

BUSINESS & PUBLIC SPACES

Active Shooter Typology Report.

From well-known attacks to rarely discussed incidents, we look at each type — and what you can do to protect your organization effectively.

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Introduction

“Shooter is halfway up, halfway up in the **Mandalay Bay Hotel...**”

That was the radio transmission from a Las Vegas patrol officer seconds after the shooting began at the 2017 Route 91 Harvest Festival.

At the street level, there was nothing this officer could do to stop an elevated shooter in a high-rise hotel room other than share critical information over the radio.

Sadly, but predictably, this critical information went unnoticed as other officers frantically called in wounded victims and erroneous information about the location of multiple “active shooters” inside the concert venue.

More than six minutes and 40 seconds passed before police supervisors identified the shooter’s location and directed officers to the hotel’s 32nd floor.

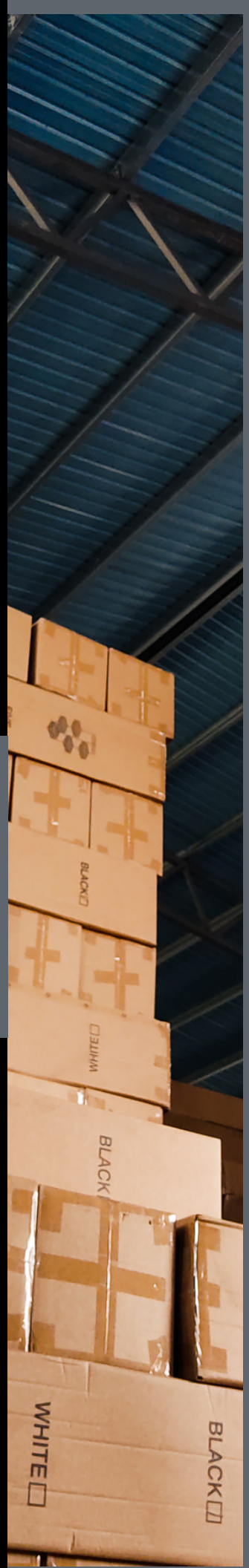
ZeroEyes

In February 2019, at the **Henry Pratt Co. Warehouse** in Aurora, Illinois, a former employee walked into the plant carrying a handgun with a laser sight. He killed five employees, including the plant manager and human resources manager.

Among the seven wounded were five police officers. Although police arrived within four minutes, the shooter was familiar with the layout and barricaded for 90 minutes before being fatally shot by officers.

Just months later, in December, a man and a woman armed with a semi-auto rifle, shotgun, and multiple handguns ran into a Jewish grocery store in Jersey City, New Jersey. They fired shots at all the employees and customers they could find during a hate-based attack.

Equipped with hundreds of rounds of ammunition, they entered into a three-hour shootout with police. Their plan had no end other than dying during a prolonged firefight with officers.



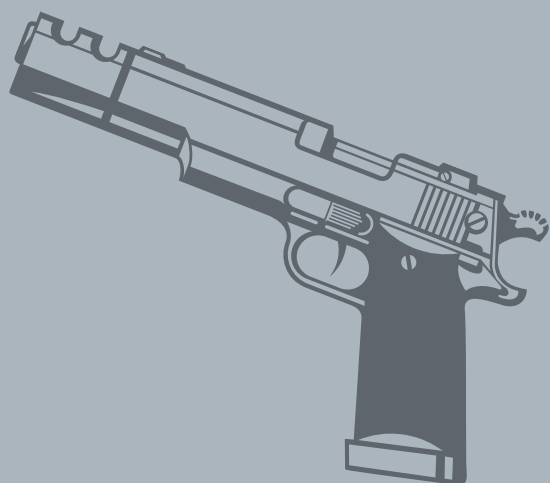
Three years later, in yet another hate-based attack, a heavily armed and armored man walked into Tops Friendly Markets in Buffalo, New York, and shot the armed security guard at the front of the store. He paced the aisles, looking for customers. When police arrived, he ran out of defenseless targets and surrendered.

Each of these situations is distinctly different...

- In Las Vegas, a sniper fired down at the crowd from a vantage point that wasn't easily identifiable or accessible to police officers working the event.
- The Tops Markets shooter rushed toward a building that didn't allow guns inside and was determined to fight his way in by any means possible. His attack ended in surrender when he ran out of potential victims.
- Inversely, in Jersey City, the pair of attackers planned to continue fighting for as long as possible until they were killed.
- In Aurora, a former employee knew he could sneak into the facility, where to find his targets, and the location that would give him an opportunity to ambush arriving officers.

For business safety directors drafting emergency plans or for police officers responding, these cases can be deemed “active shooter” events — even though they're all different.

Planning for Just One Type of Attack Can Have Deadly Consequences



DID YOU KNOW

There are nine types of active shooter scenarios.

When the same terminology is used to describe multiple circumstances, the predictable result is that plans, training, and response procedures fail to account for the specific tactics needed to address each one.

What does “active shooter” really mean?

While it’s important to know the answer, it’s crucial to understand the nine different active shooter attack types. Here, we’ll examine them all.

Attacks are generally labeled as an “active shooter” when the perpetrator kills and/or wounds as many victims as possible, either targeted or random, within the business or public space during a continuous episode of violence.

Active shooters often don’t stop shooting until they’re subdued, cornered, or apprehended by staff, bystanders, or police.

