



STUDY ON DETECTING DEADLY WEAPONS IN PUBLIC MIDDLE AND HIGH SCHOOLS

Interim report

House Bill 782 (Chapter 244, 2025) requires the Maryland Center for School Safety (MCSS) to conduct a study on the best methods for detecting deadly weapons in public middle and high schools and rapidly reporting a weapon to law enforcement. This involves an evaluation of current security infrastructure, an assessment of new technologies, and recommendations for improvement. The study requires engagement with local school systems and the production of interim and final reports.

This report includes information for the first year of the study.

Pursuant to House Bill 782 (Chapter 244, 2025)

Kate Bryan
Executive Director

Letter from the Director

Dear President Ferguson, Speaker Jones, and Members of the Senate Committee on Education, Energy, and the Environment, and the House Ways and Means Committee;

On behalf of the Maryland Center for School Safety (MCSS), I submit this interim report pursuant to House Bill 782 (Chapter 244, 2025), *Study on Detecting Deadly Weapons in Public Middle and High Schools*.

This interim report details the collaboration with local education agencies (LEAs) during **Year One** of the study, which investigated current strategies for detecting deadly weapons on public middle and high school campuses across Maryland.

MCSS recognizes that no single security measure can guarantee a safe learning environment, as no method is 100% effective. In addition, funding for school safety is limited, and LEAs must make informed decisions about how those funds are allocated. Therefore, when considering security technology, LEAs will assess capabilities and effectiveness along with initial (i.e., purchase and installation), ongoing (i.e., maintenance and leasing), and operational (i.e., personnel staffing) costs.

Additionally, LEAs must balance security measures as part of their layered approach to creating safe learning environments. This layered approach combines diverse safety and security practices, such as maintaining a positive school culture and climate, fostering personal connections, conducting various emergency preparedness activities, and implementing physical security measures.

This interim report is not a technical report; technical information on widely available weapon detection systems will be included in the 2026 final report. As such, more detailed information on “widely available” weapon detection systems and recommendations will be presented in the final report.

Sincerely,



Kate Bryan
Executive Director

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HB 782: Defining the Task

MCSS is undertaking a two-year study to identify methods for detecting deadly weapons in public middle and high schools and rapidly reporting the detection of a weapon to law enforcement.

All published reports for this study will exclude specific information about individual schools and school systems, as that information is protected under the Maryland Public Information Act (PIA).¹

Year One: Foundational Assessment (Completion: December 2025)

This first phase of the study focused on meeting with each local education agency (LEA) and documenting the type of weapon detection systems (WDS) currently in use within Maryland's public middle and high schools. The findings from this initial evaluation are detailed within the pages of this Interim Report, **published December 1, 2025**.

Year Two: Exploration, Evaluation, and Recommendations (Completion: December 2026)

The second year will expand on the first by utilizing data collected in year one, reports collected under §7-1510 of the Education Article, available research, and information gathered from vendors and security experts.

Key Activities in Year Two include:

- **Exploring Security Methods:** Identifying widely accepted security methods not currently used in Maryland public schools, and evaluating their feasibility to address security gaps.
- **System Adaptation:** Exploring ways to adapt existing security systems to better detect deadly weapons and streamline reporting to law enforcement.
- **Technology Integration:** Investigating the integration of new software with security cameras and other safety measures.
- **Optimal Usage:** Assessing the effective use and optimal placement of security technologies on school premises.
- **Technology Assessment:** Gathering formal evaluations of relevant technologies regarding critical factors like **efficacy, bias, data ownership, privacy, scope of use, and risk management**.

A final report detailing all study findings and recommendations will be **published by December 1, 2026**.

¹ "Information collected as part of [this] evaluation is not a public record and shall be protected in the same manner as records covered by § 4-314.1 of the General Provisions Article." House Bill 782 (Chapter 244, 2025).

Foundational Assessment Methodology

The initial phase of this project focused on two primary goals: (1) gathering data from the 24 LEAs and (2) establishing the foundation for the second phase of the evaluation in 2026.

Year One data collection centered on understanding the current weapon detection method and other security infrastructure used across the 24 LEAs. This involved a two-step process:

1. **Self-Assessment Survey:** A survey was used to collect initial data on the LEAs' existing weapon detection measures.
2. **Follow-up Meetings:** Individual meetings were held with each LEA to clarify survey responses and gather supplementary data.

