



2026

Fire & Life Safety Inspection Benchmark Report

Analysis of Key Performance
Benchmarks for Fire, Life Safety, and
Security Inspections (2000–2025)

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Executive Summary

Based on the world's most comprehensive database of fire and life safety equipment, this report analyzes 2025 inspection outcomes and trends from 2020–2025 for fire and life safety devices across ten building occupancy types. The data in this report has been collected over the past twenty-six years through BuildingReports' network of more than 1,400 inspection, testing, and maintenance providers and facility professionals. Now in its tenth edition, the report addresses three core questions:

- How do inspection outcomes across occupancy types and device categories highlight differences in fire and life safety risk, as reflected in inspection time, devices tested per inspection, and device failure rates?
- What benchmark ranges emerge for inspection time, inspection time per device, devices tested per inspection, and device failure rates across application categories and occupancy types?
- Which device types are most prone to failure, which primary failure reasons drive these outcomes, and what multi-year patterns emerge from 2020–2025?

INSPECTION APPLICATIONS

Devices are grouped into five categories based on their ScanSeries® inspection application.



FireScan®

Fire alarm control equipment, auxiliary functions, initiating devices, monitoring equipment, and notification appliances.



SuppressionScan®

Clean agent, gas detection, and kitchen hood systems.



SafetyScan®

Portable fire extinguishers, lighting, personal protective equipment, and safety equipment.



SprinklerScan®

Sprinkler systems and water-based fire protection systems.



SecurityScan®

Burglar and security systems, access control, CCTV, and nurse call stations.

OCCUPANCY TYPES

In this edition of the report, we continue our analysis of inspection data across ten building occupancy classifications:



BUSINESS



EDUCATIONAL



HEALTH



MERCANTILE



RESIDENTIAL



STORAGE



ASSEMBLY



INDUSTRIAL



DETENTION



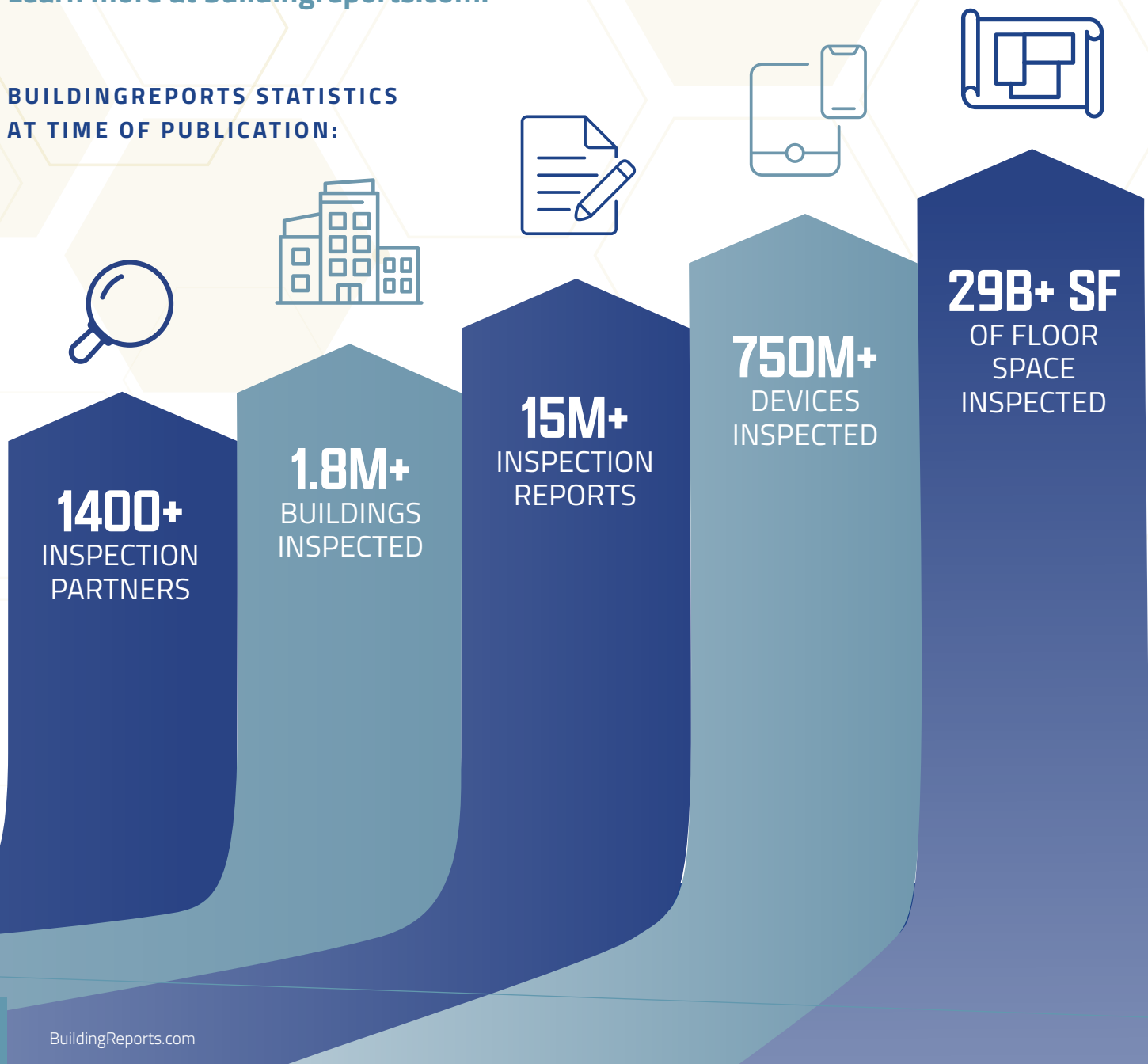
MIXED

About BuildingReports

Since 2000, BuildingReports has been dedicated to making buildings safer and compliance easier with trusted digital inspection solutions. Our platform supports inspections for fire protection systems, video and access control security systems, and HVAC equipment – helping ensure safety, efficiency, and regulatory compliance. Today, we power the world's largest network of independent service providers and facility managers, completing inspections in millions of buildings worldwide. With third-party verification and certification built in, every inspection report is accurate, reliable, and fully documented. Users can access data anytime, anywhere, through a standard web browser, giving property managers and stakeholders the confidence and flexibility to make informed decisions.