The use of this definition/criteria for an “active shooter” blends the FBI’s definition with homicide literature’s differentiation between a rampage killing versus a traditional homicide, family annihilation, or episodic serial killer.

There are widely differing definitions for mass killer, serial killer, rampage killer, active shooter, and school shooter (Madfis, 2020; Newman, 2004; Duwe, 2007; Fox, 2018; FBI; USSS; DOJ).

There’s no legal definition or specific criminal charges for an “active shooter,” “school shooter,” or “mass shooter.”



Shootings Are Rarely Random

"Active shooter" is an inconsistently defined term that serves as an umbrella for multiple different attack types.

The locations of business and mass public shootings are rarely random because the attack location has symbolic significance to the perpetrator. It's often a location where the shooter experienced unresolved trauma that manifests into a deep-seated grievance that they feel can only be resolved through indiscriminate violence (Peterson & Densley, 2021).

When there's a deep personal connection to the location, the perpetrator usually isn't a stranger to the venue, though many victims in businesses and public spaces may be random.

Business mass shooters are often current or former staff who, over time, have developed an increasingly negative and toxic relationship with company leadership, coworkers, and others.

Keep Reading for Warning Signs

Red Flags & Warning Signs

01 Behavioral Changes

Shooting in public places, specifically workplaces, are planned for weeks, months, even years. The perpetrators almost always have written notes, drawings, hit lists, maps, or manifestos detailing when, where, and why the shooting will happen. These attacks are not secret. A written plan is part of a cry for attention.

03 Fixation on Violence

The desire to commit mass violence is rooted in a specific grievance against people and places. When cries for attention and help are not heard, the shooter begins to fixate on public acts of violence as the only way to be noticed. Shooting becomes a method to get revenge for the perceived ways the place, people, or employers wronged them.

02 Overt & Veiled Threats

Committing the shooting is the final act in a long pathway to violence. Nearly all active shooters tell others (friends, family, co-workers, internet groups) about their plan or make threats of violence multiple times to get to get attention before the attack happens.

04 Isolation, Despair, & Suicide

Mass shootings are a final act of public suicide when the shooter feels there is no other way than to commit violence. Most often, the shooter either plans to commit suicide, be killed by police, or be jailed for the rest of their lives. There is rarely an escape plan or 'second act' of the plot.

Insider Threat

Someone very familiar with the target location may be able to:

- **Bypass security**
- **Attack at the weakest points**
- **Cause predictable security responses** that can be used to the attacker's advantage (like setting a fire alarm, knowing it results in building security leaving their posts while staff congregate in an outdoor courtyard)

Along with understanding the significance of the targeted location, recognizing the type of attack that's happening is critical to determine if people should:

1. **Run away**
2. **Stay inside**
3. **Lockdown/barricade in a safe place**

Let's look at the different types of attacks and some real-life examples...

The Nine Attack Types



■ Single Shooter: Inside Attack

01 | Deadly Intent

A surprise attack aimed to kill as many people as possible, both intended and random targets.

02 | Deep Knowledge

Insider knowledge of the target allows the shooter to freely access, bypass, or easily defeat security.

03 | Meaningful Target

Focus on symbolic target location aligning with the grievance of the shooter, often with a hit list of possible targets.

February 2019 — Henry Pratt Co. Warehouse, Aurora, IL

A 45-year-old former employee walked into the plant carrying a handgun with a laser sight. He killed five employees, including the plant manager and human resources manager. Among the seven wounded were five police officers. Although police arrived within four minutes, the shooter was familiar with the layout and barricaded for 90 minutes before being fatally shot by officers.



CCTV footage released by the Aurora Police Department recorded the attack.

■ Multiple Shooter: Inside Attack

01 | Shared intent by two or more insiders

A coordinated surprise attack aimed to kill as many people as possible, both intended and random targets.

02 | Deep Knowledge

All of the attackers have insider knowledge and access to the target that allows them to bypass or easily defeat security. Plans involve working as a team to move targets into specific areas of vulnerability.

03 | Meaningful Target

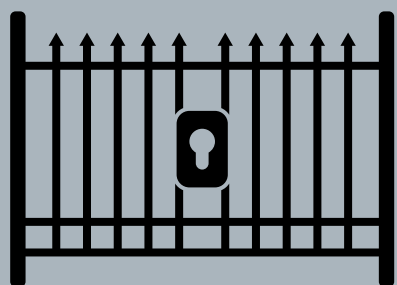
There is a grievance shared by a pair or group of shooters who direct their collective anger at the location. Often one attacker is the 'ringleader' with the deepest grievance who recruits others into the plot.

December 2015 — Inland Regional Center, San Bernardino, CA

A married couple targeted a San Bernardino County Department of Public Health (where the husband was employed) training event and Christmas party of about 80 employees in a rented banquet room.

After investigators discovered messages between the couple describing a commitment to jihadism and martyrdom, the attack was deemed an act of terrorism. They killed 14 people and seriously injured 22.

■ Frontal Assault



Raiding a fixed target that the shooter(s) does not have permission to enter.

May 2022 — Tops Friendly Markets, Buffalo, NY

A man wearing body armor and a ballistic helmet and armed with a semi-auto rifle and shotgun exited his car with his weapons visible at the Tops Friendly Markets in Buffalo, NY.

He shot customers inside and outside, plus the store's armed security guard (who shot the attacker, but his bullet didn't penetrate the bulletproof vest).

Instead of barricading inside the store or opening fire on police officers, the attacker surrendered as soon as the first officers arrived, having run out of defenseless targets.