Survey Development and Distribution

Year One of the project began with a survey designed to gather initial information about the current landscape of weapon detection system methods and other security measures in use within the 24 Maryland school systems.

- **Timeline:** MCSS staff began creating the survey in June 2025.
- **Structure:** The survey included universal questions and added additional qualifying questions based on the LEA's current use of WDS:
 - "Yes" (Currently Using): When LEAs indicated they were using WDSs in one or more schools, additional questions covered technology types and current usage.
 - "No" (but Considering): When LEAs indicated they were not currently using but were considering WDS in one or more schools, additional questions covered research, systems investigated, and decision-making factors.
 - "No" (Not Currently Using or Considering): When LEAs indicated they were not currently using and were not considering WDS in one or more schools, additional questions covered barriers to implementation.
- **Review:** Two (2) LEAs reviewed and commented on the draft survey questions.
- **Distribution & Response:** The final survey was sent to all 24 Maryland LEAs in June 2025. All 24 LEAs responded by September 2025.

Follow-up Meetings

Following the collection of the survey responses, individual meetings were scheduled to follow up on LEA responses and gather additional technical and non-technical information.

- **Timeline:** Meetings with the LEAs were held between July 2025 and October 2025.
- **Focus:**
 - **Technical Questions:** These questions covered the technology used and technology under consideration.
 - **Non-Technical Questions:** These questions covered operational procedures, implementation logistics-including staffing, costs, and barriers to implementation.

Our two-tiered approach, which combined self-assessment surveys and follow-up meetings, provided the foundation for the study. All 24 LEAs participated, enabling us to capture information for this interim report in preparation for the Year Two evaluation phase.

Defining Key Terms: Weapon Detection System and Deadly Weapon

For the purposes of this study, a weapon detection system (WDS) is broadly defined as any system designed to locate, identify, and alert users to the possible presence of a deadly weapon. **Weapon detection systems (WDSs) vary in their capabilities; some are able to detect concealed weapons, while others are limited to detecting only brandished (visible) weapons.**

Understanding the systems requires a working definition of the term **“deadly weapon”**:

- **Legal Context:** House Bill 782, which mandates the study, does not define “deadly weapon.” However, Maryland Criminal Law § 4-102 (“Deadly weapons on school property”) broadly prohibits carrying a “firearm, knife, or deadly weapon of any kind” on public school property.
- **LEA Interpretation:** When surveyed, 22 out of 24 LEAs offered a practical definition of deadly weapon as “any object or instrument made, designed, or used to cause death or serious bodily injury”. Additionally, several school systems include definitions for “weapon” or “deadly weapon” in their policies and student handbooks.
- **Study Focus:** WDS discussed in the interim report are **primarily focused on** the detection of **firearms**, although some systems have the capability to detect other weapons. Year Two will focus more broadly on capturing the various capabilities of different WDSs.

Categorization of Weapon Detection Technologies

This interim report provides a preliminary overview of methods currently in use or being considered by LEAs. The report’s categorizations (listed below) are limited to “**technology types**” and **capabilities currently deployed or under consideration** by LEAs. This report *does not* include a full list of capabilities for available systems or identify specific products or vendors. The final report will offer a more detailed explanation of widely available weapon detection methods, including their various capabilities. For the purpose of this report, simplified descriptions of these systems have been used.

Note: None of the systems discussed in this report are able to identify a weapon with 100% accuracy. Consequently, every alert generated by a device or system requires human verification to determine if a prohibited item (e.g., firearm) is present. Also, weapon detection capabilities are highly dependent on system configuration.

The categories and types of WDSs relevant to this study include:

