

EDUCATION

Active Shooter Typology Report.

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

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Introduction

“Fire drill. Everyone line up to go outside.”

As 5th-period classes started at Westside Middle School in Jonesboro, AR, the fire alarm bells started ringing. Following their training, students lined up and filed out of the building

To the teachers' surprise, several “pops” rang out as they gathered near the gymnasium. It sounded like someone lit fireworks to make the drill more realistic. But it wasn't fireworks. Two students hidden in the treeline were firing shots at their classmates after they deliberately pulled the fire alarm to draw students outside.

Just like most other school shooters over the last 60 years, the attacks are committed by current and former students who know the layout of the school and the most vulnerable time and place for an attack.

Five were killed and 10 others wounded before students and staff realized what was happening and took cover inside the school.

ZeroEyes

Two decades later, in Parkland, Florida, a teen with a rifle snuck into Marjory Stoneman Douglas High School and became an “active shooter” as he fired in the school hallways. After firing hundreds of rounds and shooting 34 students and staff, he set down his rifle and walked away from the building with other teens fleeing the school.

School security nationwide ramped up after Parkland. Then on May 7, 2019, two students walked into STEM School Highlands Ranch, a charter school located in Douglas County, Colorado, just miles from Columbine High.

Their coordinated attack plan involved each going to separate areas of the school—one in the high school section and the other in the middle school section—corralling victims between both shooters.

One assailant entered the high school area, pulling a gun from a guitar case as he entered a classroom. Student Kendrick Castillo jumped on him and was fatally shot in the chest. Other brave students rushed and disarmed the shooter. In the middle school area, the other assailant wounded four victims, then was tackled by a security guard.

Active Shooter Typology



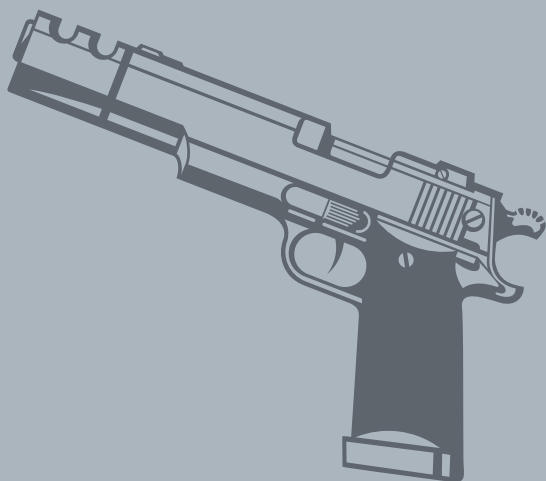
Just three years later, an “active shooter” crashed his truck through a fence and began firing as he ran into Robb Elementary School in Uvalde, Texas. Officers radioed reports of multiple “active shooters”—including an “active shooter” on the roof—before finally realizing there was a single teen with a rifle inside a classroom.

Each of these situations is distinctly different...

- At **Westside Middle School**, current students got classmates and teachers outside the school and **ambushed** them.
- In **Parkland**, a former student **knew he could sneak across campus** and slip away with the crowd when he stopped shooting.
- Inversely, at **STEM School Highlands Ranch**, current students were allowed to carry musical instrument cases into the building, and the **surprise attack** wasn't evident until the moment it started.
- The shooter at **Robb Elementary** was rushing toward a building he wasn't allowed to enter and was **determined to fight his way inside by any means possible**.

For a school principal drafting an emergency plan or for police officers responding, these cases can be deemed “active shooter” attacks — *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 school campus, 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 school staff, other students, 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,” “mass shooter,” or “school 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 school shootings and mass public shootings are **rarely random** because the attack location has **symbolic** significance to the perpetrator. It's often a school 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 public spaces or schools may be random.

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

Keep Reading for Warning Signs

School Shooting Red Flags

01 Written Plan

School shootings 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.

02 Overt & Veiled Threats

Committing the shooting is the final act in a long pathway to violence. Nearly all school shooters tell other students about their plan or make threats of violence multiple times to get to get attention before the attack happens.