■ Sniper Attack



Firing at a fixed target from a distance beyond the security parameter.

April 2022, Edmund Burke School, Washington, DC

A 23-year-old man fired a rifle at students inside a glass pedestrian bridge on the school campus from his fifth-floor apartment building across the street.

The first 60 shots were fired in 18 seconds and 200 total rounds were fired. He then wounded a student on the glass bridge, a school security guard, a parent waiting in a vehicle to pick up a child, and another adult pedestrian.

The shooter committed suicide when police raided his apartment hours later. Police found six firearms, including rifles and handguns. The shooting was live-streamed with a camera inside the rifle scope. While waiting for police, the shooter made edits to the Edmund Burke School Wikipedia page to add his attack.

■ Assassination or Ambush

Targeted killing of a specific individual(s) because the shooter knows the specific victim(s) will be at the location.

14%

of planned attacks at businesses and public places are ambushes or assassinations.

July 2021: BioSpine Institute, Brooksville, FL

A man walked into an outpatient surgery center staffed by 10 doctors, nurses, and administrators. He entered the patient area and shot an unidentified woman multiple times.

Staff fled the facility and called 911, spurring an “active shooter” response from police. While searching the facility, officers found the man inside a closet, and he surrendered. Police determined the shooting was related to a domestic dispute, and the shooter targeted the woman because he knew she would be at the medical center.

■ Hostage-Taking

Unlike 1970-1990s, hostage situations have become very rare (less than 2% of attacks in public spaces)

Taking hostages based on ideology, grievance, or financial gains (ransom).

January 2021: Children's Medical Group, Austin, TX

A doctor with stage IV cancer who recently moved to Austin inquired about volunteering at a pediatrician's office.

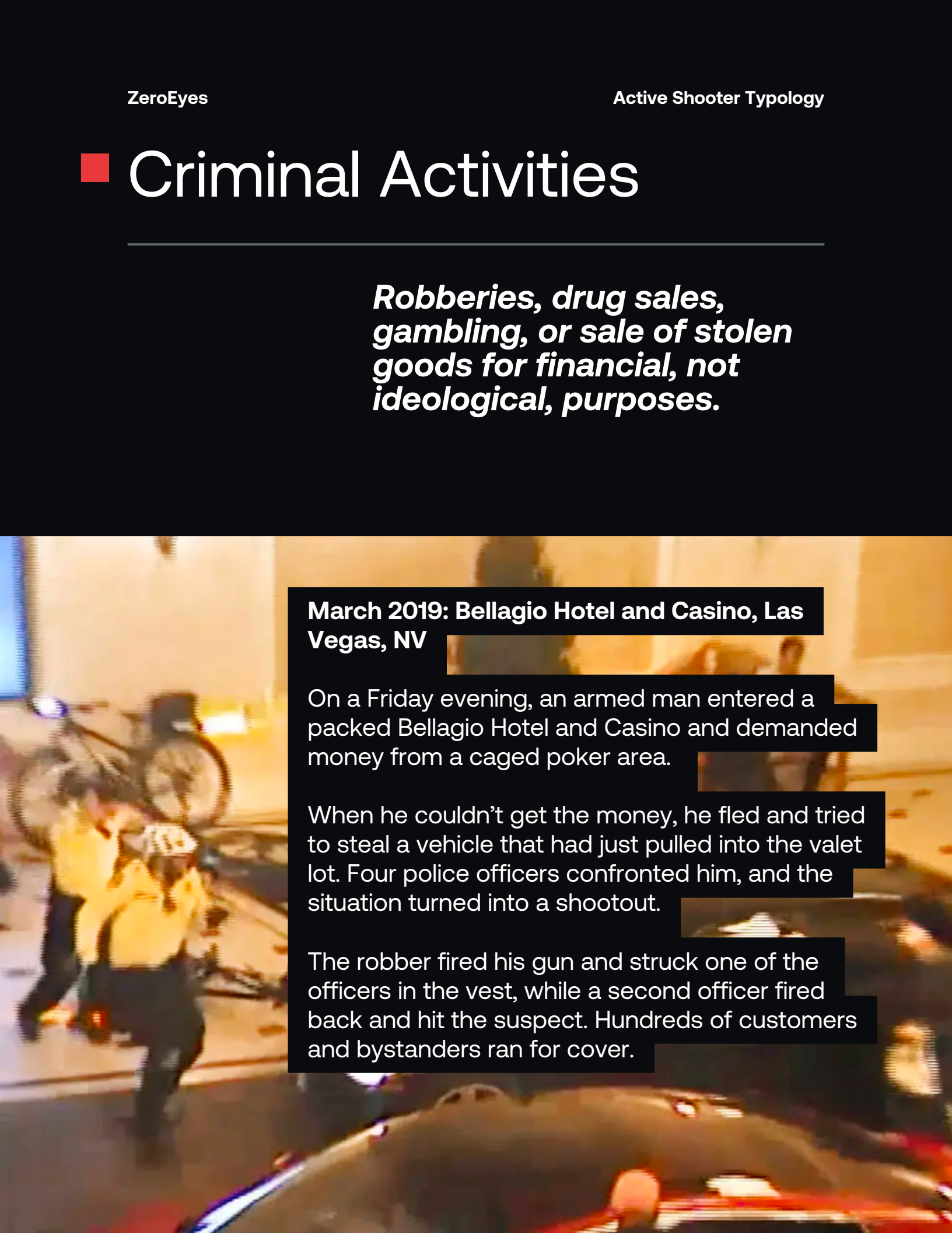
Four days later, he returned to the office with two duffel bags and two firearms, holding five employees at gunpoint before killing one of the office partners, Dr. Lindley Dodson, a pediatrician.

