class, killing 9 and wounding 3 of the 13 students. Cho goes across the hall from room 206 and enters room 207, an Elementary German

Timeline of Events as Described by the Virginia Tech Review Panel Report	
Date (2007) / Time	**Event**
	class. He shoots teacher Christopher James Bishop, then students near the front of the classroom and starts down the aisle shooting others. Cho leaves the classroom to go back into the hall. Students in room 205, attending Haiyan Cheng's class on Issues in Scientific Computing, hear Cho's gunshots. (Cheng was a graduate assistant substituting for the professor that day.) The students barricade the door and prevent Cho's entry despite his firing at them through the door. Meanwhile, in room 211 Madame Jocelyne Couture-Nowak is teaching French. She and her class hear the shots, and she asks student Colin Goddard to call 9-1-1. A student tells the teacher to put the desk in front of the door, which is done but it is nudged open by Cho. Cho walks down the rows of desks shooting people. Goddard is shot in the leg. Student Emily Haas picks up the cell phone Goddard dropped. She begs the police to hurry. Cho hears Haas and shoots her, grazing her twice in the head. She falls and plays dead, though keeping the phone cradled under her head and the line open. Cho says nothing on entering the room or during the shooting. (Three students who pretend to be dead survive.)
0941	A BPD dispatcher receives a call regarding the shooting in Norris Hall. The dispatcher initially has difficulty understanding the location of the shooting. Once identified as being on campus, the call is transferred to VTPD.
0942	The first 9-1-1 call reporting shots fired reaches the VTPD. A message is sent to all county EMS units to staff and respond.
0945	The first police officers arrive at Norris Hall, a three-minute response time from their receipt of the call. Hearing shots, they pause briefly to check whether they are being fired upon, then rush to one entrance, then another, and then a third but find all three chained shut. Attempts to shoot open the locks fail.
	The police inform the administration that there has been another shooting. University President Steger hears sounds like gunshots, and sees police running toward Norris Hall. Back in room 207, the German class, two uninjured students and two injured students go to the door and hold it shut with their feet and hands, keeping their bodies away. Within 2 minutes, Cho returns. He beats on the door and opens it an inch and fires shots around the door handle, then gives up trying to get in. Cho returns to room 211, the French class, and goes up one aisle and down another, shooting people again. Cho shoots Goddard again twice more. A janitor sees Cho in the hall on the second floor loading his gun; he flees downstairs. Cho tries to enter room 204 where engineering professor Liviu Librescu is teaching Mechanics. Librescu braces his body against the door yelling for students to head for the window. He is shot through the door. Students push out screens and jump or drop to grass or bushes below the window. Ten students escape this way. The next two students trying to escape are shot. Cho returns again to room 206 and shoots more students.
0950	Using a shotgun, police shoot open the ordinary key lock of a fourth entrance to Norris Hall that goes to a machine shop and that could not be chained. The police hear gunshots as they enter the building. They immediately follow the sounds to the second floor. Triage and rescue of victims begin. A second e-mail is sent by the administration to all Virginia Tech e-mail addresses announcing that "A gunman is loose on campus. Stay in buildings until further notice. Stay away from all windows." Four loudspeakers out of doors on poles broadcast a similar message. Virginia Tech and Blacksburg police ERTs arrive at Norris Hall, including one paramedic with each team.

Timeline of Events as Described by the Virginia Tech Review Panel Report	
Date (2007) / Time	**Event**

0951	Cho shoots himself in the head just as police reach the second floor. Investigators believe that the police shotgun blast alerted Cho to the arrival of the police. Cho's shooting spree in Norris Hall lasted about 11 minutes. He fired 174 rounds, and killed 30 people in Norris Hall plus himself, and wounded 17. While the shootings at Norris Hall were occurring, police were taking the following actions in connection with the shootings at
	WAJ:
	• Officers canvass WAJ for possible witnesses.
	• VTPD, BPD, and VSP process the room 4040 crime scene and gather evidence.
	• Officers search interior and exterior waste containers and surrounding areas near WAJ for evidence.
	• Officers canvass rescue squad personnel for additional evidence or information.
	• Police officials assign the additional responding law enforcement personnel. At Norris Hall, the first team of officers begins—
	  • Securing the second floor.
	  • Triaging the 48 gunshot victims and aiding survivors in multiple classrooms.
	  • Coordinating rescue efforts to remove survivors from Norris Hall.
	  • Gathering preliminary suspect or gunman descriptions.
	  • Determining if additional gunmen exist.