03 Fixation on Violence

The desire to commit mass violence is rooted in a specific grievance against the school. 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 school wronged them.

04 Isolation, Despair, & Suicide

School 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 students and staff congregating 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.

December 2019 — Saugus High, Santa Clarita, CA

When classes changed, a straight-A student with no disciplinary history pulled a gun from his backpack. He fired randomly into a crowd of students in the school courtyard, striking five classmates before killing himself. The entire attack was over in 16 seconds.

■ 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

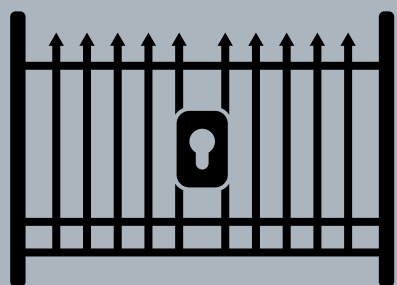
There is a grievance shared by a pair or group of shooters who direct their collective anger at the school. Often one student is the 'ring leader' with the deepest grievance who recruits others into the plot.

May 2019 — STEM School, Highlands Ranch, CO

Two current students entered the school armed with handguns and planned to shoot students at two separate locations. When one of the attackers walked into a classroom and pulled a gun from a guitar case, several students charged at him.

One student was killed as he tackled the shooter, giving two classmates time to subdue and disarm him. On the other side of the campus, the second shooter wounded four students before being tackled by a security guard.

■ Frontal Assault



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

October 2022 — Central Visual Performing Arts High, St. Louis, MO

A former student with a semi-auto rifle and 600 rounds of ammo loaded in magazines broke the window of a locked side door. He walked up the stairway to the third floor and began shooting at students in the hallway. He shot six students and staff—two fatally—before barricading inside a third-floor classroom where he was eventually killed by police.

Students jumped from the third-story windows to avoid being trapped in a classroom with the shooter. More than 200 rounds were fired inside the school.



■ 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 school.

8%

of school shootings are ambushes or assassinations.

October 2021: YES Prep, Houston, TX

A 25-year-old male former student, armed with a rifle, tried to open the locked doors and then fired shots to break the glass so he could get inside. He then fired shots down the hallway at the school principal.

The school went on lockdown, and the shooter surrendered to police when they arrived. The family reported that he had a history of mental illness and was hearing voices at the time of the shooting.

The shooter admitted the shooting to police and said the principal was not his target—he was looking for another staff member. No students were injured.

■ Hostage-Taking

Prior to 2004, this was the most common form of school attack.

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

September 2012: Normal Community High School, Normal, IL

A 14-year-old student pulled a handgun inside a classroom and told the teacher “This is my class now.” He began talking about his struggles and bullying.