The shooter had never met any of the employees. After six hours of attempted negotiations, police raided the office and found the shooter dead from a self-inflicted wound.



■ Criminal Activities

Robberies, drug sales, gambling, or sale of stolen goods for financial, not ideological, purposes.



March 2019: Bellagio Hotel and Casino, Las Vegas, NV

On a Friday evening, an armed man entered a packed Bellagio Hotel and Casino and demanded money from a caged poker area.

When he couldn't get the money, he fled and tried to steal a vehicle that had just pulled into the valet lot. Four police officers confronted him, and the situation turned into a shootout.

The robber fired his gun and struck one of the officers in the vest, while a second officer fired back and hit the suspect. Hundreds of customers and bystanders ran for cover.

■ Siege



Entering a facility and holding a defensive position as long as possible without taking hostages or having a plan to escape.

December 2019, JC Kosher Supermarket, Jersey City, NJ

A man and a woman armed with a semi-auto rifle, shotgun, and multiple handguns ran into a Jewish grocery store and fired shots at all the employees and customers they could find during a hate-based attack.

Equipped with hundreds of ammunition rounds, they entered into a three-hour shootout with police. Many of the assailants' shots penetrated the walls of a Jewish school across the street, where children lay on the floor of classrooms until rescued by police. The couple's van parked outside contained multiple homemade explosives. Police eventually killed both shooters.

The original grocery store never reopened. With community support, the store reopened in a new location the following year... however, it's now permanently closed.

■ Complex Coordinated Attacks

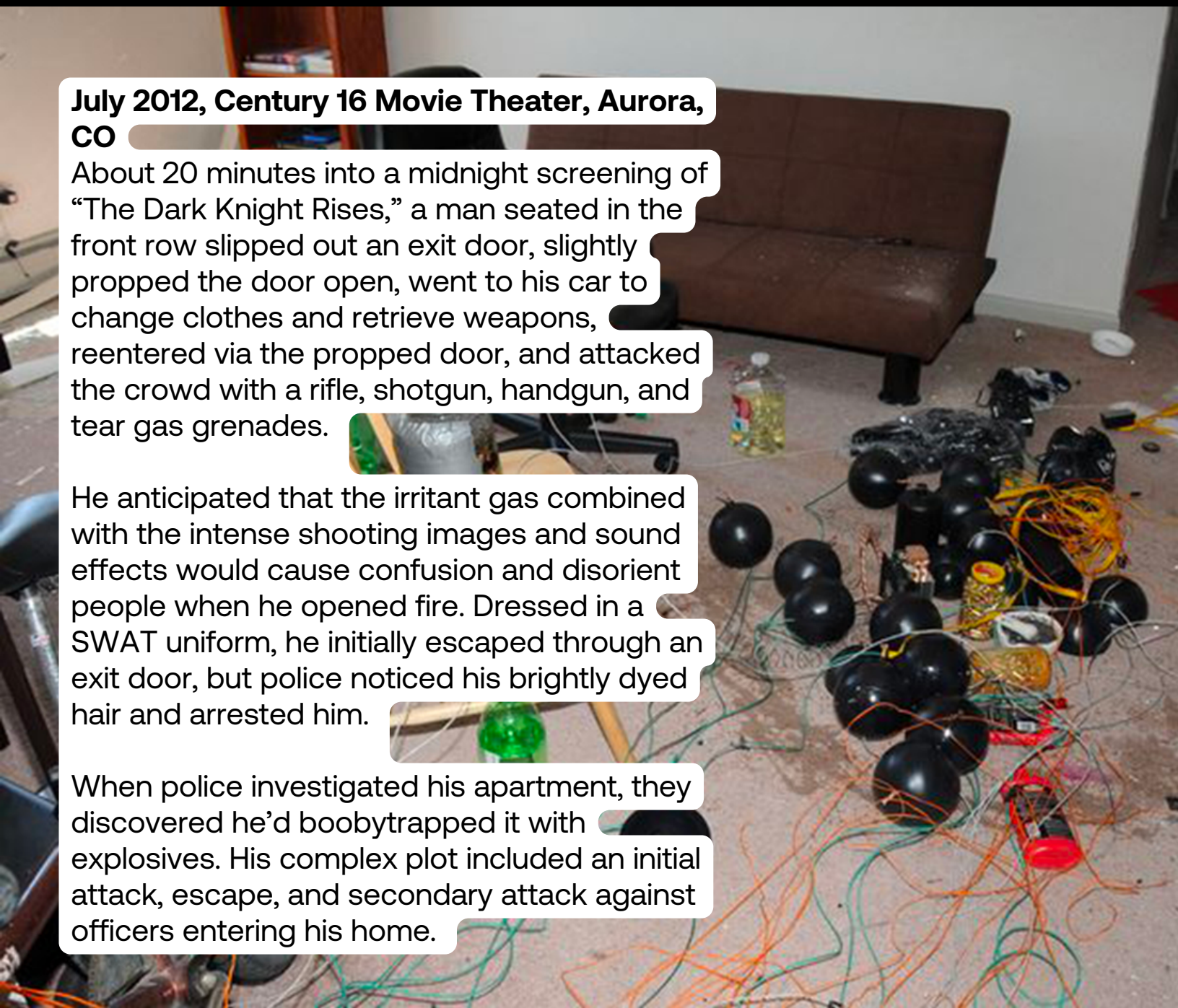
A hybrid of any combination of attack types.