Learn more at buildingreports.com.

BUILDINGREPORTS STATISTICS AT TIME OF PUBLICATION:



Metrics

INSPECTION TIME

Average duration of an inspection session, measured from the first device scan to the last. *Note: This excludes travel or other on-site activities.*

$$\frac{\text{Total Seconds Tested}}{\text{Total Inspections}}$$

INSPECTION TIME PER DEVICE

Average time a technician spends testing one device.

$$\frac{\text{Total Seconds Tested}}{\text{Total Devices Inspected}}$$

DEVICES TESTED PER INSPECTION

Average number of devices tested in an inspection.

$$\frac{\text{Total Devices Tested}}{\text{Total Inspections}}$$

DEVICE FAILURE RATES

Percentage of inspected devices that fail quality checks.

$$\frac{\text{Total Devices Failed}}{\text{Total Devices Inspected}}$$

DEVICE FAILURES PER 100 INSPECTIONS

Average number of device failures identified for every 100 inspections performed.

$$\frac{\text{Total Devices Failed}}{\text{Total Inspections}} / 100$$

BuildingReports tracks hundreds of metrics, but five of them stand out as the pulse of industry trends:



Inspection Times

Inspection time measures the total duration of an inspection session for a set of devices in a given occupancy and application category, from the first device scan to the last, excluding travel and pre- and post-inspection activities. It reflects the combined impact of device volume, device complexity, inspection scope, and workflow efficiency on how long a typical visit takes.

At the visit level, inspection time is most useful for planning: it indicates how long technicians can expect to be on site and helps inform staffing, scheduling, and service-level commitments. In combination with inspection time per device and devices tested per inspection, it clarifies whether changes in total time are driven by more devices, more complex devices, or changes in inspection efficiency.

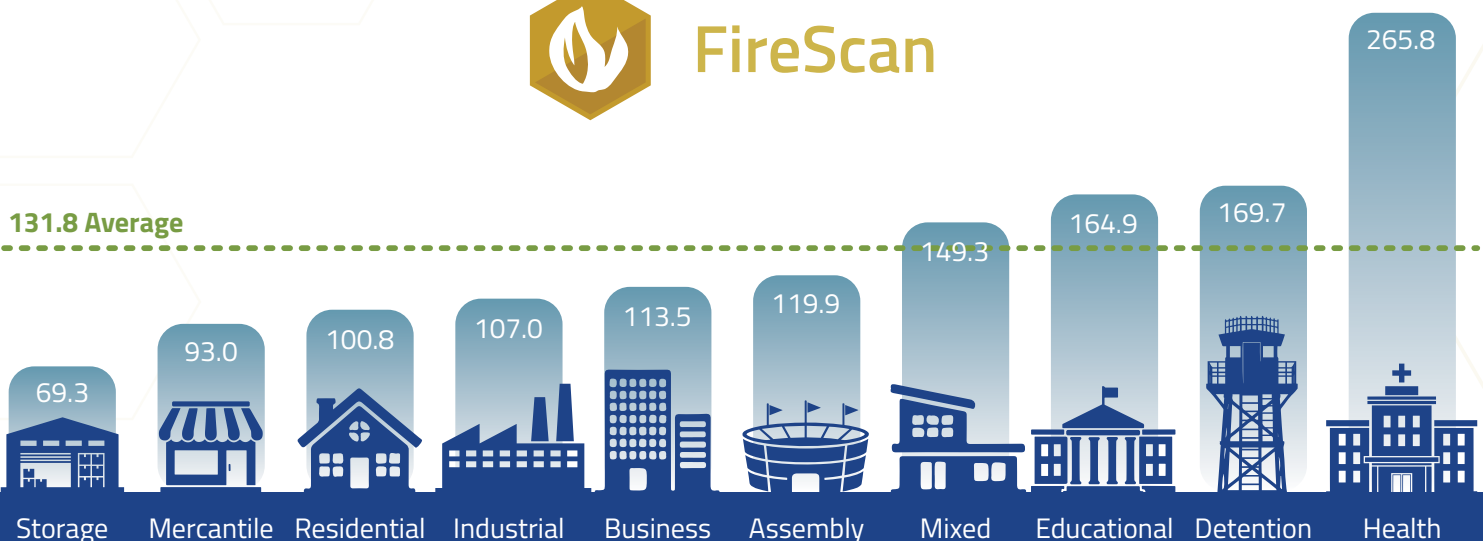
HOW TO INTERPRET CHANGES IN INSPECTION TIME

- An increase in inspection time means inspections are taking longer on average in that occupancy and application. This may reflect larger systems, expanded scope, more complex devices, or emerging inefficiencies that could affect capacity and responsiveness.
- A decrease in inspection time means inspections are being completed more quickly on average. This may indicate streamlined workflows, better tools or training, or simpler device mixes, but can also reflect reduced scope and should be evaluated alongside devices tested per inspection and device failure rates.



FireScan

131.8 Average



Average Inspection Times per Device in Minutes



KEY INSIGHTS

In 2025, FireScan inspection times shifted noticeably across several occupancies, with Detention and Industrial recording longer average durations and Educational and Health occupancies seeing meaningfully shorter times.