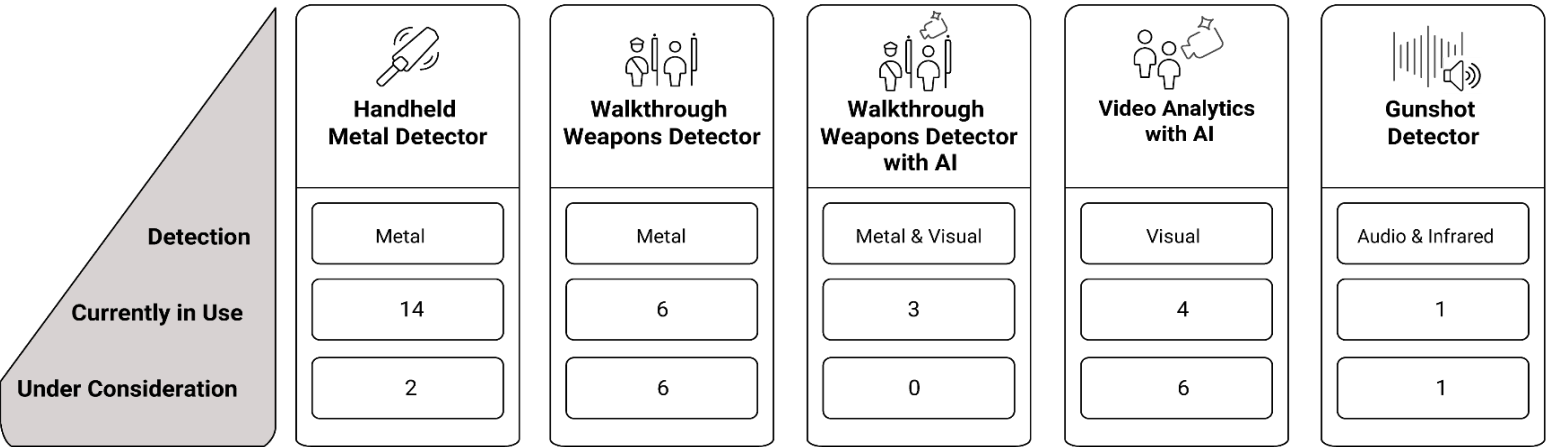
Category	Technology Type	Primary Function
Metal Detection	Handheld Metal Detector	<p>Portable metal detector wands are battery-powered scanning tools. When waved over a person or their belongings, they detect (hidden or visible) metal objects by sensing the metal's interaction with an electromagnetic field. These devices are typically used for secondary search. When items are detected, it alerts personnel, prompting a more thorough search.</p> <p><i>Note: Metal detection sensors cannot distinguish between innocuous metal objects, such as pocket change or keys, and actual threats, like deadly weapons.</i></p>

Metal Detection	Walkthrough Weapons Detector	<p>More advanced walkthrough metal detector that an individual passes through to allow for the detection of (hidden or visible) metallic weapons by sensing the metal's interaction with an electromagnetic field. Then, using an algorithmic analysis of electromagnetic signals, it may distinguish between permitted items like cell phones or metal water bottles and weapons. When items are detected, it alerts personnel, prompting a more thorough secondary search.</p> <p>Note: The detection of deadly weapons, particularly smaller knives, depends on system sensitivity settings.</p>
Metal Detection	Walkthrough Weapons Detector with Artificial Intelligence (AI)	<p>Security system that an individual passes through that not only identifies metal but also uses integrated camera visuals and AI to analyze and distinguish the specific shape, composition, and location of a (hidden or visible) metallic weapon. These more sophisticated devices are employed by LEAs to detect the possible presence of weapons while screening out most personal items. When items are detected, it alerts personnel by highlighting the location of the potential weapon with a red box on a screen, allowing for a more targeted secondary search.</p> <p>Note: The detection of deadly weapons, particularly smaller knives, depends on system sensitivity settings.</p>
Visual Detection	Video Analytics with Artificial Intelligence (AI)	<p>Camera-based detection systems that use AI on real-time video feeds. These systems detect brandished (visible) deadly weapons and automatically send alerts to designated individuals for review and confirmation of the identified object. Depending on the system, they may work with the existing camera infrastructure.</p> <p>Note: Objects (e.g., firearms) that are not visible to the camera can not be identified by video detection technologies.</p>
Acoustic Infrared Detection	Gunshot Detector	<p>Ceiling-mounted sensor that utilizes sound and infrared analysis to identify the unique signature of gunfire or muzzle flash. These systems may also detect other noises (e.g., glass breaking, elevated noise levels, or keywords (e.g., "help")). When sounds are detected, an alert is sent to personnel to determine the cause.</p>

Maryland's Current Outlook

This section outlines the current implementation status and future considerations of WDS in middle and high schools among Maryland's LEAs, as determined by the initial self-assessment surveys and subsequent clarification meetings as of October 2025. The findings revealed a varied landscape of adoption, with a growing interest in multi-layered security approaches.