0952	The police clear the second floor of Norris Hall. Two tactical medics attached to the ERTs, one medic from Virginia Tech Rescue and one from Blacksburg Rescue, are allowed to enter to start their initial triage.
0953	The 9:42 a.m. request for all EMS units is repeated.
1008	A deceased male student is discovered by police team and suspected to be the gunman: • No identification is found on the body. • He appears to have a self-inflicted gunshot wound to the head. • He is found among his victims in classroom 211, the French class. • Two weapons are found near the body.
1017	A third e-mail from Virginia Tech administration cancels classes and advises people to stay where they are.
1051	All patients from Norris Hall have been transported to a hospital or moved to a minor treatment unit.
1052	A fourth e-mail from Virginia Tech administration warns of "a multiple shooting with multiple victims in Norris Hall," saying the shooter has been arrested and that police are hunting for a possible second shooter.
1057	A report of shots fired at the tennis courts near Cassell Coliseum proves false.
1242	University President Charles Steger announces that police are releasing people from buildings and that counseling centers are being established
1335	A report of a possible gunshot near Duck Pond proves to be another false alarm.
1601	President George W. Bush speaks to the Nation from the White House regarding the shooting.

Timeline of Events as Described by the Virginia Tech Review Panel Report	
Date (2007) / Time	**Event**
1700	The first deceased victim is transported to the medical examiner's office.
2045	The last deceased victim is transported to the medical examiner's office.
Evening	A search warrant is served for the residence of the first victim's boyfriend. Investigators continue investigating whether he is linked to the first crime; the two crimes are not yet connected for certain.

Table 29. Abbreviated Timeline of Events as Described by the Virginia Tech Review Panel Report

B. MESSAGES ISSUED BY VIRGINIA TECH

Messages issued by the Virginia Tech University Policy Group to the Community in Response to the Norris Hall Shooting	
Time	**Message**
0950	*"A gunman is loose on campus. Stay in buildings until further notice. Stay away from all windows."*
1015	*"Virginia Tech has cancelled all classes. Those on campus are asked to remain where they are, lock their doors, and stay away from windows. Persons off campus are asked not to come to campus."*
1050	*"In addition to an earlier shooting today in West Ambler Johnston, there has been a multiple shooting with multiple victims in Norris Hall. Police and EMS are on the scene. Police have one shooter in custody and as part of routine police procedure; they continue to search for a second shooter. "All people in university buildings are required to stay inside until further notice. All entrances to campus are closed."*
1130	*"Faculty and staff located on the Burruss Hall side of the drill field are asked to leave their office and go home immediately. Faculty and staff located on the War Memorial/Eggleston Hall side of the drill field are asked to leave their offices and go home at 12:30 p.m."*
1215	*"Virginia Tech has closed today Monday, April 16, 2007. On Tuesday, April 17, classes will be cancelled. The university will remain open for administrative operations. There will be an additional university statement presented today at noon.* *"All students, faculty and staff are required to stay where they are until police execute a planned evacuation. A phased closing will be in effect today; further information will be forthcoming as soon as police secure the campus.* *"Tomorrow there will be a university convocation/ ceremony at noon at Cassell Coliseum. The Inn at Virginia Tech has been designated as the site for parents to gather and obtain information."*

Table 30. These Messages Were Issued to the Virginia Tech Community in Response to the Norris Hall Shooting by the Virginia Tech University Policy Group.[349]

[349] Virginia Tech Review Panel, *Mass Shootings at Virginia Tech*, 97.

LIST OF REFERENCES

"16 Killed in UT Shooting Rampage." *Texas Landmarks and Legacies* MMXII, no. 213 (August 1, 1966). http://howdyyall.com/Texas/TodaysNews/index.cfm?GetItem=305.