July 2012, Century 16 Movie Theater, Aurora, CO

About 20 minutes into a midnight screening of “The Dark Knight Rises,” a man seated in the front row slipped out an exit door, slightly propped the door open, went to his car to change clothes and retrieve weapons, reentered via the propped door, and attacked the crowd with a rifle, shotgun, handgun, and tear gas grenades.

He anticipated that the irritant gas combined with the intense shooting images and sound effects would cause confusion and disorient people when he opened fire. Dressed in a SWAT uniform, he initially escaped through an exit door, but police noticed his brightly dyed hair and arrested him.

When police investigated his apartment, they discovered he’d boobytrapped it with explosives. His complex plot included an initial attack, escape, and secondary attack against officers entering his home.



Background

There is a rich body of academic literature on mass shootings, but **the focus of most studies is either the underlying causes or impacts after an attack, rather than analyzing the characteristics of the attack itself.**

One research topic is the individual psychology of perpetrators and how their threatening behaviors in childhood and adolescence can be identified to prevent a future attack (Weisbrot, 2008; Allen, 2008; Meloy, 2011; Reeves, 2018).

Multiple studies look at the psychological trauma of victims following an incident (Suomalainen, 2011; Haravuori, 2011).

The long-term economic impact and lifetime earning potential of communities that experienced a school shooting have been analyzed by economists (Levine, 2021).

Organizational theory rather than psychology has been used to explore how failures occurred—like missing overt warning signs displayed by the attacker— and missed the opportunity to prevent attacks (Goodrum, 2022).

While the motive of mass shootings has been used to develop psychological profiles (Silva, 2022; Silva, 2021; Peterson, 2022; Fox, 2016), the tactical strategy selected by the shooter, has never been the focus of academic analysis.

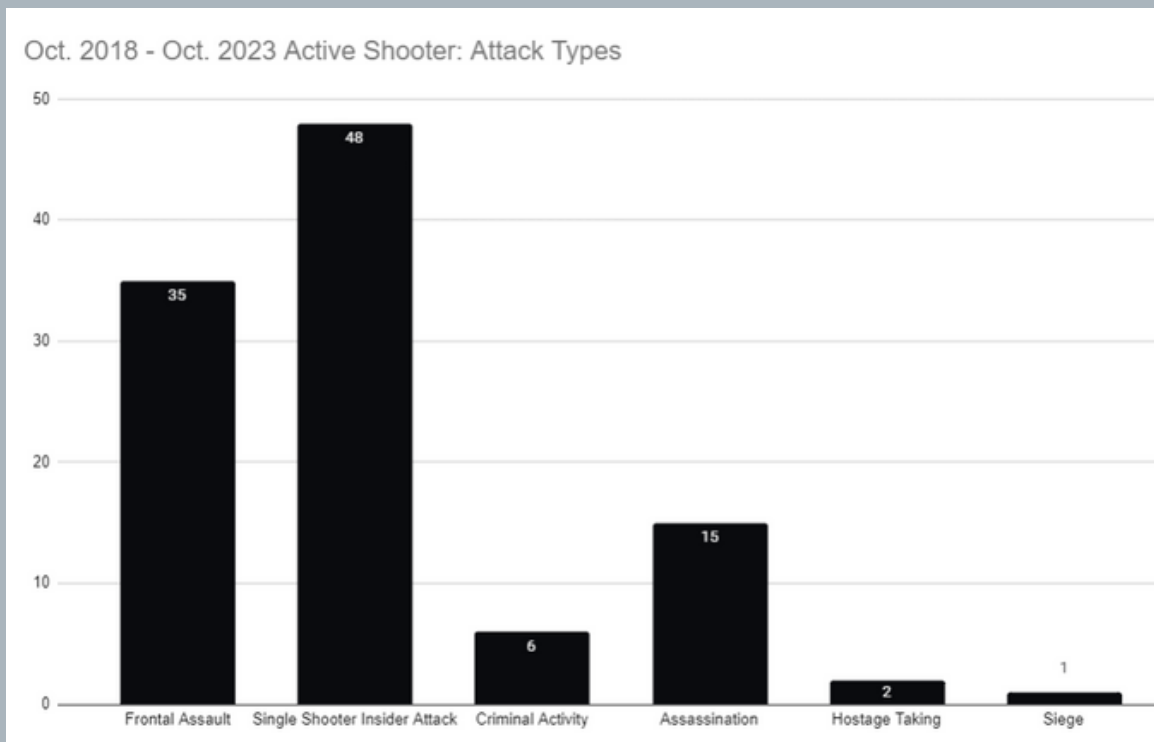
The firearms tactics employed by terrorist groups around the world are grouped into the categories of “assassination, single-shooter attacks, two-shooter team attacks, frontal assaults, complex attacks, hostage taking, robbery, and siege” (Ross, 2012).