Note: This report **does not** include a breakdown by individual school or LEA.²



Deployed Technologies

LEAs currently using the following categories of WDS:

- **Handheld Metal Detector:** Used by fourteen (14) LEAs. LEAs reported using handheld detectors on an **as-needed basis**, typically for secondary inspections, sporting events, or as a specific measure in an individual student safety plan.
- **Walkthrough Weapons Detector:** Used by six (6) LEAs. Of the six, three (3) LEAs reported using the systems for daily school entry in their middle and high schools and three (3) reported using the system only for sporting or other special events.
- **Walkthrough Weapons Detector with AI:** Used by three (3) LEAs for daily entry.

² "Information collected as part of [this] evaluation is not a public record and shall be protected in the same manner as records covered by § 4-314.1 of the General Provisions Article." House Bill 782 (Chapter 244, 2025).

- **Video Analytics with AI:** Used by four (4) LEAs.
- **Gunshot Detector:** Used by one (1) LEA.

Technologies Under Consideration

LEAs are considering the following categories of WDS:

- **Handheld Metal Detector:** Being considered by two (2) LEAs.
- **Walkthrough Weapons Detector:** Being considered by six (6) LEAs.
- **Walkthrough Weapons Detector with AI:** Being considered by zero (0) LEAs.
- **Video Analytics with AI:** Being considered by six (6) LEAs.
- **Gunshot Detector:** Being considered by one (1) LEA.

Financial Costs³

This section details the **LEA-reported financial costs** associated with acquiring, operating, and maintaining WDS. Here we distinguish between the one-time, initial acquisition expenses for the equipment and installation, and the ongoing costs for maintenance, software updates, and licensing.

Initial costs for WDS vary significantly by LEA based on the technology used, the scale of deployment, and whether the equipment is leased or purchased. Ongoing costs are driven primarily by software licensing and necessary infrastructure and maintenance. *Costs in some jurisdictions may be reduced through bulk discounts.*

Handheld Metal Detector

Only one (1) **LEA** provided an initial acquisition price for handheld metal detectors, reporting a cost of approximately **\$210 per unit**.

Walkthrough Weapons Detector

The initial acquisition and licensing costs for these more advanced active weapon detection systems were reported by LEAs:

- **Per Device:** On average, LEAs reported an initial acquisition and setup cost of **\$17,500 per device**. Multiple devices are often necessary for each entry point to manage the necessary throughput.
- **Leasing vs. Purchasing:** LEAs reported costs may cover leasing (which includes licensing and upgrades) or purchasing (which may require separate annual contracts for licensing, service, and maintenance).
- **Ancillary Hardware/Items:** LEAs also noted additional costs, including batteries/chargers, anchor bolts/base plates, stanchions, bins (for student belongings), and additional electrical outlets.
- **Support and Software:** One (1) LEA reported annual license and maintenance costs ranging from **\$3,000–\$6,000** for one system (software updates, support, app access).

³ Costs listed are as of 2025.

Walkthrough Weapons Detector with AI

The initial acquisition and licensing costs for these more advanced weapon detection systems that also use artificial intelligence were reported by LEAs:

- **Per Device:** On average, LEAs reported an initial acquisition and setup cost of **\$100,000 per device**. Multiple devices are often necessary for each entry point to manage the necessary throughput.
- **Leasing vs. Purchasing:** LEAs reported costs may cover leasing (which includes licensing and upgrades) or purchasing (which may require separate annual contracts for licensing, service, and maintenance).
- **Maintenance:** Two (2) LEAs reported that their systems frequently required repair. One LEA directly contracts with a vendor due to the systems being "high maintenance," while the other utilizes trained LEA facilities personnel and salvages spare parts from non-operational units.
- **Ancillary Hardware/Items:** LEAs also noted additional necessary and optional costs, including batteries/chargers, anchor bolts/base plates, stanchions, bins (for student belongings), informational posters for entry procedures, and upgraded cameras for video management system integration.
- **Software and Connections:** Three (3) LEAs mentioned avoiding specific software packages to mitigate costs. Two (2) LEAs noted ongoing costs for infrastructure (i.e., power, network access) and cloud storage for system-generated data. One (1) LEA reported annual license and maintenance costs ranging from **\$10,000–\$25,000** for one system (software updates, support, app access).

Video Analytics with AI

Acquisition costs for visual (camera-based) WDS were provided by **two (2) LEAs**:

- **Initial Software License and Installation:** The costs for the system are typically multi-year contracts, and the average depends on how many cameras will be equipped with the detection system. LEAs typically select a subset of a school's cameras for installation. Reported cost averages **\$3,000 per school** plus ongoing licensing costs.
- **Ongoing Licensing Costs:** Annual licensing costs ranged depending on how many cameras were equipped with the detection system. Reported cost ranges from **\$100-300 per camera per year**.