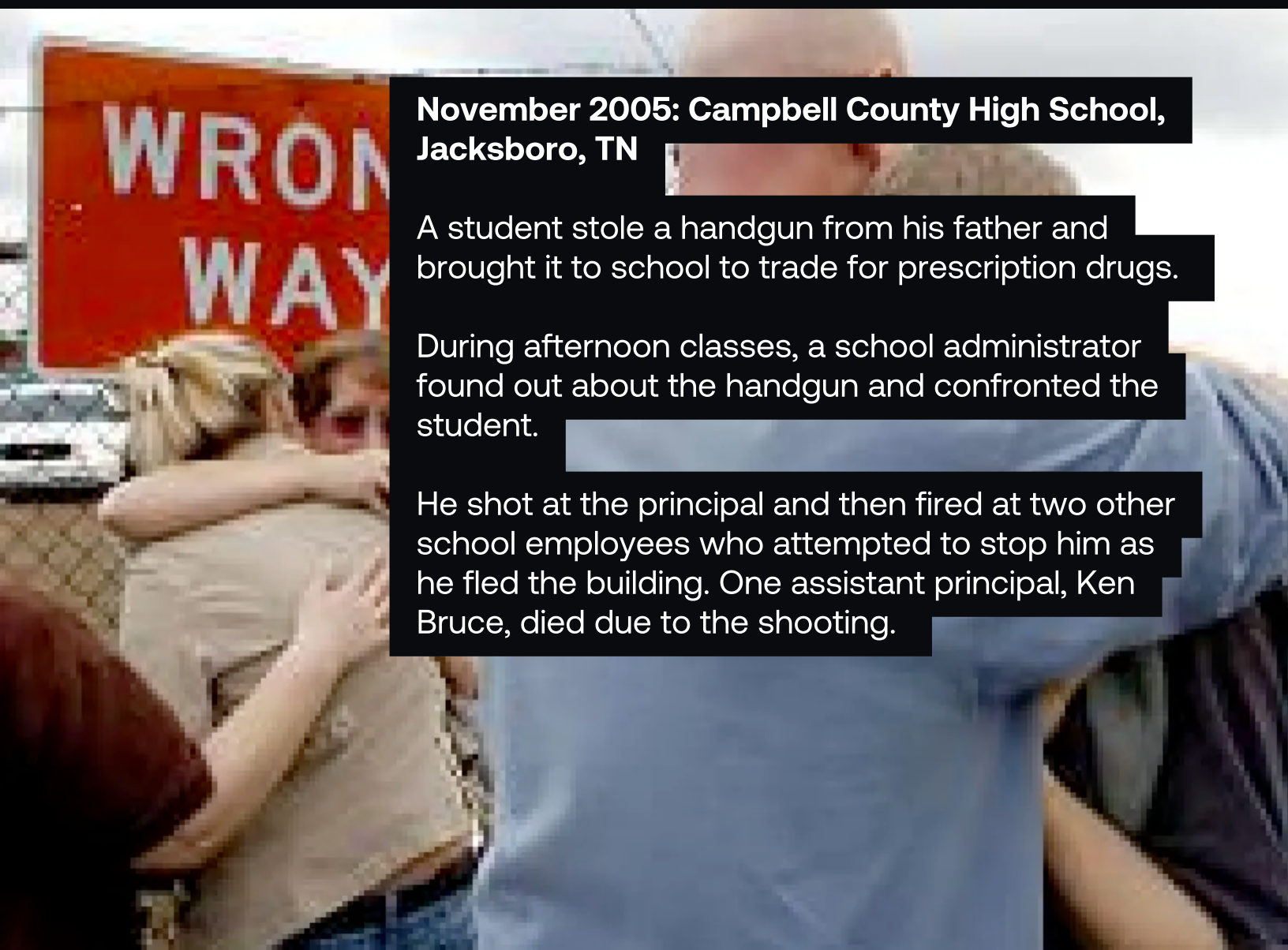
When students tried to get up, he fired four shots into the classroom ceiling and held the class hostage. When he lowered his gun for a second, the teacher tackled him.

The student had three handguns, a knife, and a hatchet in his backpack.



■ Criminal Activities

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



November 2005: Campbell County High School, Jacksboro, TN

A student stole a handgun from his father and brought it to school to trade for prescription drugs.

During afternoon classes, a school administrator found out about the handgun and confronted the student.

He shot at the principal and then fired at two other school employees who attempted to stop him as he fled the building. One assistant principal, Ken Bruce, died due to the shooting.

■ Siege

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

February 2018, Dalton High School, Dalton, GA

A teacher barricaded himself in his classroom and didn't let students in. When the principal tried to unlock the door, the shooter told him he had a gun and fired a shot out of the window.

The school resource officer was able to talk to the teacher through the door and eventually convinced him to unlock the classroom and peacefully surrender. No students, staff, or officers were injured.