NOTABLE INCREASES IN 2025

- **Detention:** Average time increased 49 minutes from 121 to 170 minutes (a 40% increase). This is the largest change among occupancies.
- **Industrial:** The average rose 24 minutes from 83 to 107 minutes (a 29% increase).

NOTABLE DECREASES IN 2025

- **Educational:** The average declined 28 minutes from 193 to 165 minutes (a 15% decrease). This is one of the sharpest time reductions and reflects a reversal in a previous upward trend.
- **Health:** The average fell 27 minutes from 293 to 266 minutes (a 9% decrease). Although Health still has the longest FireScan inspection times, 2025 shows a clear reduction in time required per visit and extends the downward trend that began in 2022.



↑40%
DETENTION



↑29%
INDUSTRIAL



↓15%
EDUCATIONAL



↓9%
HEALTH



KEY INSIGHTS

SafetyScan inspection time generally declined by an average of 3.9 minutes (a 4.5% decrease) across all occupancies in 2025, with no statistically significant increases observed.

NOTABLE DECREASES IN 2025

- **Assembly:** Reflecting the largest relative decrease in time, average inspection time decreased 9 minutes from 71 to 62 minutes (a 13% decrease). This continues a strong multi year pattern of declining SafetyScan inspection times in assembly occupancies.
- **Detention:** The average fell 11 minutes from 105 to 94 minutes (a 11% decrease). That reduction moves detention visits closer to times seen in 2023.



