

Research Supporting ALICE

1. Active Shooter Mitigation for Gun-Free Zones

- a. Source: Active Shooter Mitigation for Gun-Free Zones Adam Kirby, PhD, Charles E. Anklam III, PhD, J. Eric Dietz, PhD, PE Computer and Information Technology Purdue University West Lafayette, IN, United States.
- b. The study demonstrates how response time has the largest impact of any variable in ensuring the least amount of casualties in an active shooting situation. Response time and number of casualties can be decreased depending upon the policy chosen.
- c. 160 active shooter events occurred in the United States between 2000 and 2013, an average of 11.4 per year. 1043 casualties occurred during those events. Of those, 486 lost their lives.
- d. Only 22 of the 160 incidents occurred in places where citizens are permitted to exercise concealed carry.
- e. Phil Leggiere of Homeland Security Today examined the report. His summary concluded that “the vast majority of attacks in the active shooter data set ended violently, either by force applied by law enforcement, private security, bystanders, or the attackers themselves. Only 14 percent ended without applied force, such as by a negotiated surrender” [5].
- f. “We’ve seen over and over a single resource officer, or even an armed teacher in a defensive position between attacker and students, can reduce the number of victims by up to 70 percent,” [J. Eric] Dietz said. “They are the only two measures that consistently have significant results in detailed modeling.”
- g. According to the model, the simple policy of locking doors can reduce the number of people shot in an active shooter event by almost 25%. This illustrates the inadequacy of locking doors, as it only reduces casualties by up to 25%, while proactive strategies like ALICE reduces casualties by up to 90%.

2. A Study of Active Shooter Incidents, 2000 - 2013

- a. Source: Blair, J. Pete, and Schweit, Katherine W. (2014). A Study of Active Shooter Incidents, 2000 - 2013. Texas State University and Federal Bureau of Investigation, U.S. Department of Justice, Washington D.C. 2014.
- b. The FBI identified 160 active shooter incidents that occurred in the United States between 2000 and 2013.
 - i. An average of 11.4 incidents occurred annually.
 - ii. An average of 6.4 incidents occurred in the first 7 years studied, and an average of 16.4 occurred in the last 7 years.
 - iii. 70.0% of the incidents occurred in either a commerce/business or educational environment.
 - iv. Shootings occurred in 40 of 50 states and the District of Columbia.
 - v. 60.0% of the incidents ended before police arrived.

- vi. 70% of incidents end in 5 minutes or less.
 - vii. 37% over in less than 2 minutes.
 - viii. Only 1.3% had 2 shooters involved.
 - ix. 52% of casualties in K-12 were in hallways or classrooms. This indicates that the threat is already inside and in contact with victims. Lockdown does not apply.
 - x. 85% of K-12 incidents the shooter was a student, former student, former teacher or related to a person in the facility. This means that the option of hiding has a low probability of success due to threat knowing where everyone is located.
- c. Casualties (victims killed and wounded) totaled 1,043.
- i. A total of 486 individuals were killed.
 - ii. A total of 557 individuals were wounded.
 - iii. In 64 incidents (40.0%), the crime would have fallen within the federal definition of “mass killing”—defined as “three or more” killed—under the new federal statute.
- d. All but 2 incidents involved a single shooter.
- e. In 64 incidents (40.0%), the shooters committed suicide; 54 shooters did so at the scene of the crime.
- f. The findings also reflect the damage that can occur in a matter of minutes. In 63 incidents where the duration of the incident could be ascertained, 44 (70%) of 63 incidents ended in 5 minutes or less, with 23 ending in 2 minutes or less. Even when law enforcement was present or able to respond within minutes, civilians often had to make life and death decisions, and, therefore, should be engaged in training and discussions on decisions they may face.
- g. Therefore, many incidents ended before police arrived. Of the 160 incidents, at least 107 (66.9%) ended before police arrived and could engage the shooter, either because a citizen intervened, the shooter fled, or the shooter committed suicide or was killed by someone at the scene.
- h. The majority of the 160 incidents (90 [56.3%]) ended on the shooter’s initiative—sometimes when the shooter committed suicide or stopped shooting, and other times when the shooter fled the scene.
- i. In 21 incidents (13.1%), the situation ended after unarmed citizens safely and successfully restrained the shooter.

3. Best practice considerations for schools in active shooter and other armed assailant drills

- a. Source: NASP and NASRO. (2014). Best practice considerations for schools in active shooter and other armed assailant drills [Brief]. Bethesda, MD: National Association of School Psychologists.
- b. Options-based drills provide students and staff with a range of alternative strategies to save lives, and the permission to use them, depending on the situation. For instance the nature of the threat, time of day, and the location of students interact to affect the best options. The premise of options-based drills is to allow participants to make

independent decisions including when and whether to evacuate, barricade classroom doors, or as a last resort, counter the attack of the armed assailant. As with other safety drills (e.g., fire or tornado), it is important that options-based drills take into account the developmental levels of students as well as the physical layout of the school campus (e.g., ease of access to outside doors and proximity of places to hide other than classrooms).