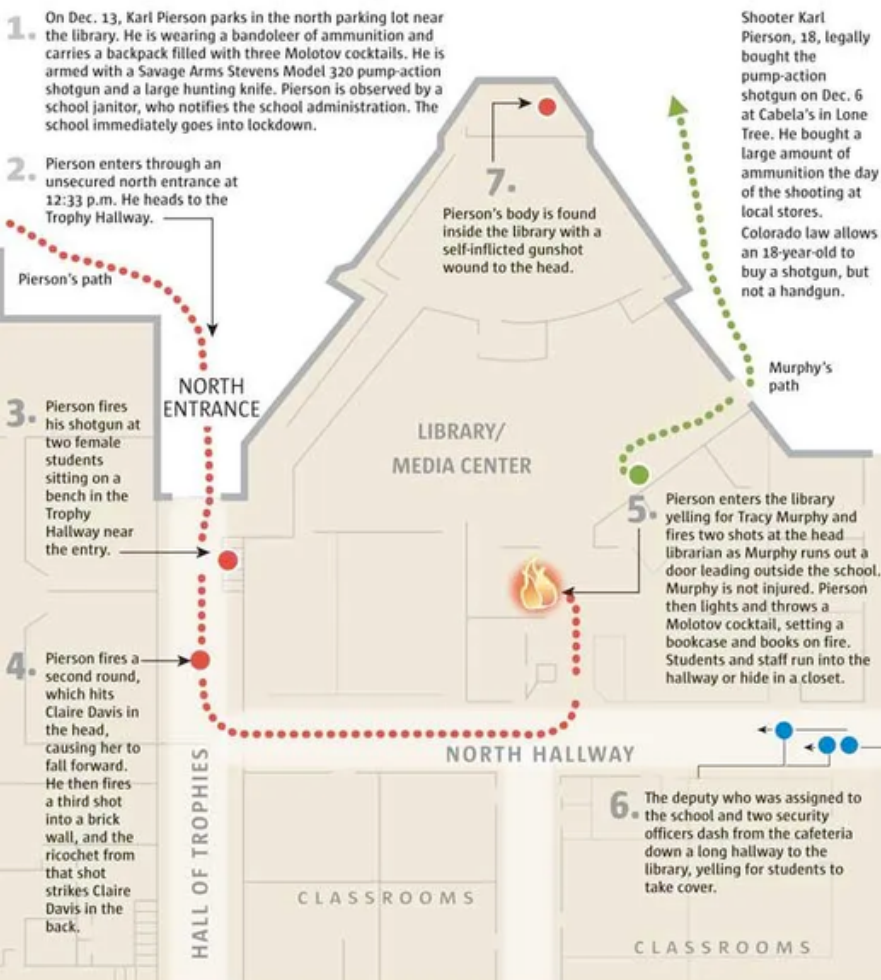
Complex Coordinated Attacks

A hybrid of any combination of attack types.

ARAPAHOE SHERIFF INVESTIGATIVE REPORT: ARAPAHOE HIGH SCHOOL SHOOTING, DEC. 13, 2013

Behind the terror

Witness interviews show Karl Pierson frequently expressed anger toward fellow students and school staff in the months leading up to the Dec. 13 shooting. In September, Pierson threatened to kill Tracy Murphy, head librarian and head speech and debate team coach. On Dec. 11, Pierson was accidentally locked out of teacher Vicki Lombardi's classroom, and he began yelling and pounding on the door. Lombardi called for assistance, and assistant principal Kevin Kolasa responded and sent Pierson home for the day.



December 2013, Arapahoe High School, Centennial, CO

A student walked into his school with a shotgun, Molotov cocktails, and extra ammunition.

He fired five shots down hallways, killing one student, then threw a Molotov cocktail into the library.

Before he could get to the librarian, he was confronted by a school resource officer and committed suicide. Police believe his intended target was the librarian, who was the staff sponsor of the debate team of which the shooter was a member.

Background

There is a rich body of academic literature on school 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.**

The causes of school shootings have been studied in the context of society and gun culture (Lawrence, 2006), as a byproduct of violent video games (Ferguson, 2008), how the media covers school shootings (Muschert, 2009; Wondemaghen, 2014), and how online subcultures influence potential school shooters (Lindgren, 2011).