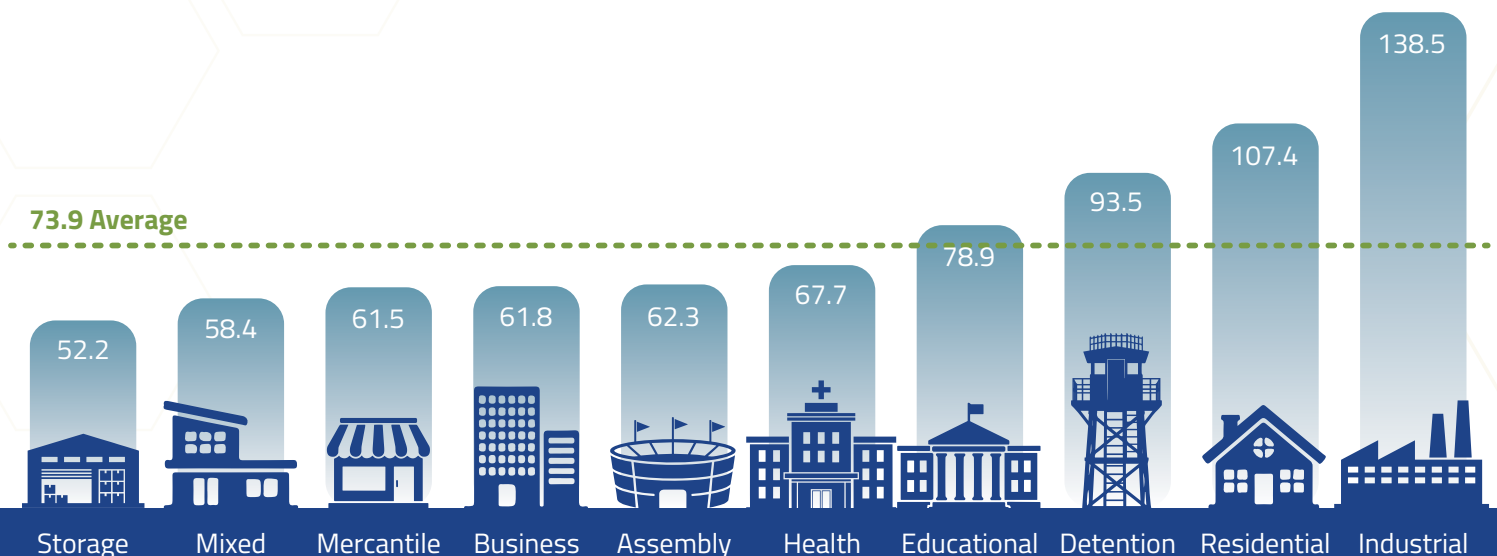
↓4.5%
INSPECTION
TIME



↓13%
ASSEMBLY



↓11%
DETENTION



Average Inspection Times per Device in Minutes



SecurityScan

KEY INSIGHTS

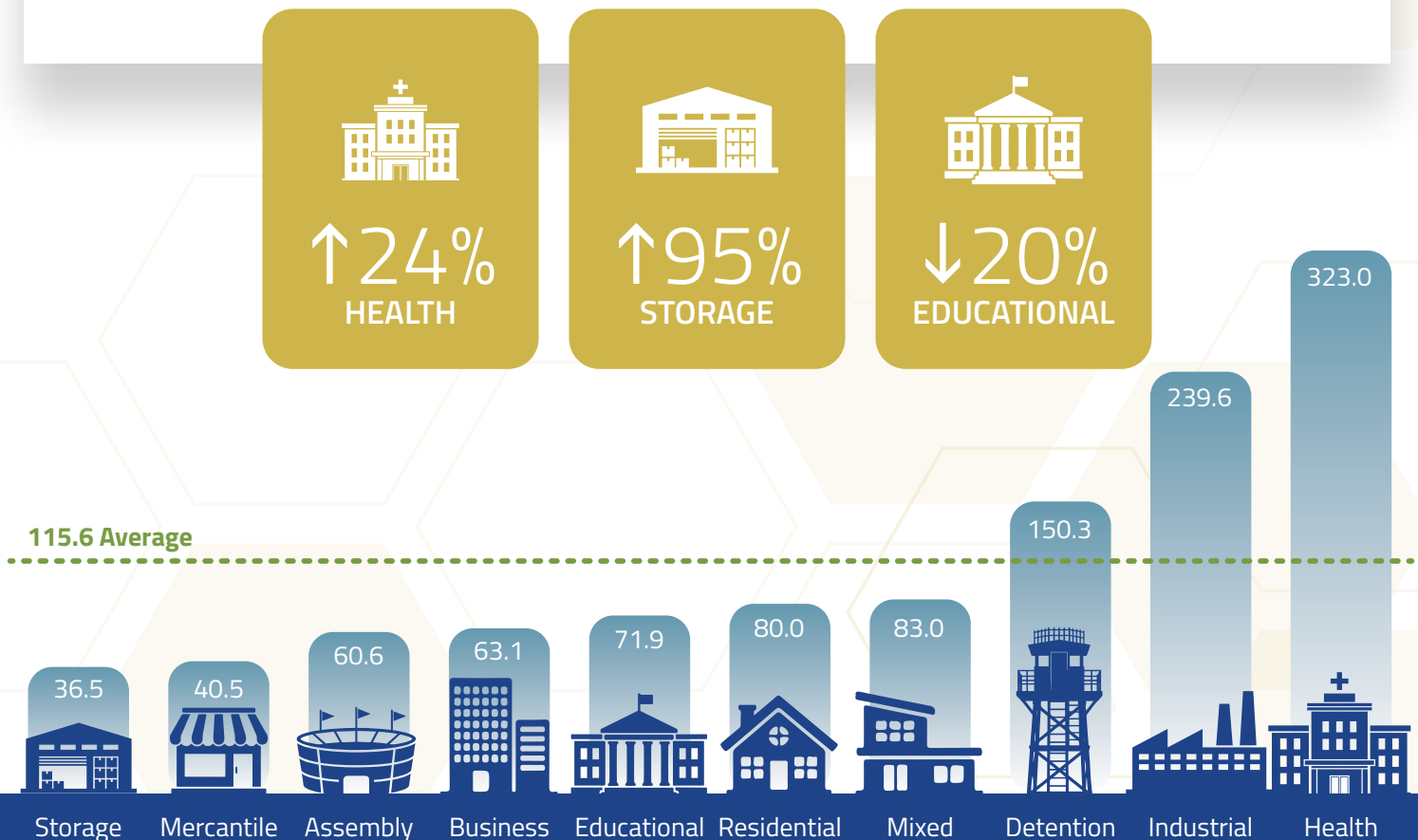
SecurityScan inspection times saw an overall increase of 5.2 minutes (up 8.0%) in 2025, led by Storage, Industrial, Residential, and Health occupancies.

NOTABLE INCREASES IN 2025

- **Health:** Continuing a strong upward multi-year trend, the average increased 62 minutes from 261 to 323 minutes (a 24% increase).
- **Storage:** While still accounting for the shortest SecurityScan inspection times, the average increased 18 minutes from about 19 to 37 minutes (up 95%). This shift reverses the earlier downward trend and brings Storage inspection times back in line with 2021 levels.

NOTABLE DECREASE IN 2025

- **Educational:** Leading occupancies for the greatest relative drop of 20%, Educational SecurityScan inspections decreased from 90 minutes to 72 minutes on average in 2025.



Average Inspection Times per Device in Minutes



SprinklerScan

KEY INSIGHTS

SprinklerScan inspection time increased a modest 1.5 minutes (a 2.8% increase) on average over all occupancies.

NOTABLE INCREASE IN 2025

- **Mercantile and Industrial:** Both occupancies followed a similar shift from 2024, increasing by 8 minutes (a 14% increase), reversing the downward trend seen between 2023 and 2024.

NOTABLE DECREASE IN 2025

- **Storage:** Seeing the greatest decrease from 2024, average inspection time trended downward 4 minutes from 52 minutes to 48 minutes (an 8% decrease). This continues a very strong multi-year downward pattern.