"3 Dead in LTC Shooting." *Baton Rouge, LA–WAFB*, February 18, 2008. http://www.wafb.com/Global/story.asp?S=7842633.

Abcarian, Robin, and Richard Fausset. "Three Killed in Shooting at Alabama Campus." *LA Times*, February 13, 2010. http://articles.latimes.com/2010/feb/13/nation/la-na-alabama-shooting13-2010feb13.

American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders Fourth Edition Text Revision (DSM-IV-TR)*. Washington, DC: Office of Publishing Operations, American Psychiatric Association.

Andrew Berwick. *2083: A Declaration of European Independence*. London: 2011.

Anthony DePalma. "Questions Outweigh Answers In Shooting Spree at College." *The New York Times*, December 28, 1992.

Associated Press. Anchorage Daily News. "Library Shooting Kills 7." July 19, 1976. http://news.google.com/newspapers?nid=1828&dat=19760710&id=XjUeAAAAIBAJ&sjid=fb4EAAAAIBAJ&pg=1447,1114782.

Bill Callahan. "Transcript Bares Warring Emotions of SDSU Gunman." *San Diego Union-Tribune*, October 18, 1996.

Blair, Pete. "Response to Active Shooter Events." Lecture: Advanced Law Enforcement Rapid Response Training (ALERRT) Active Shooter Conference, San Marcos Texas, November 15, 2011.

Botts, Cheryl. "State of Texas, County of Travis, Sworn Affidavit." Offense Number M-968-150, August 4, 1966. http://en.citizendium.org/wiki/File:Cheryl_Botts_0001.jpg.

Bromley, Max L. "Policing Our Campuses: A National Review of Statutes." *American Journal of Police* 15, no. 3 (1996): 7.

"Casting Off Shadow of UT Tower Shooting." *Austin American Statesman*, May 14, 2011.

Chertoff, Michael. *National Incident Management System*. Washington, DC: U.S. Department of Homeland Security, 2008.

City of New York Police Department. “2000–2005 Historical Comfinal Data, 2006–2010 Shooting & Homicide Database.” 2010.

CNN.com/U.S. “Suspect in Law School Slayings Arraigned.” January 17, 2002. Posted: 12:28 PM EST. http://archives.cnn.com/2002/US/01/16/law.school.shooting/.

Department of Financial Services. *Town of Blacksburg, Virginia Comprehensive Annual Financial Report*, June 30, 2007.

Department of Homeland Security. *Active Shooter: How to Respond.* October 2008.

———. *National Incident Management System*. (FEMA Publications Warehouse; Pub. P-501, Catalog Number 08336-1). December 2008.

Department of Justice, Federal Bureau of Investigation. *The School Shooter: A Threat Assessment Perspective*. Quantico, VA: FBI Academy.

Drysdale, Diana A., William Modzeleski, and Andre B. Simons. *Campus Attacks: Targeted Violence Affecting Institutions of Higher Education*. U.S. Service, U.S. Department of Homeland Security, Office of Safe and Drug-Free Schools, U.S. Department of Education, and Federal Bureau of Investigation, U.S. Department of Justice. Washington, DC, 2010.

Dwyer, K., D. Osher, and C. Warger. *Early Warning, Timely Response: A Guide to Safe Schools*. Washington, DC: U.S. Department of Education, 1998.

Eckhardt, Megan L. “10 Years Later, U. Iowa Remembers Fatal Day.” *The Daily Iowan*, November 1, 2001. http://web.archive.org/web/20070422044050/http://www.uwire.com/content/topnews110101001.html.

FEMA’s State and Local Guide SLG 101: Guide for All-Hazards Emergency Operations Planning. September 1996.

“File:Bomb Attack on Oslo 2011 (Updated Infographic), English Version.svg.” *Wikipedia Infographic*, (n.d.). http://en.wikipedia.org/wiki/File:Bomb_attack_on_Oslo_2011_(Updated_infographic),_English_version.svg.

Finz, Stacy. “SDSU Stunned By 3 Faculty Slayings at the College of Engineering, Shock and Pain,” *San Diego Union-Tribune*, August 16, 1996.