Another research topic: 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) and how student survivors recover emotionally after an attack (Brown, 2018; Turuen, 2014).

The long-term economic impact and lifetime earning potential of communities that experienced a school shooting has 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).

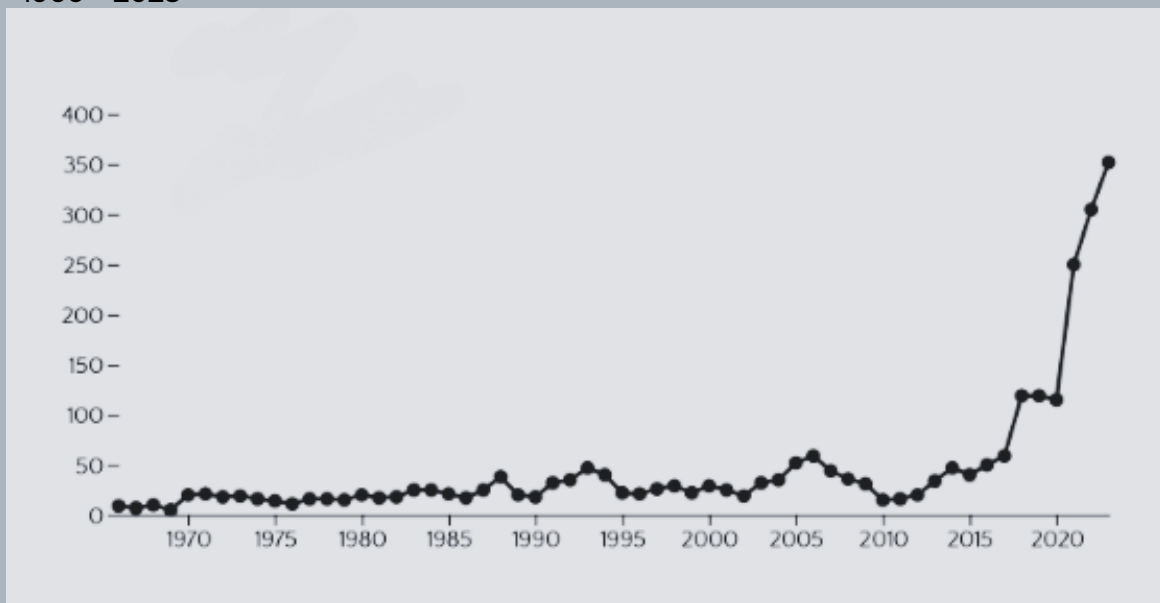
Unlike additional, motive-based analysis of mass shootings that reaffirm what we already know about individual social grievances, pathway to violence, and psychological traits of the attacker, **a tactics-based examination of school shootings is completely missing from the canon of existing literature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

Attacks at Schools

Since 1966, there have been 213 attacks at K–12 schools that fit the general “active shooter” definition of an attack when the perpetrator killed and/or wounded victims, either targeted or random, within the school campus, business, or public space during a continuous episode of violence.