- **Additional Services:** LEAs reported additional fees apply for human verification monitoring or system integration. One (1) LEA provided specifics, reporting annual licensing and subscription costs ranging from **\$2,000 to \$5,000 per year**, depending on the scale and monitoring services provided.
- **Cameras:** Additional costs may be incurred for the purchase of new or replacement cameras, particularly for those with low resolution.

Gunshot Detector

The average initial acquisition costs for these detectors were reported to be **\$1,100 per unit**. The number of detectors needed per school is not fixed and depends on the school's specific layout, size, and room acoustics.

Required Staffing Levels and Training

The requirement for dedicated staff is consistently reported as the most significant and often prohibitive operational expense, serving as the primary barrier to WDS adoption for the majority of LEAs.

Staffing Levels

Handheld Metal Detector

Handheld metal detectors (i.e., wands) require **one (1)** staff member for operation.

Walkthrough Weapons Detector

A **minimum of two (2) staff** are required to operate a detector lane and conduct secondary inspections. However, LEAs reported that **three (3) to four (4) staff members** per entrance is ideal since most entrances used during arrival require at least **two (2) lanes**.

When an alarm is triggered by the walkthrough unit, designated personnel are responsible for isolating the individual and their belongings for a secondary inspection to identify the source of the alarm. This secondary screening is an important operational step to resolve the alert before the individual is permitted to enter. Schools using walkthrough units may also staff an adjacent table for secondary inspections when the system alerts. Secondary inspections may involve hand-searching bags and wand-ing individuals.

Walkthrough Weapons Detector with AI

See “Walkthrough Weapons Detector” above.

Video Analytics with AI

Following an alert, human verification is essential because, like other detection systems, the system may issue alerts for non-weapons. This human verification step is typically performed by the LEA’s office of safety and security staff. For redundancy, multiple individuals receive and follow up on alerts.

Some vendors offer *optional* human verification monitoring subscriptions—at an additional cost.

Gunshot Detector

Following a weapon alert, human verification is necessary to determine the cause. This may include checking cameras in the area of the alert or sending personnel to inspect the area.

Training Requirements

Initial training for WDS operators is typically brief and provided by the vendor, with costs often integrated into the initial acquisition price.

- **Personnel Trained:** Training is generally provided to **school administrators** and **school security employees**, though some LEAs include designated **teachers, other staff members**, and **school resource officers** to support entry monitoring.
- **Secondary Inspections:** Training should cover the full alert-to-resolution protocol, including how to initially respond to an alarm, verbally engage the individual, and conduct the necessary secondary inspection with discretion and professionalism to maintain the individual's dignity while prioritizing safety.
- **Duration:** Reported training times were short, ranging from **one (1) hour** to a maximum of **one (1) day**.
- **Ongoing Training:** After the initial vendor training, new staff are typically trained internally by existing personnel.

Barriers to Implementation

Out of the **24** LEAs surveyed, **15** LEAs (**62.5%**) reported they were not utilizing WDS beyond handheld metal detectors, with the high costs and personnel staffing requirements being the most cited reasons.

Cost & Funding

- **Prohibitive Costs:** Systems are expensive. Both initial purchase and ongoing operation, full-scale deployment of walkthrough systems, can reach millions.
- **Funding Dependency:** LEAs are often dependent on limited and inconsistent grant or operational funding to cover the substantial equipment and maintenance costs of physical security systems.

Personnel & Staffing

- **High Staff Requirement:** Operation of walk-through systems requires significant personnel, often estimated at two (2) to four (4) staff members *per entrance* during peak entry times. One LEA reported an average cost of \$82,000 for a full-time employee.
- **Reliance on Existing Staff:** LEAs often cannot afford to hire new staff to man walkthrough systems and must rely on existing personnel (security employees, administrators, teachers). This reliance has several potential consequences.
 - **Diversion of Resources:** Staff diverted from their primary duties (e.g., teaching, administration, patrol) to manage the screening process, potentially compromising the quality or availability of core services.
 - **Increased Staff Burden:** Existing personnel may require additional training and extended hours, resulting in an increased workload, job fatigue, and potentially lower morale.
 - **Inconsistent Operation:** The use of non-dedicated system operational staff may result in inconsistent application of screening protocols, reduced vigilance, and a higher risk of human error compared to specialized dedicated security personnel.
 - **Scope of Duty:** Teachers' contracts generally define their responsibilities, and adding the duties of operating security equipment or conducting searches would likely be viewed as a significant change in working conditions.