Fleming, Philip. *The President’s Conference on Fire Prevention Action Program*. Departmental Auditorium. Washington, DC: May 1947.

Flippin, Perry. “UT Tower Heroes to be Honored.” *SA Standard Times*, August 6, 2007.

"Four Men Charged in University of Central Arkansas Campus Shooting That Left 2 Dead." *The Associated Press*, October 29, 2008. http://articles.nydailynews.com/2008-10-29/news/17908440_1_campus-shooting-shooting-deaths-four-men-face.

Freedman, Lawrence. *Deterence*. Polity Press, 2004.

Freydis. "The School Shootings Report Part II." (n.d.). http://hololology.com/shooting2.html#12.

Galbraith, Jay R. "The Star Model." (n.d.).

Gamino, Denise. "Austin Facility Names Hero of UT Rampage." *The Austin American-Statesman*. August 11, 2008.

Grossman, Dave. "School Shooting Contingency Plans & Considerations." *Killology Research Group: A Warrior Science Research Group Partner*, 2000. http://www.killology.com/school_notes_plans.htm.

Headquarters. Department of the Army. *Field Manual No. 3-21.75 (21-75)*. Washington, DC, January 28, 2008.

Hicks, Jesse. "What Charlie Saw." April 2006. *deekmagzine.com*.

Houghton Mifflin Company. *The American Heritage Dictionary*.

Hubbard Sean K., and Charles E. Ergenbright. "Defeating the Active Shooter: Applying Technology to Reduce the Capability of Armed Shooters in High Occupancy Facilities." Master's thesis draft proposal, Naval Postgraduate School, 2011.

Hughes, Joe. "3 at SDSU Shot Dead Student Held Professors Were Hearing Defense of Master's Thesis." *San Diego Union-Tribune*, August 16, 1996.

Hughes, Joe, and Maria Hunt. "Suspect Hid Handgun in First-Aid Kit Graduate Student Then Shot Three Profs, Police Say." *San Diego Union-Tribune*, August 17, 1996.

Hunter, Desiree, and Jay Lindsay. "Alabama Suspect Fatally Shot Her Brother in 1986." *AOL News*, February 13, 2010. http://www.aolnews.com/2010/02/13/3-dead-in-shooting-at-university-of-alabama-huntsville/.

Huppke, Rex. "Our Lady of the Angels: The Fire That Changed Everything." *Chicago Tribune, Chicagoland*, November 29, 2008. http://www.chicagotribune.com/news/local/chi-our-lady-of-the-angels-fire-students-killed,0,6650568.story.

Janes, Jared. "Killer Acted Paranoid: Woman Lived in Car, Believed Suicidal Before Shootings." *The Advocate*, February 12, 2008.

The Jeanne Clery Disclosure of Campus Security Policy and Campus Crime Act. Annual Report of 2007.

Johnstone, Chris. "Oslo Killer Sought Weapons From Prague's Underworld." *Foreign Affairs*, July 25, 2011. http://www.ceskapozice.cz/en/news/society/oslo-killer-sought-weapons-prague%E2%80%99s-underworld.

Katzman, Martin A. "Current Considerations in the Treatment of Generalized Anxiety Disorder." *CNS Drugs* 23, no. 2 (February 1, 2009): 103–120.

Kelly, Raymond W. New York City Police Department. *Active Shooter Recommendations and Analysis for Risk Mitigation*, 2010.

Kramen, Alissa, Kelly Massey, and Howard Timm. *Guide for Preventing and Responding to School Violence*. Alexandria, VA: International Association of Chiefs of Police.

Lavergne, Gary M. *Sniper in the Tower: The Charles Whitman Murders*. College Station, TX, University of North Texas Press, February 1997.

Leavit, Michael O., Alberto R. Gonzales, and Margaret Spellings. "Report to the President: On Issues Raised by the Virginia Tech Tragedy." Department of Human Services, Department of Education, Department of Justice (June 2007): 10–16.