Number of Shootings at Schools

1966 - 2023



271

Incidents 1/1/23-10/20/23

199

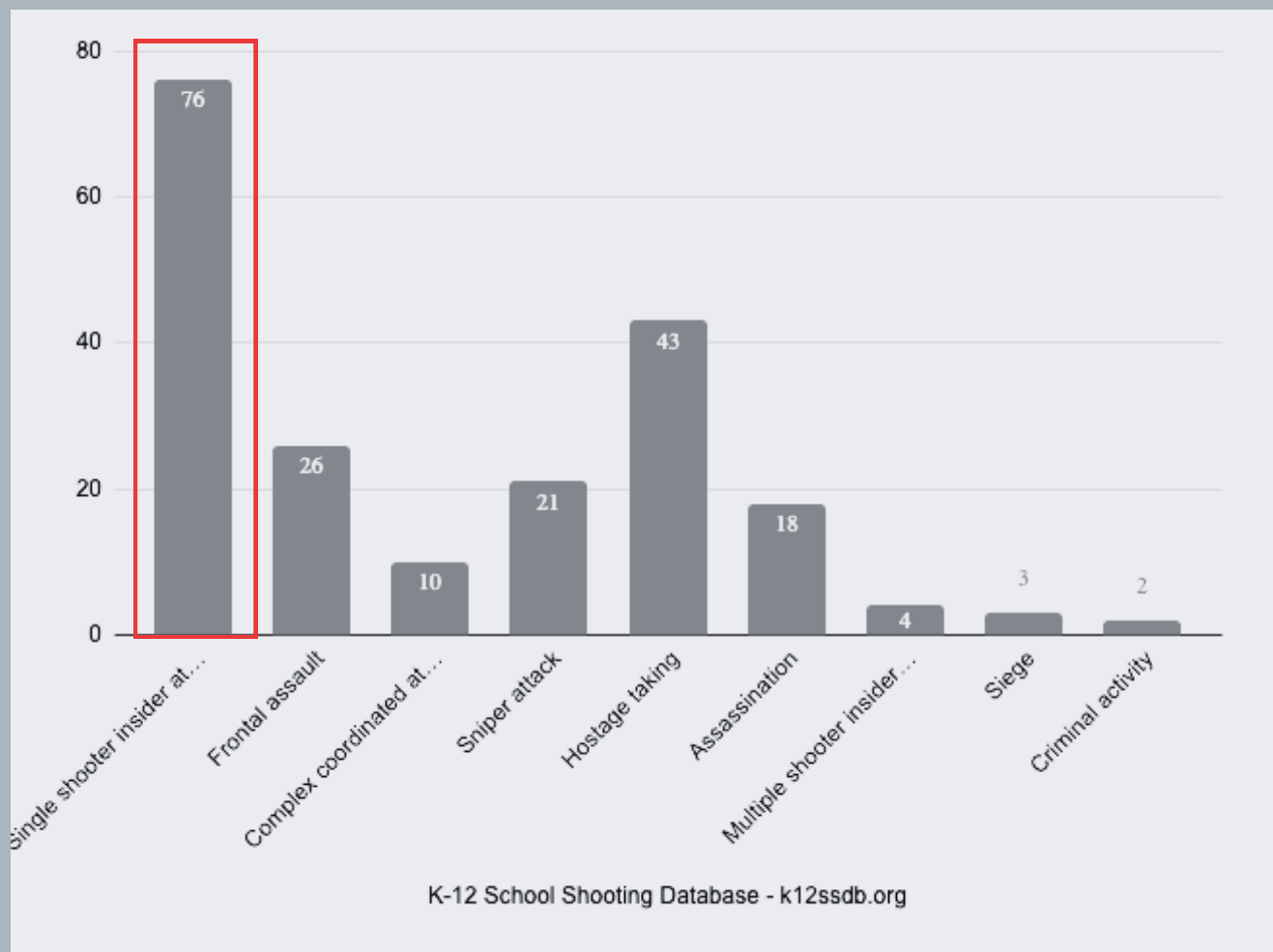
Victims 1/1/23-10/20/23

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

Over half of all planned school shootings were single-shooter insider attacks or deliberate hostage-taking. Although common training scenarios include a second shooter or complex coordinated plot with a secondary attack on responders, these types of attacks **only occurred 6.5% of the time**.

Sniper attacks—which are rarely trained for—are **twice as likely** as a complex coordinated plot.

K-12 School Active Shooter Attack Types



Unprepared: Sniper Attack

In April 2022, a sniper with five rifles in a fifth-floor apartment fired more than 200 rounds at the Edmund Burke School in Washington, DC just before dismissal.

Few, if any, school shooting training exercises have ever prepared for an elevated sniper attack.