↑ 14%
MERCANTILE

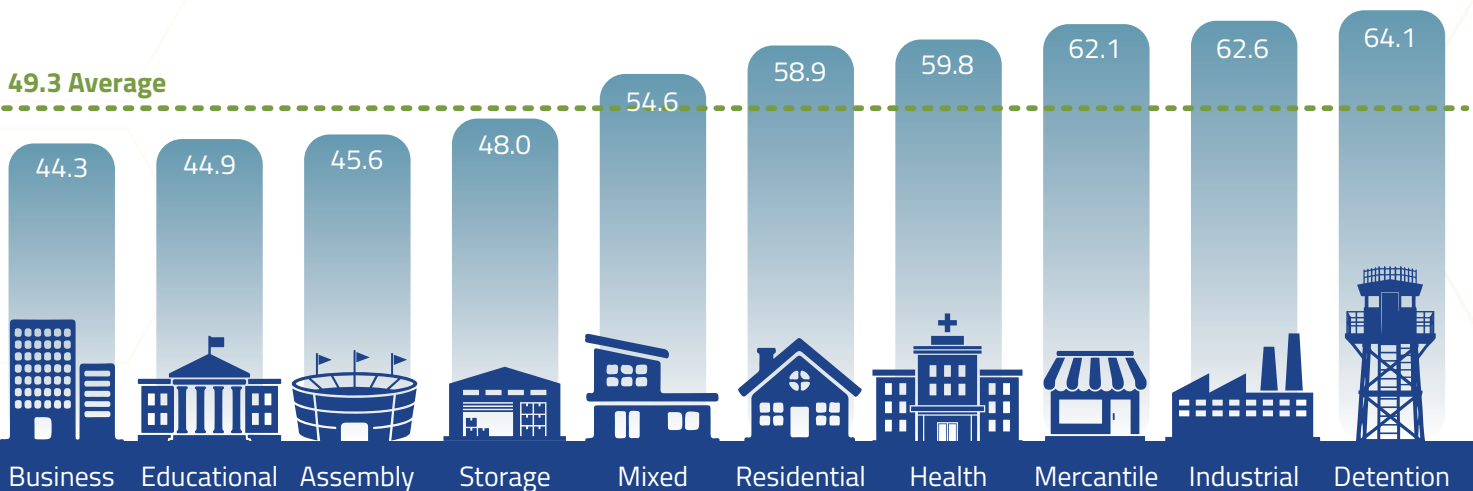


↑ 14%
INDUSTRIAL



↓ 8%
STORAGE

49.3 Average



Average Inspection Times per Device in Minutes



KEY INSIGHTS

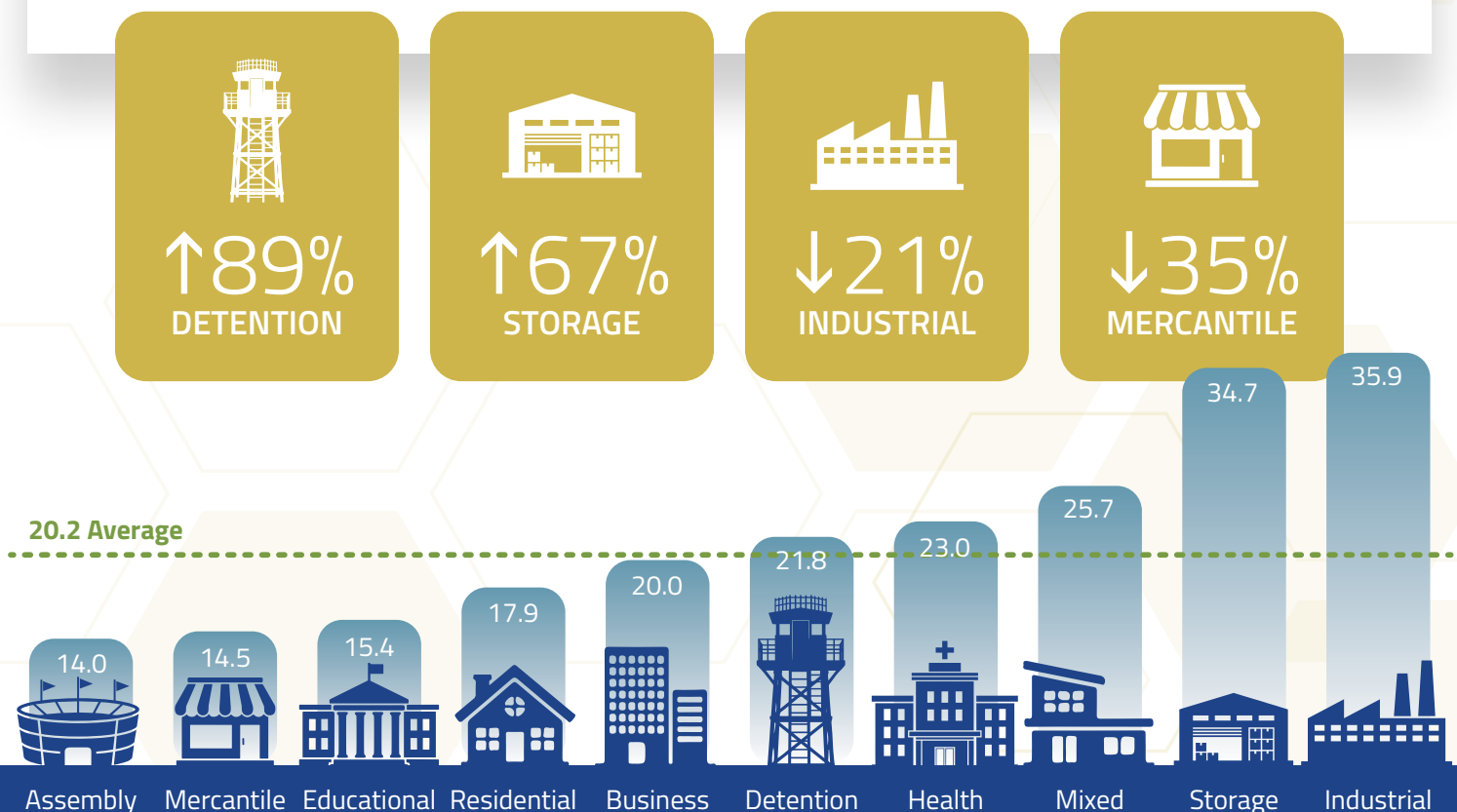
SuppressionScan inspection time showed some pronounced shifts in 2025, particularly for industrial, detention, storage, and mercantile occupancies.

NOTABLE INCREASES IN 2025

- **Detention:** Rebounding from a dip in 2024, average time rose 89% from 12 to 22 minutes.
- **Storage:** Now the second most time-intensive occupancy, inspection time increased 67% from 21 to 34 minutes. This reverses the earlier trend of decreasing inspection times and may signal a return to Storage SuppressionScan inspections being the most time intensive, as they were in 2021.

NOTABLE DECREASES IN 2025

- **Industrial:** Still leading in duration across occupancies, industrial inspection times continued a downward trend started in 2022. The average fell 21% from about 45 to 36 minutes.
- **Mercantile:** The average declined 35% from about 22 to 15 minutes. This is the largest reduction in time for SuppressionScan devices in 2025.