Leingang, Matt. "Ohio State Shooting: 1 Killed, 2 Wounded At Ohio State University Campus." *Associated Press*, March 9, 2010. http://www.huffingtonpost.com/2010/03/09/ohio-state-shooting-1-kil_n_491250.html.

Ligon. Austin Police Department. *Charles Whitman Police Report, Supplementary Offence Report*, Offence Reported: Murder, Date Reported: 8-1-66, (Offence NO. M-968150, APD 1-1-64-11). Offence Reported: Murder, Date Reported: 8-1-66.

Maravetz, Steve. "Remembering November 1: A University Tragedy 10 Years Later." *Faculty and Staff News* 39, no. 5 (October 19, 2001).

Marriott, Michel. "Iowa Gunman Was Torn by Academic Challenge." *New York Times*, November 4, 1991. http://www.nytimes.com/1991/11/04/us/iowagunman-was-torn-by-academic-challenge.html.

Mayhugh, Samuel. "Active Shooters: Behavior, Conditions, and Situations." *Active Shooter Awareness Virtual Roundtable*. Washington, DC, September 27, 2011.

McKinnon, Jim. "2 Arrested, 1 Sought in Duquesne University Shooting." *Pittsburgh Post-Gazette*, September 19, 2006. http://postgazette.com/pg/06262/723109-100.stm.

Mon, Su Thet. “Synes Ikke Selv at Han Bør Strafes.” *Nyheter*, July 24, 2011. http://www.nrk.no/nyheter/norge/1.7724994.

Morrison, Shawna. “Tech Police Chief Studying up on His Job.” *Roanoke Times*, December 21, 2006. http://www.roanoke.com/news/nrv/cram/feature/wb/wb/xp-96761.

Mullen, Chairman, Joint Chiefs of Staff, M. G. *The National Military Strategy of the United States of America, Redefining America’s Military Leadership*. February 2011.

National Institute of Mental Health, *Mental Health and Mass Violence: Evidence-Based Early Psychological Intervention for Victims/Survivors of Mass Violence. A Workshop to Reach Consensus on Best Practices*, (NIH Publication No. 02-5138), Washington, DC: U.S. Government Printing Office, 2002.

National Police Directorate. “The Politiet.” *POD Publications* (June 2010): 3.

Northern Illinois University. “Report of the February 14, 2008 Shooting at Northern Illinois University.” 2009.

“Norwegian ‘MI5’ Had Massacre Suspect on List.” *Skynews*, July 25, 2011. http://news.sky.com/home/world-news/article/16036733.

Perry, Tony. “Ex-San Diego State Student Pleads Guilty to Murdering 3 Professors.” *Los Angeles Times*, May 28, 1997.

President of the United States, Barack Obama. *National Security Strategy*, May 2010.

Reddy, Marisa. “Evaluating Risk for Targeted Violence in Schools: Comparing Risk Assessment, Threat Assessment, and Other Approaches.” *Psychology in the Schools* 38, no. 2 (2001): 161.

Schneider, Tod. *CPTED 101: Crime Prevention through Environmental Design—The Fundamentals for Schools*. Washington, DC: National Clearinghouse for Educational Facilities at the National Institute of Building Sciences, 2010.

Secretary of Defense. Robert Gates., *National Defense Strategy*, June 2008.

———. *Quadrennial Defense Review Report*, February 2010.

Seung, Hui Cho (Deceased). *Virginia Polytechnic Institute Mass Murder Domestic Police Cooperation 00:RH* (Case ID# 62D-RH-NEW). Federal Bureau of Investigation Official Report, April 18, 2007.

Smith, Nicole. “Blood Spills in Library Hallways.” *The Daily Titan* 82, no. 51 (May 16, 2006): 1.

Snow, Robert. *Swat Teams: Explosive Face-offs with America*. Cambridge, MA: Perseus Books, November 1999.

Snyder, Thomas D. Sally A. Dillow, and Charlene M. Hoffman, "Digest of Education Statistics 2008." (NCES 2009-020), *Washington, DC: National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education*, March 2009. http://nces.ed.gov.

"Special Organization." *Norway Police Department*, 2008. https://www.politi.no/om_politiet/organisasjon/sarorganer/.