Video broadcasted online by shooter during the attack

2022/04/22
15:17:22

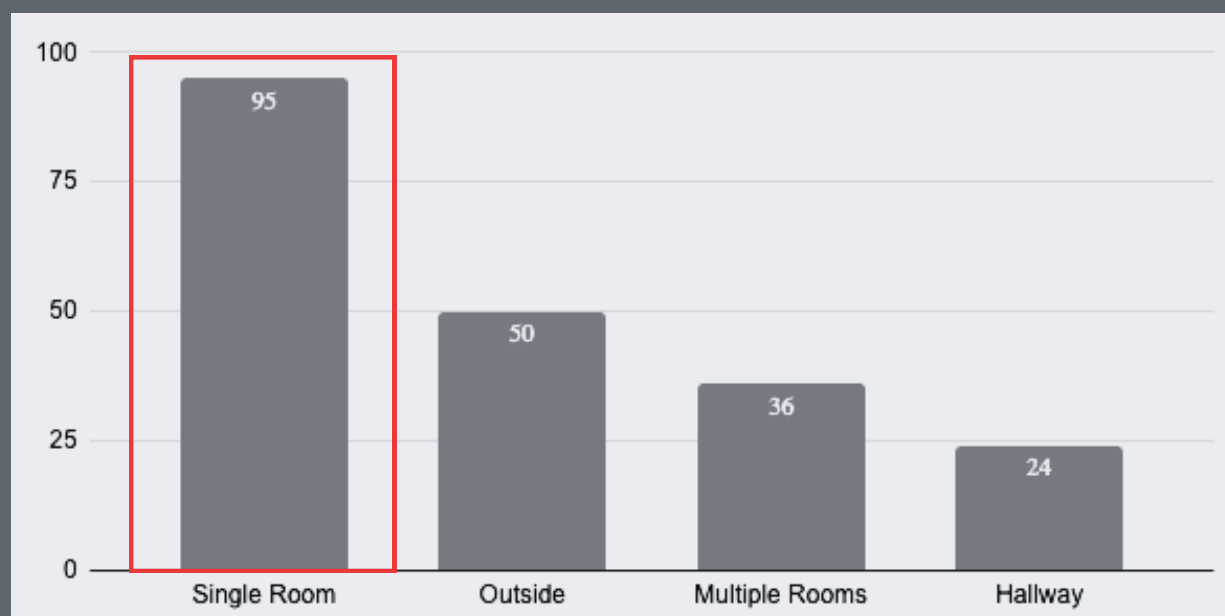
Assumptions versus Reality

Many school security plans and equipment are designed to prevent a shooter from moving between multiple classrooms—yet only 17% of shooters targeted victims in multiple rooms.

Most school shootings in this sample of 213 deliberate attacks occurred before fortifications were added, yet roughly half of the shootings were still contained, or the shooter chose to stay, in a single room.

Only
17%
targeted victims in
multiple rooms

In 50 of the 213 shootings, the shooting happened outside and the shooter never entered the building,