4. Gunshot Wound Data

- a. Source: <http://www.columbianeurosurgery.org/conditions/cranial-gunshot-wounds/>
- b. Source: <http://www.aans.org/Patient%20Information/Conditions%20and%20Treatments/Gunshot%20Wound%20Head%20Trauma.aspx>
- c. Gunshot wounds to the head have become a leading cause of head injury in many United States cities. They are also the most lethal of all firearm injuries. It is estimated that gunshot wounds to the head have a greater than 90% fatality rate for United States civilians, and at least two thirds of the victims die before ever reaching a hospital.

5. Congressional Research Service: Mass Murder with Firearms: Incidents and Victims, 1999-2013

- a. Source: Congressional Research Service: Mass Murder with Firearms: Incidents and Victims, 1999-2013 William J. Krouse Specialist in Domestic Security and Crime Policy Daniel J. Richardson Research Assistant July 30, 2015.
- b. Offenders committed 66 mass public shootings, murdering 446 victims and non-fatally wounding another 329 victims from 1999 through 2013.

6. Investigation of Millennial Students' Responses to a Shelter-in-Place Experience

- a. Source: Thomas C. Johnson & Melodie H. Frick (2016) Investigation of Millennial Students' Responses to a Shelter-in-Place Experience, Journal of Student Affairs Research and Practice, 53:4, 444-457, DOI: 10.1080/19496591.2016.1167064
- b. While over 80% of students engaged in some type of shelter-in-place behavior, not every student sheltered-in-place until the all-clear signal was issued. Approximately 19% of the students who initially sheltered-in-place indicated they resumed their normal activities before the all-clear signal was given.
- c. Similar to the concern over the students who did not shelter-in-place until the all-clear signal was given are the findings regarding whether students engaged in the Department of Homeland Security recommended protective behaviors. A majority of the students did not perform most behaviors. One explanation for not performing some of these behaviors may lie in one of the traits ascribed to millennials: their abundance of technological skills and the availability of electronic devices such as smartphones and tablets (Bauerlein, 2009). The data support this explanation in that almost no students turned off the ringers on their cellular telephones, 44% of the students alerted someone else about the incident, and 65% of the students monitored the university's web site for additional information regarding the incident.

7. Planning and Response to an Active Shooter: An Interagency Security Committee Policy and Best Practices Guide November 2015

- a. The Interagency Security Committee (ISC), under the authority of Presidential Executive Orders 12977 and 13286, mandates that the following policy be enacted at all nonmilitary Federal facilities.
- b. POLICY: 1) Each facility shall have an active shooter preparedness plan, which is to be updated every two years, as needed. At a minimum, a plan should comprise the following elements:
 - i. Security Assessments
 - ii. Preparedness
 - iii. Communication
 - iv. Incident Plan (i.e., actions to take during an incident)
 - v. Training and Exercises
 - vi. Post Incident Recovery
 1. Employees
 2. Operation
- c. The goal of the ISC's Active Shooter Working Group is to promote the highest chance of victim and responder survivability through awareness, prevention, education, and training.
- d. This guidance is designed to be applicable to all buildings and facilities in the United States occupied by Federal employees. These include existing buildings, new construction, or major modernizations; facilities owned, or being purchased, or leased; stand-alone facilities; Federal campuses; where appropriate, individual facilities on Federal campuses; and special-use facilities.
- e. Due to the nature of an active shooter event, this document contains guidance for all who might be involved, including law enforcement agencies, facility tenants, and the public.
- f. However, because active shooter situations are also frequently over prior to the arrival of law enforcement, individuals must be prepared both mentally and physically to deal with an active shooter situation.
- g. There are no hard links to provide an accurate profile of an active shooter.
- h. The ISC Active Shooter Working Group's primary mission was to develop one cohesive active shooter document that agencies housed in Federal facilities can use as a reference to enhance preparedness for an active shooter incident(s). This document may also be useful to other local jurisdictions across the United States.
- i. Training and exercises are the best activities to help prepare personnel to react quickly and effectively in emergency situations.
- j. Not unlike periodic fire drills, continual awareness campaigns of the active shooter threat can ensure a much higher chance of reacting quickly and surviving an actual situation.