Average Inspection Times per Device in Minutes

Inspection Time per Device

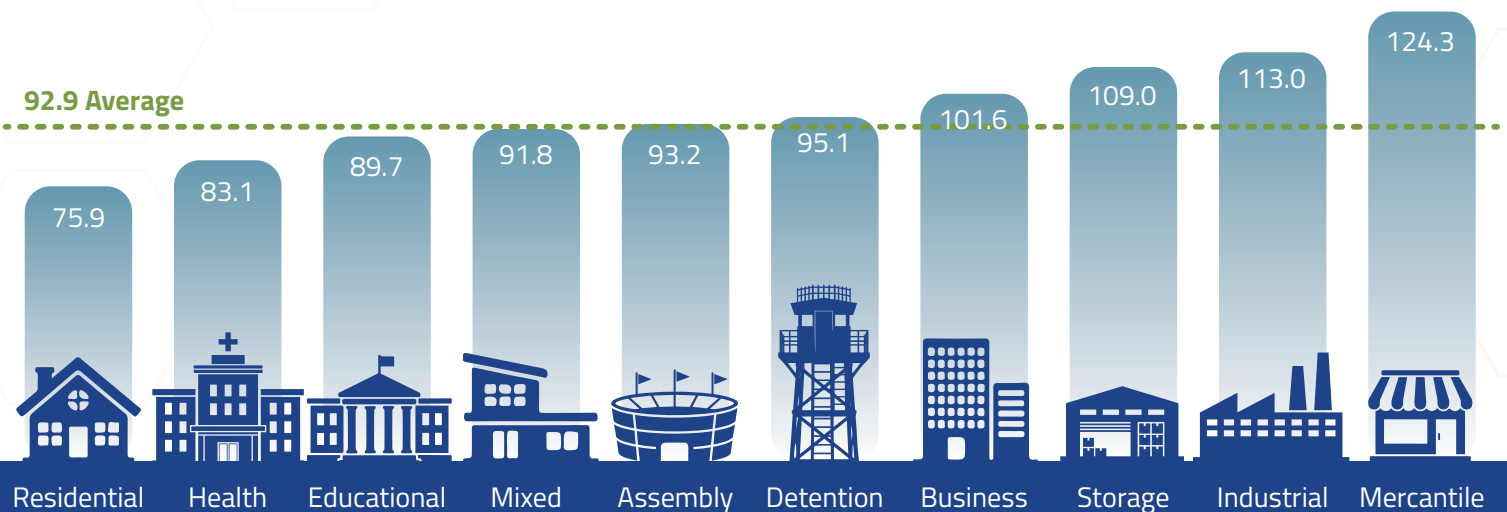
Inspection time per device answers the question of how much time, on average, each device in an occupancy type requires to be inspected. It is calculated by dividing total inspection time by the total number of devices tested, yielding an average time per device. This enables comparisons across occupancies on a common, per device basis. It controls for changes in total inspection hours or device volume, so differences over time or between occupancies reflect how much time the average device requires rather than simply more devices or more total hours. This metric also highlights that some occupancies include more complex or specialized devices within their respective ScanSeries class that inherently demand longer inspection times, revealing where device test times are more time intensive even when overall inspection volume is similar. To see a more detailed breakdown of top 10 devices by inspection time for each device category, see the device performance section on page 32.

HOW TO INTERPRET CHANGES IN INSPECTION TIME PER DEVICE

- An increase in inspection time per device indicates that each device is taking longer to inspect on average. This can reflect emerging inefficiencies or added inspection steps, but it can also mean that occupancies are incorporating more complex or specialized devices that legitimately require more inspection time.
- A decrease in inspection time per device suggests that devices are being inspected more efficiently on average, that inspection scope has been streamlined, or that the mix of devices has shifted toward simpler types that require less time per inspection.



FireScan



Average Inspection Times per Device in Seconds



KEY INSIGHTS

FireScan inspection time per device became more variable and increased slightly, rising by 2.3 seconds per device (a 2% increase). Some occupancies experienced longer average device inspection times, while others saw modest decreases.

NOTABLE INCREASES IN 2025

- **Mercantile:** After a sharp increase in 2022 and a reversal to more moderate times in 2024, Mercantile FireScan devices still lead in inspection time per device with another increase of 14 seconds per device from 111 to 124 seconds (a 12% increase).
- **Detention:** The average rose 10% from roughly 86 to 95 seconds per device.

NOTABLE DECREASE IN 2025

- **Educational:** Seeing the largest decrease, the average declined 6% from about 96 to 90 seconds per device. This reduction extends a gradual improvement in per device time.