- **Financial Trade-Offs:** While avoiding new hires saves money in one budget line, it often creates hidden costs by requiring overtime pay, backfilling the duties of diverted staff, or reducing the overall efficiency of the school or organization.

Logistical & Operational Issues

- **Student Flow Delays:** High student volume makes funneling all students through limited entry points difficult, which may cause significant delays and backups.
- **Power and Connection:** Some WDSs have the capability to integrate with a school's existing security infrastructure, allowing for remote monitoring and alert notifications. However, these systems rely on internet and network connectivity for both operation and necessary updates. LEA IT departments must grant approval for these connections and for the integration of the system's proprietary software, hardware, and cloud-based applications, which are essential for managing data and deploying updates, which some LEAs are hesitant to allow.
- **False Alerts:** No system is 100% accurate and alerts for non-weapons are not uncommon.

Legal & Liability Concerns

- **Search Protocol Uncertainty:** Concerns about who should conduct secondary searches (school personnel vs. law enforcement) and the location of the search.
- **Staff Hesitation:** A concern exists that existing staff or administrators may be hesitant or reluctant to conduct the required secondary searches.

Data Privacy Concerns

- **Cameras and Images:** Camera footage that is directly related to a student and maintained by the school for official purposes (e.g., disciplinary action) constitutes an education record under the Family Educational Rights and Privacy Act (FERPA), subjecting it to specific privacy and disclosure restrictions.⁴
- **Sensitive Data Handling:** LEAs expressed concern about WDS systems dealing with sensitive data, prompting questions about security and storage protocols.

⁴ "As with any other "education record," a photo or video of a student is an education record, subject to specific exclusions, when the photo or video is: (1) directly related to a student; and (2) maintained by an educational agency or institution or by a party acting for the agency or institution. (20 U.S.C. 1232g(a)(4)(A); 34 CFR § 99.3 "Education Record")." <https://studentprivacy.ed.gov/fag/fags-photos-and-videos-under-ferpa>

- **Varied Data Storage:** Storage methods are inconsistent across technologies. Although some technologies claim not to store data, other systems store data **in the cloud**, with schools retaining unrestricted access.
- **Cybersecurity Standards: Technical security** of the systems, including the type of **encryption and cybersecurity certifications** held (e.g., SOC 2 Type II, ISO 27001, NIST), is a consideration.

Impacts

The deployment of a WDS creates a complex environment, influencing student, staff, and the community's perceptions of safety, trust, and school climate.

Maryland LEA Feedback

- **Increased Safety:** Seven (7) LEAs reported increased school safety, citing a "huge deterrent effect" and "significant reductions in weapons" entering schools.
- **Reduced Fear:** Multiple LEAs reported "reduced fear and concern" among users when the system was in use.

National Research

- **No Consistent Threat Reduction:** National studies found no consistent reduction in threats, fights, or victimization, despite some reports of lower rates of students bringing weapons.⁵
- **Increased Fear:** Visible security measures can sometimes negatively affect students' sense of safety and may actually increase fear, even in statistically secure schools.⁶

Community Buy-In and Response

- **Minimal Resistance:** Three (3) LEAs reported no community resistance. Proactive communication (signage, letters, videos) led to minimal pushback.
- **Increased Safety Perception:** Survey data from one (1) LEA showed both students and staff felt safer with WDS. Another noted its function as a deterrent, prompting individuals to leave prohibited items in cars.
- **Public Perception Concern:** One (1) LEA raised concerns that the assumption WDS eliminates all weapons is unrealistic citing studies⁷ suggesting WDS can increase student anxiety and noted the lack of empirical data proving full effectiveness.
- **Communication Strategy:** LEAs have varied approaches to communication, from initial press releases to no longer advertising the visual systems, while continuing to announce active metal WDS use at events.

⁵ Abigail Hankin, Marci Hertz, and Thomas Simon, "Impacts of Metal Detector Use in Schools: Insights from 15 Years of Research," *Journal of School Health* 81, no. 2 (February 2011): 100–06, <https://doi.org/10.1111/j.1746-1561.2010.00566.x>.

⁶ National Association of School Psychologists, "School Security Measures and Their Impact on Students" (Bethesda, MD: NASP, 2015).