Unlike additional, motive-based analysis of mass shootings that reaffirm what we already know about individual social grievances, pathway to violence, and psychological traits of the attacker, **a tactics-based examination of mass shootings is completely missing from the canon of existing literature on targeted attacks.**

**Keep Reading for Attacks in Businesses
& Public Spaces**

Attacks in Businesses & Public Spaces

The ZeroEyes Research Center identified 119 attacks between October 2019 and October 2023 that fit the general “active shooter” definition of an attack when the perpetrator killed and/or wounded victims — either targeted or random — within a business or public space during a continuous episode of violence.



230

Victims

257

Wounded

Within this sample, the average number of victims per shooting was 4.2.

It's important to note that these 119 attacks are not a comprehensive list of every mass shooting or active shooter situation during this period. This sample intends to provide generalizable findings about these shootings' characteristics.

In these incidents, the assailants' tactics aren't evenly distributed across the nine attack types.

Most planned attacks in businesses and public spaces were single-shooter insider attacks. While a business may invest in perimeter security or hardening the building with ballistic doors or windows, an insider has access and permission to be inside the defense layers.

The second most common type of attack was frontal assault, where a perpetrator plans to be forbidden from entering a facility and is heavily armed to fight their way inside.

Assassinations create significant challenges for securing public spaces and businesses. These shooters target a specific person or group at a time or place that they're vulnerable to an attack. When assassinations are plotted, a workplace or frequently visited public space is often the most predictable location to shoot the intended target.

Two-thirds of the planned attacks took place *inside* the building.

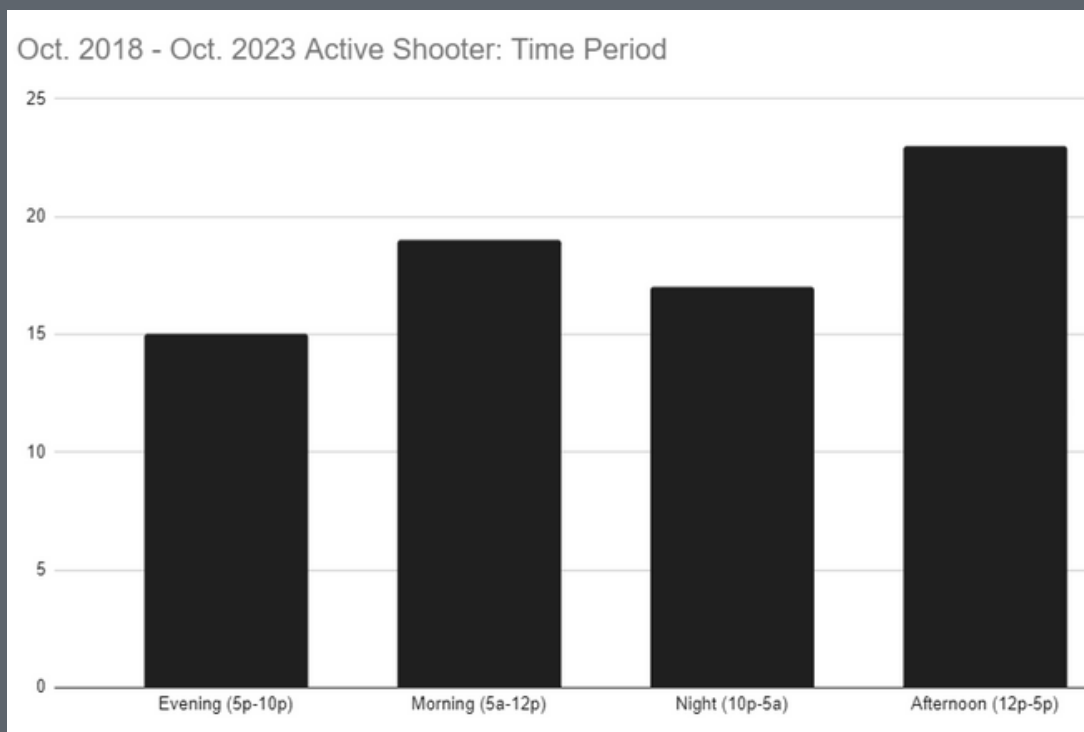
It makes sense based on the attack types because insider attacks are committed by shooters allowed into the building, and frontal assaults are those fighting their way inside.

A small number of shootings were both inside and outside. In such situations, if the shooter's location can be quickly identified, getting people to the opposite location may save lives.