↑ 12%
MERCANTILE



↑ 10%
DETENTION



↓ 6%
EDUCATIONAL

KEY INSIGHTS

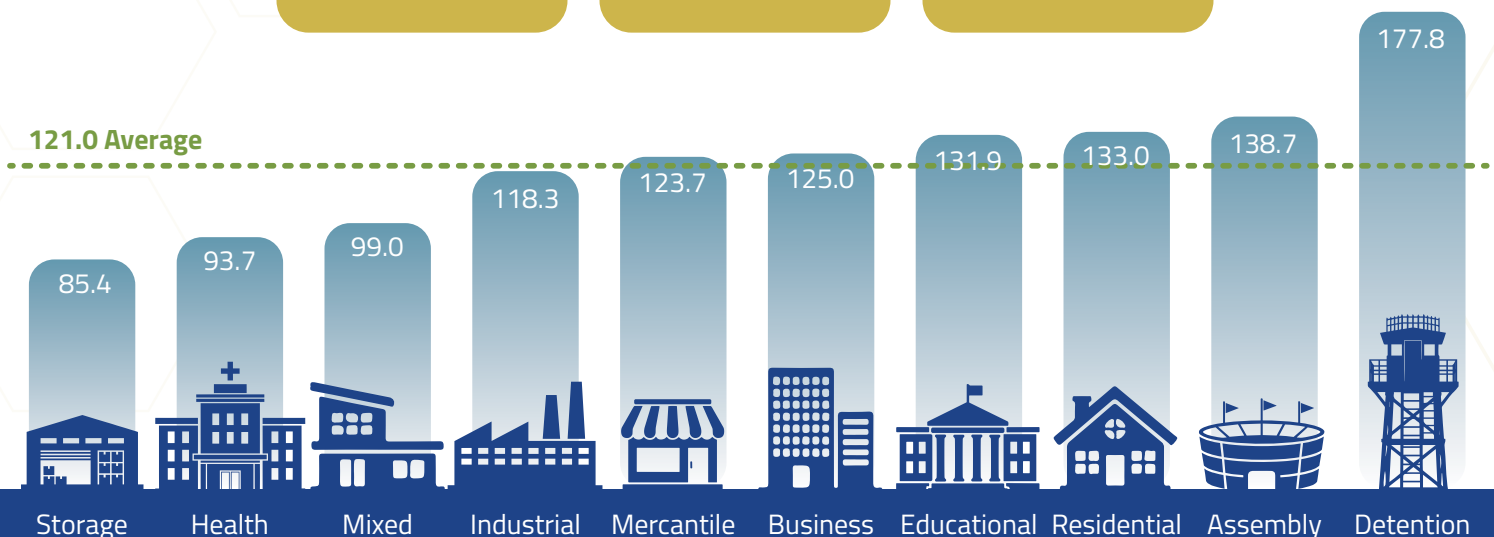
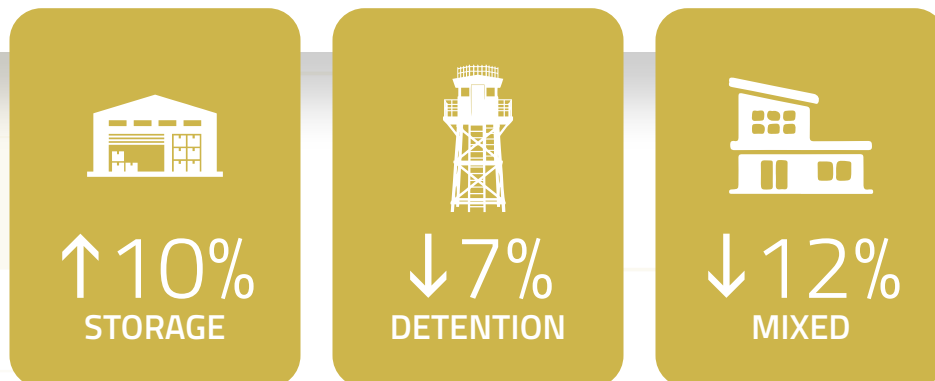
Time spent per SafetyScan device changed only modestly in most occupancies in 2025 (down 1.5%), with only a few occupancies showing clearer movements.

NOTABLE INCREASE IN 2025

- **Storage:** Representing the fastest per-device times, average Storage device inspection times increased 10% from about 78 to 85 seconds per device. This move reverses earlier decreases and suggests a return to pre-2023 times.

NOTABLE DECREASES IN 2025

- **Detention:** Continuing to lead all occupancies in time-per-device, the average dropped 7% from about 192 to 178 seconds per device.
- **Mixed:** Average time per device declined 12% from about 112 to 99 seconds. This is one of the stronger improvements and continues a year-over-year alternating pattern of higher and lower times per device.



Average Inspection Times per Device in Seconds



KEY INSIGHTS

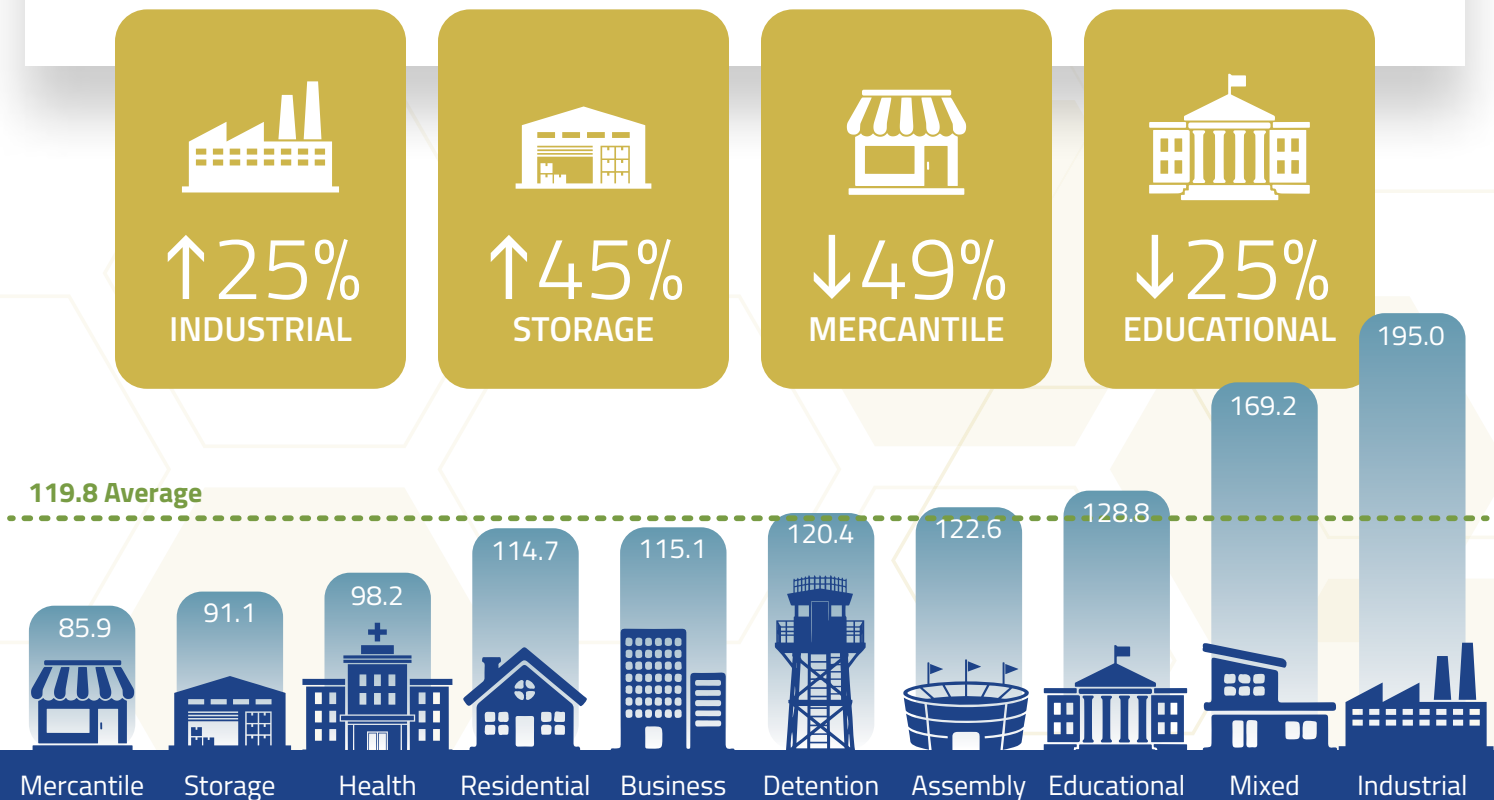
SecurityScan device inspection times have historically shown significant year-over-year instability across most occupancies. 2025 is marked by major swings in both directions with most occupancies seeing at least 12% increases or decreases in time per device.