- k. Instructor-led training is more formal and requires a time commitment from participants for the duration of the course. In some cases, online or web-based instruction is a suitable alternative that can reduce or alleviate scheduling conflicts or travel requirements.
 - l. To be prepared for an active shooter incident, facilities should train facility occupants and on-site security staff in what to expect and how to react. After conducting training sessions, it is essential to reinforce the classroom or on-line instruction with realistic exercises.
 - m. There are many types of exercises, starting with discussion-based exercises such as seminars and tabletop exercises. Activities can graduate to operations-based exercises utilizing personnel and equipment from multiple jurisdictions culminating in a full-scale exercise.
 - n. All drills and exercises should be announced prior to conducting them.
 - o. Individuals need to decide what action is appropriate based on their locations.
 - p. While they should follow the plan and any instructions given by appropriate facility representatives during an incident, they will often have to rely on their own judgment. The mental rehearsal of scenarios and considering response options in advance will assist individuals and groups in quickly selecting their best course of action.
 - q. While personal safety is the primary consideration in any emergency, helping others to safety increases the survivability for all potential victims.
 - r. Occupants should do the following:
 - i. If it is safe to do so, the first course of action that should be taken is to run.
 - ii. If running is not safe, lock the doors and/or barricade.
 - iii. Hide along the wall closest to the exit but out of view from the hallway (which would allow the best option for ambushing the shooter and for possible escape if the shooter enters or passes by the room).
 - iv. If neither running nor hiding is a safe option, when confronted by the shooter individuals in immediate danger should consider trying to disrupt or incapacitate the shooter by using aggressive force and items in their environment, such as fire extinguishers, chairs, etc. Research shows there is strength in numbers, as indicated in the earlier mentioned study. The potential victims themselves have disrupted 17 of 51 separate active shooter incidents before law enforcement arrived.
- 8. Guide for Developing High-Quality School Emergency Operations Plans**
- a. Source: U.S. Department of Education, Office of Elementary and Secondary Education, Office of Safe and Healthy Students, Guide for Developing High-Quality School Emergency Operations Plans, Washington, DC, 2013.
 - b. Families and communities expect schools to keep their children and youths safe from threats (human-caused emergencies such as crime and violence) and hazards (natural disasters, disease outbreaks, and accidents). In collaboration with their local

government and community partners, schools can take steps to plan for these potential emergencies through the creation of a school Emergency Operations Plan (school EOP).

- c. Once an initial set of threats and hazards have been identified through the process described in the previous section, the planning team should select suitable assessment tools to evaluate the risk posed by the identified threats and hazards.
- d. Plans must comply with the Americans with Disabilities Act, among other prohibitions on disability discrimination, across the spectrum of emergency management services, programs, and activities, including preparation, testing, notification and alerts, evacuation, transportation, sheltering, emergency medical care and services, transitioning back, recovery, and repairing and rebuilding.
- e. Bringing community partners (e.g., law enforcement officers, fire officials, and EMS personnel) that have a role into the school to talk about the plan will make students and staff feel more comfortable working with these partners.
- f. Ideally, schools will create an exercise program, building from a tabletop exercise up to a more advanced exercise, such as a functional exercise.
- g. Active shooter situations are unpredictable and evolve quickly. Because of this, individuals must be prepared to deal with an active shooter situation before law enforcement officers arrive on the scene.
- h. Considerations must be given to how the school community will be notified that there is an active shooter on school grounds. This could be done through the use of familiar terms, sounds, lights, and electronic communications such as text messages.
- i. No single response fits all active shooter situations; however, making sure each individual knows his or her options for response and can react decisively will save valuable time. Depicting scenarios and considering response options in advance will assist individuals and groups in quickly selecting their best course of action.
- j. As the situation develops, it is possible that students and staff will need to use more than one option.
- k. Students and staff should be trained to hide in a location where the walls might be thicker and have fewer windows. In addition:
 - i. Hide along the wall closest to the exit but out of the view from the hallway (allowing for an ambush of the shooter and for possible escape if the shooter enters the room); as a last resort when confronted by the shooter, adults in immediate danger should consider trying to disrupt or incapacitate the shooter by using aggressive force and items in their environment

9. Bill Lewinski, Ph.D. Force Science Institute

- a. .19-.31 sec is range of average shot of handgun.
- b. Taking your eyes off the threat adds 1 second to respond to threat.
- c. Impossible to multi task, brain can only focus on a single task, can go task to task in milliseconds.
- d. Tunnel vision (external narrow attention) is 2-4 degrees, normal vision is 120 degrees.
- e. 0.3 seconds to blink eye (person spends hour a day with eyes closed from blinking).

- f. Average time to react to being shot and fire back 1.99-2.44 seconds.
- g. Visual reaction to stimulus is .05 seconds slower than audio stimulus.
- h. 0.7-0.8 seconds to react to expected situation.
 - i. It takes 1.5-1.6 seconds (2x longer) to react to unexpected situation.
- i. .06-1.5 seconds to go from looking straight to look to the side then back to looking straight.
- j. 0.35 seconds to reassess a situation.

10. Muir, Adapting Online Education to Different Learning Styles

- a. Students learn:
 - i. 10% of what they read.
 - ii. 20% of what they hear.
 - iii. 30% of what they see.
 - iv. 50% of what they see and hear.
 - v. 70% of what they say.
 - vi. 90% of what they say and do.