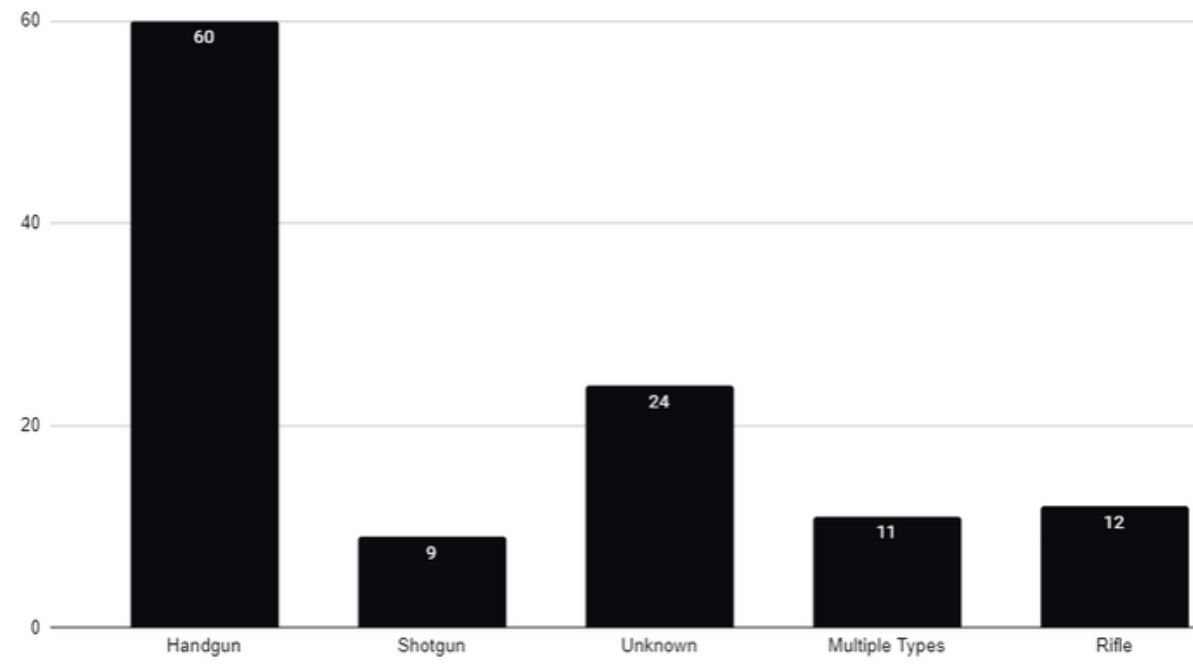
For example, if there's a shooter inside a building committing a planned attack, notifying customers and employees to leave as quickly as possible, rather than lockdown, may be advisable in most situations.

Planned attacks occurred during different times of day.

Many people think gun violence is an after-dark problem — but there were more shootings during the morning than between 10 p.m. and 5 a.m.



Oct. 2018 - Oct. 2023 Active Shooter: Firearm Type



This time-of-day variety means the primary points of contact during emergencies may not be onsite when shootings occur.

If a facility's emergency notifications require senior-management approval, someone must be available 24/7 to approve or send the alert.

Handguns were the most common weapon used, as they're easier to conceal and sneak into facilities while committing the most common attack type: single-shooter insider.

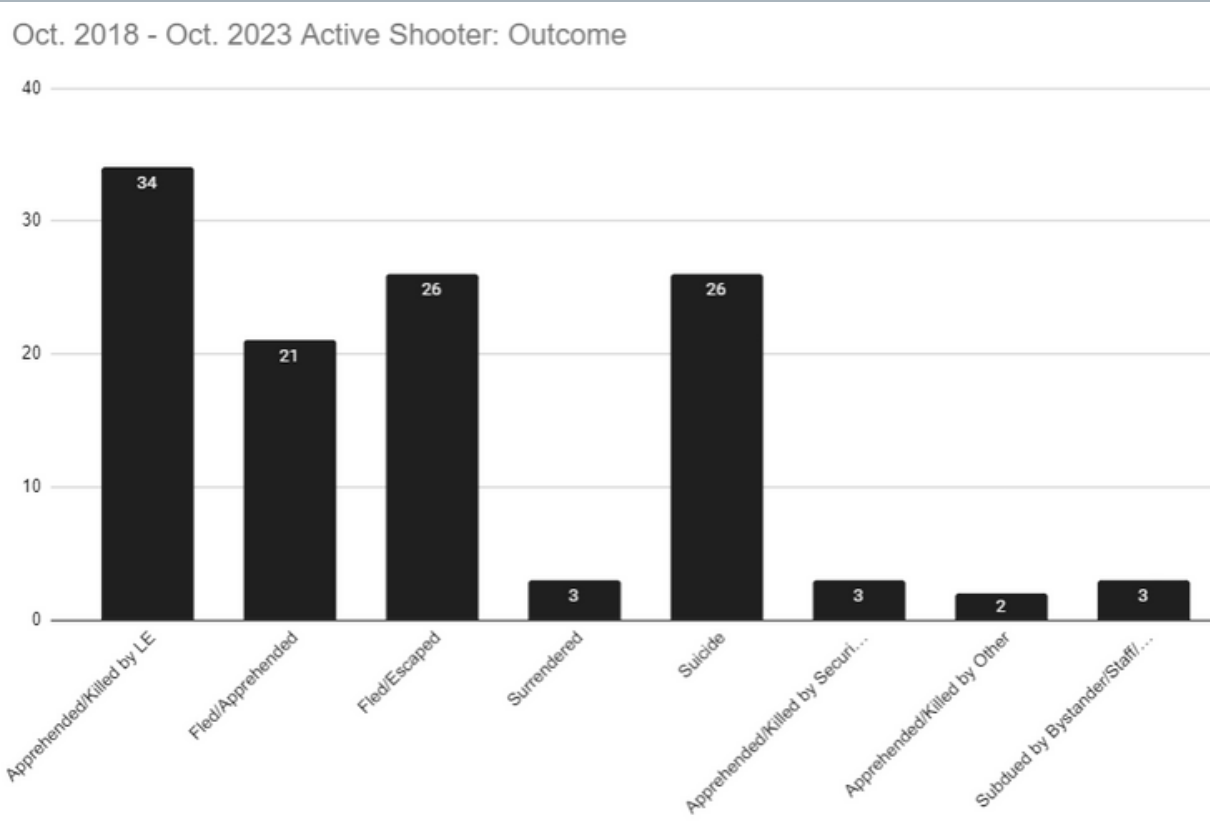
Active shooters with rifles, shotguns, and multiple types of weapons are heavily armed to fight their way into locations, which aligns with the second most common attack type: a frontal assault on the facility.