———. *The Politiet*, February 15, 2010. https://www.politi.no/om_politiet/organisasjon/sarorganer/.

Stoltenberg, Prime Minister Jens. "Address by Prime Minister in Oslo Cathedral." *Office of Prime Minister Home Page*, July 24, 2011. http://www.regjeringen.no/en/dep/smk/Whats-new/Speeches-and-articles/statsministeren/statsminister_jens_stoltenberg/2011/address-by-prime-minister-in-oslo-cathed.html.

Suicide Prevention Resource Center. *Promoting Mental Health and Preventing Suicide in College and University Settings*. Newton, MA: Education Development Center, Inc., 2004.

Swirt, Michael, and Matthew Saltmarsh. "Oslo Suspect Cultivated Parallel Life to Disguise 'Martyrdom Operation.'" *New York Times*, July 25, 2011, A6. http://www.nytimes.com/2011/07/25/world/europe/25breivik.html?_r=1&src=un&feedurl=http%3A%2F.

Texas State University. *Advanced Law Enforcement Rapid Response Training (ALERRT) Manual*, June 2007.

U.S. Department of Education. Family Policy Compliance Office. "Balancing Student Privacy and School Safety: A Guide to the Family Education Rights and Privacy Act for Colleges and Universities." April 5, 2012. http://www.ed.gov/policy/gen/guid/fpco/brochures/postsec.pdf.

———. Office of Safe and Drug-Free Schools. *Action Guide for Emergency Management at Institutions of Higher Education*. Washington, DC, 2009.

———. U.S. Department of Justice. "Creating Safe and Drug Free Schools: An Action Guide." September 1996. http://www.ed.gov.

U.S. Department of Homeland Security. U.S. Fire Administration National Fire Data Center. "School Fires." *Topical Fire Research Series* 8, no. 1 (August 2007). www.usfa.dhs.gov/statistics/reports/pubs/tfrs.shtm.

United States Secret Service. United States Department of Education. *The Final Report and Findings of the Safe School Initiative: Implications for the Prevention of School Attacks in the United States*, May 2002.

———. *Threat Assessment in Schools: A Guide to Managing Threatening Situations and to Creating Safe School Climates*. Washington, DC, May 2002.

Urbina, Ian. "Ohio State Employee Kills Co-Worker, Then Self, Police Say." *New York Times*, March 9, 2010. http://www.nytimes.com/2010/03/10/us/10ohio.html.

Virginia Tech Review Panel. *Mass Shootings at Virginia Tech*. Report of the Review Panel Presented to Governor Kaine. Commonwealth of Virginia, August 2007.

Vulnerability. *The American Heritage Dictionary*. Boston: Houghton Mifflin Company, 1985.

Walker Peter, and Matthew Taylor. "Far Right on Rise in Europe, Report Says," *The Guardian*, November 6, 2011. http://www.guardian.co.uk/world/interactive/2011/nov/06/europe-far-right-nationalist-populist-interactive.

Ward, Victoria. "Norway Shooting: German Tourist Hailed a Hero After Saving 30 Lives." *The Telegraph*, July 24, 2011. http://www.telegraph.co.uk/news/worldnews/europe/norway/8658437/Norway-shooting-German-tourist-hailed-a-hero-after-saving-30-lives.html.

Williams, Clive. "Deadly, Cruel Lesson from Norway." *The Austrailian*, July 26, 2011. http://www.theaustralian.com.au/news/features/deadly-cruel-lesson-from-norway/story-e6frg6z6-1226101590303.

Winnefeld, Admiral James A. Jr. U.S. Navy, Commander, U.S. Northern Command and North American Aerospace Defense Command. *Testimony Before the House Armed Services Committee*, March 30, 2011.

"The Wrong Helicopter and a Sinking Boat: Why It Took Special Forces So Long To Reach Norwegian Island Massacre." *Mail Online*, July 11, 2011. http://www.dailymail.co.uk/news/article-2018280/Norway-massacre-Why-did-police-long-reach-Utoya-island.html#ixzz1YQYGT8gt.

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