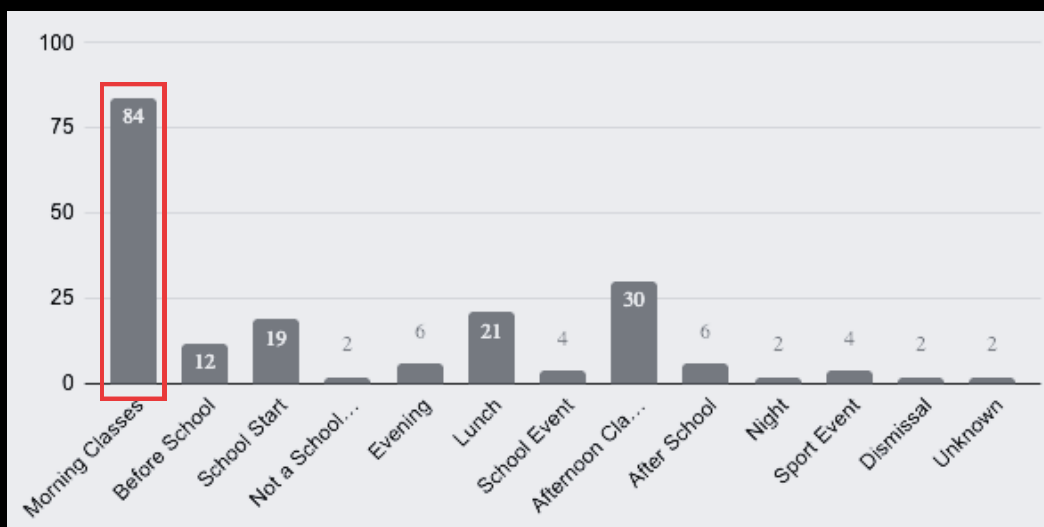
Understanding the Threat

Planned attacks at schools happen overwhelmingly **during morning classes**.

It's critical to note that 31 attacks occurred **before the school opened** or right at opening, before students were inside secure buildings or classrooms.

When shootings happen during this time, school doors may still be locked.

Three weeks before the Parkland shooting, a 15-year-old student killed two and wounded 18 at Marshall County High in Benton, KY. His planned attack occurred before classes started at 7:57 a.m. in a large hallway near the cafeteria.



Planned attacks at schools are carried out predominantly by **current or former students** with a direct connection to the campus.

Because students capable of planning attacks and obtaining weapons tend to be older teens, about two-thirds of these deliberate school shootings happen at high schools, or combined K–12 and 6–12 grade schools.

57%

of active shooters
target high schools

About 14% of active shooters target either elementary or middle schools. Some middle-school attacks are carried out by younger teens.

One such example occurred on March 25, 1998, at Westside Middle School in Jonesboro, AR. Two male students, 13 and 11, pulled the fire alarm and aimed at their fellow students as they evacuated the school. The boys had nine weapons and 2,000 rounds of ammunition that were stolen from a grandparent's house.



Implications for Securing Schools

Increasingly, school security falls into two categories:

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

These security measures are not effective in 60% of cases.

Insiders who are allowed to access the school (**38%**), snipers who fire from a distance (**10%**), or frontal assaults where a heavily armed person shoots their way in (**12%**) would not have been prevented by these measures.

In the 10 complex coordinated plots, the attack plan was designed to draw students and staff away from the building or move victims towards IEDs and flammable liquid devices.

In all of these attacks, a hardened school building with officers on campus would not prevent the school shooting.

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

When school security strategies are developed based on a broad category rather than the **specifics of different types**, different security strategies 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.

Hostages are rarely considered during planning or training. Thirty-one of the 43 hostage situations (72%) were successfully negotiated **without any victims being killed** or wounded. Five other hostage situations had a single victim killed or wounded. If police use the common, generic, active-shooter response to “run to the sound of gunfire” during a hostage situation, this risks escalating a situation that could be peacefully negotiated.

Emergency response and protective actions for a surprise attack by a student versus a sniper attack from a distance are completely different.

If police and school officials 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 school officials, 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 AI gun detection solution that works with your existing security cameras to combat mass shootings and gun-related violence by providing situational awareness, delivering clarity, and potentially reducing response times—all to help save lives.

Our alerts provide shooter images, location, type of gun(s), and direction of travel to help determine the type of attack and then provide the best response to the attack.

Active Shooter: Options

When a shooting starts, students and staff 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 school a safe place for students to stay until police arrive—and can give SROs or other security officers the critical time need to stop the assailant.

Awareness During in an Attack

If there's a surprise attack inside the school, ZeroEyes can provide the shooter's location within seconds—telling students and staff if they should run or shelter. If the shooter is nearby, it's usually best to run away. On a large campus, 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, students 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 school as possible or **lockdown** inside classrooms with ballistic doors and windows.

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



About ZeroEyes



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

Outraged by school shootings and their impact on children, educators, and communities, our cofounders—veterans, technologists, and 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 full SAFETY Act DT&E Designation.

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