⁷ Schildkraut, J., & Grogan, K. (2019). *Are metal detectors effective at making schools safer?* San Francisco, CA: WestEd. Available from <https://www.wested.org/resources/are-metal-detectors-effective-at-making-schools-safer>.

Contextual Effects

- **Integrated Policing Strategy:** Research suggests the psychological effects of WDS are difficult to isolate because they are often implemented as part of a broader security presence.⁸
- **Trust and Inclusion:** Security presence can frame the school as a place requiring heavy enforcement rather than support, influencing how families perceive trust, inclusion, and safety.⁹
- **Future Assessment:** One (1) LEA is planning to pilot WDS at a sporting event specifically to observe student/guest reactions and assess behavioral factors (e.g., evasion attempts).

⁸ National Association of School Psychologists. (2018). School security measures and their impact on students [Research summary]. Bethesda, MD: Author.

⁹ The Education Trust, "Creating Safer Schools: A Case Study," (Washington, DC: The Education Trust, 2021).

Foundational Safety and Security Needs

In addition to WDSs, the study requires us to build upon data collected from regular safety evaluations and equipment surveys, which highlight broader, foundational physical security needs in Maryland schools.

Safety Evaluation Summary (Past Two Years)

LEAs' safety evaluation summary reports most frequently identified the following physical safety and building security needs:

- **Access Control:** Replacement of **defective exterior and interior (e.g., building entrance, classroom) doors or locks** and the installation of **a secured vestibule** at the main entrance.
- **Communication Gaps:** Addition or replacement of **amplifiers, repeaters, bidirectional antennas, WiFi extenders, signal boosters, two-way radios, public safety radios, PA (Public Address) Systems, and mass alerting systems** to improve internal and external communication with public safety officials.
- **Camera Systems:** Addition or replacement of **aging camera systems**.
- **Perimeter Fencing:** Addition or replacement of **fencing** in critical areas to restrict access to parts of the campus or prevent unauthorized elopement.

Equipment Needs Survey (2022)

A 2022 MCSS survey assessing needs among **11** responding LEAs found that the majority required the following additional equipment (listed in order of frequency):

- **Radio Repeater and/or Bi-directional Amplifiers and Antennas** (for improved radio and cellular communication).
- **Automatic External Defibrillators (AEDs).**
- **Incident Command System Kits** (containing vests, command charts, communication tools (radios, bullhorns, flashlights), and signage/control equipment (barricade tape, caution tape, clipboards).
- **Evacuation Equipment** (such as sleds and chairs for individuals with mobility challenges).
- **"Stop The Bleed" Kits** (containing tourniquets and clotting agents).

Year One Synopsis and Next Steps

The foundational assessment, completed in Year One, established a baseline for WDS implementation across Maryland. It revealed a **varied and cautious** landscape of adoption. The most common systems in use are handheld metal detectors—used as needed—and walkthrough weapons detection systems, sometimes complemented by camera-based detection systems. Consistently reported findings across the state indicate that equipment costs and personnel staffing are the primary factors preventing LEAs from acquiring or deploying WDSs beyond handheld metal detectors.

When implemented, LEAs generally reported increased feelings of safety among staff, students, and the community. However, it is important to note that there is no definitive research that indicates these systems reduce incidents. Also, the financial and logistical burden of staffing remains a critical issue requiring consideration before deployment.

LEAs' comprehensive strategies for detecting deadly weapons consider WDSs as a component within a multilayered system that also addresses fundamental physical and emergency communication vulnerabilities. As such, this report also highlighted **additional physical security gaps** that LEAs self-identified as priorities for physical security improvements.

Additionally, LEAs' identified foundational security needs, such as addressing **defective doors, locks, and critical communication equipment gaps** (e.g., public address systems, radio repeaters, and bi-directional amplifiers). These foundational security needs are often prioritized over and implemented before weapon detection technologies.

Building upon these foundational findings, **Year Two** of the study will shift its focus toward **exploration, evaluation, and recommendations**. Key activities will concentrate on **(1)** identifying widely acceptable WDSs, **(2)** exploring how existing security and communications infrastructure can be adapted to streamline weapon reporting to law enforcement and school administrators, **(3)** meeting with vendors to better understand capabilities, **(4)** gathering formal evaluations of relevant technologies regarding critical factors like efficacy, bias, data ownership, and privacy, and **(5)** recommendations for the integration and expansion of WDS and other security technologies.