40%
of active shooter attacks end with the shooter fleeing.

An active shooter attack most frequently ends with the shooter fleeing (39.8%) the area (combining both “fled” columns in the graph below reveals this).

After fleeing, they’re caught roughly half the time; the rest escape.

What can help police identify and arrest more of these attackers: shooting alerts that include the perpetrator’s location and image.



When active shooters don't flee, they're most likely apprehended or killed by police, or they take their own lives. Many mass shootings are acts of public suicide by a person with a direct connection to the location who blames the workplace, retailer, or agency for the problems in their life.

In less than 7% of the cases, a security officer, bystander, or coworker subdued the shooter before police arrived.



Implications for Securing Businesses and Public Spaces

Increasingly, securing public spaces falls into two categories:

- **Hardening the physical structure**, such as metal detectors, bulletproof glass, and ballistic materials.
- **Increasing policing or security patrols**, including armed or unarmed security staff.

These security measures are not effective in 78% of cases.

Insiders who are allowed to access the facility (45%) or frontal assaults where a heavily armed person shoots their way in (33%) would not have been prevented by these measures.

In the 15 assassination or ambush plots, the attack plan was designed to target a person or group of people in a specific place where they would be vulnerable (e.g., entering or leaving the building).

In all of these attacks, a hardened office building, mall, arena, or public space would not prevent the shooting from happening.

A root cause of misaligned security investments and strategies is that “active shooter” and “mass shooting” are blanket terms used to describe multiple different attack types.

When security strategies are developed based on a broad category rather than the specifics of different types, different response plan and procedures may have varying levels of effectiveness for each scenario.

The nine attack types must be treated as distinctly different scenarios — each with its own unique set of plans and procedures.

While these situations have not been common in recent years, hostage situations were common in public spaces from the early 1970s until the 2000s. Hostages are rarely considered during planning or training. If police responders use their common, generic, “run to the sound of gunfire” active-shooter response during a hostage situation, this risks escalating a situation that could be peacefully negotiated.

Emergency response and protective actions for a surprise attack inside a business by a current employees versus a frontal assault by a heavily armed disgruntled customer or former employee are completely different.

If police, employees, and facility management lack planning and training for each scenario, the consequences of taking the wrong actions can be deadly.

Situational Awareness Can Save Lives.

DID YOU KNOW

AI gun detection technology provides businesses, law enforcement, and emergency medical services with critical, time-saving information.

Without real-time images and locations of the shooter, it's challenging for police and school officials to determine which of the nine attack types is happening.

ZeroEyes delivers a proactive A.I. gun detection solution that integrates into existing security cameras to stop mass shootings and gun-related violence by reducing response times, providing situational awareness, and delivering clarity...ultimately saving lives.

Our alerts provide images and location of the shooter to help determine what type of attack is happening and then determine the best response to the attack.

Active Shooter: Options

When a shooting starts, your staff and patrons have two options: run or lockdown.

Detection Before an Attack

When ZeroEyes detects the shooter before they enter the building, or as they brandish a weapon outside for an attack, locking doors and avoiding windows can make the inside of the business a safe place for employees and customers to stay until police arrive—and can give security officers the critical time needed to stop the assailant.

Awareness During an Attack

If there's a surprise attack inside a business or public space, ZeroEyes can provide the shooter's location within seconds, telling customers and staff if they should run or shelter. If the shooter is nearby, it's usually best to run away. In a large facility, if the shooter is on the opposite side of the building or in another building, it's probably best to shelter inside.

Safer Path Forward

By knowing the shooter's location in real-time, the type of firearm(s) brandished, and the number of assailants, customers and staff can take the most effective action and use other safety measures to the fullest potential.

Without a system like ZeroEyes, it's hard to decide when it's best to run as far from the building as possible or lockdown inside.

Now, critical decisions can be made immediately: Situational awareness is within reach.

About the Author

David Riedman is the creator of the [K-12 School Shooting Database](#) and ZeroEyes' Director of Research. He conducts research on gun violence in all types of public spaces, including schools, and has authored multiple peer-reviewed articles on analyzing school shootings, homeland security policy, and critical infrastructure protection.

He formerly worked as the Homeland Security Adviser for the Downtown Washington, DC Business Improvement District, a national security consultant, and served for 18 years as a firefighter and emergency medical technician in Maryland, where he reached the rank of captain.

David has keynoted the largest conferences for public health, emergency management, and campus security. He's been cited by over 1,000 media outlets, including The New York Times, Washington Post, The Guardian, Chicago Tribune, National Public Radio, The Wall Street Journal, Al Jazeera, Bloomberg, Freakonomics Radio, and the New England Journal of Medicine.

About ZeroEyes

Founded in 2018 by a team of Navy SEALs and elite technologists, ZeroEyes was created to protect people from facing similar circumstances.

Outraged by school mass shootings and their impact on children, educators, and communities, our cofounders—most of them parents—were compelled to develop a proactive solution to keep people safe.

The solution was developed using thousands of proprietary images and videos captured to train our AI weapons detection model, giving us the most comprehensive and superior technology in the market.

Today, our patented solution is recognized by the U.S. Department of Homeland Security (DHS) as a promising anti-terrorism technology and is the first video analytics technology to receive SAFETY Act DT&E Designation.

To learn more about how ZeroEyes saves time and saves lives, visit ZeroEyes.com.