NOTABLE INCREASES IN 2025

- **Industrial:** Now having the longest per-device times, the average rose 25% from roughly 156 to 195 seconds per device. This points to a clear trend starting in 2022 toward more time spent on each SecurityScan device in industrial occupancies.
- **Storage:** Reversing a downward trend, average time increased 45% from 63 to 91 seconds per device.

NOTABLE DECREASES IN 2025

- **Mercantile:** From 2022 to 2025, Mercantile SecurityScan per-device inspection time dropped 49% from a near lead of 167 seconds to the fastest occupancy per-device times of 2025 at 86 seconds.
- **Educational:** After a peak in 2023, the average declined 25% from about 172 in 2024 to 129 seconds per device.



Average Inspection Times per Device in Seconds



KEY INSIGHTS

Time per SprinklerScan device changed modestly across most occupancies in 2025, with a few clearer standouts on both the improvement and slowdown sides.

NOTABLE INCREASES IN 2025

- **Mercantile:** With the highest per-device time since 2022, Mercantile SprinklerScan devices continued to increase by another 7% from 99 to 106 seconds per device from 2024 to 2025.
- **Mixed:** Seeing the largest increase in time, Mixed increased 11% from about 76 to 84 seconds.

NOTABLE DECREASES IN 2025

- **Storage:** Notably, Storage SprinklerScan devices have followed a very strong downward, statistically significant trend. From leading with 108 seconds per device in 2020, times have dropped 6.7 seconds per year (46% overall) to the fastest per-device time of 74 seconds of 2025.
- **Assembly:** Continuing a downward trend, the average declined a further 4% from about 93 seconds in 2024 to 89 seconds per device.



↑7%
MERCANTILE



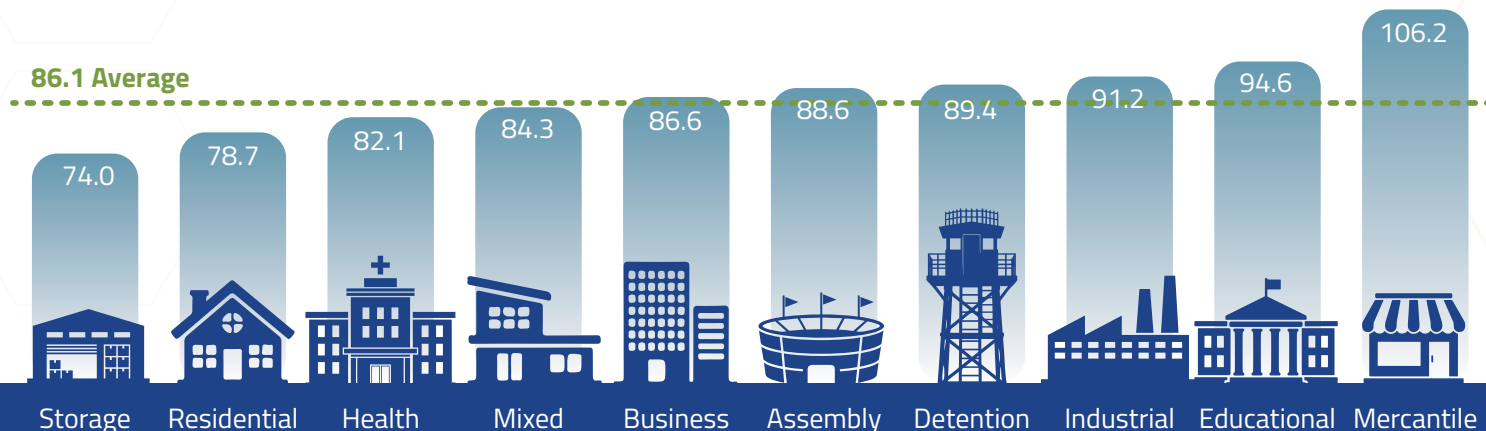
↑11%
MIXED



↓46%
STORAGE



↓4%
ASSEMBLY



Average Inspection Times per Device in Seconds



SuppressionScan

KEY INSIGHTS

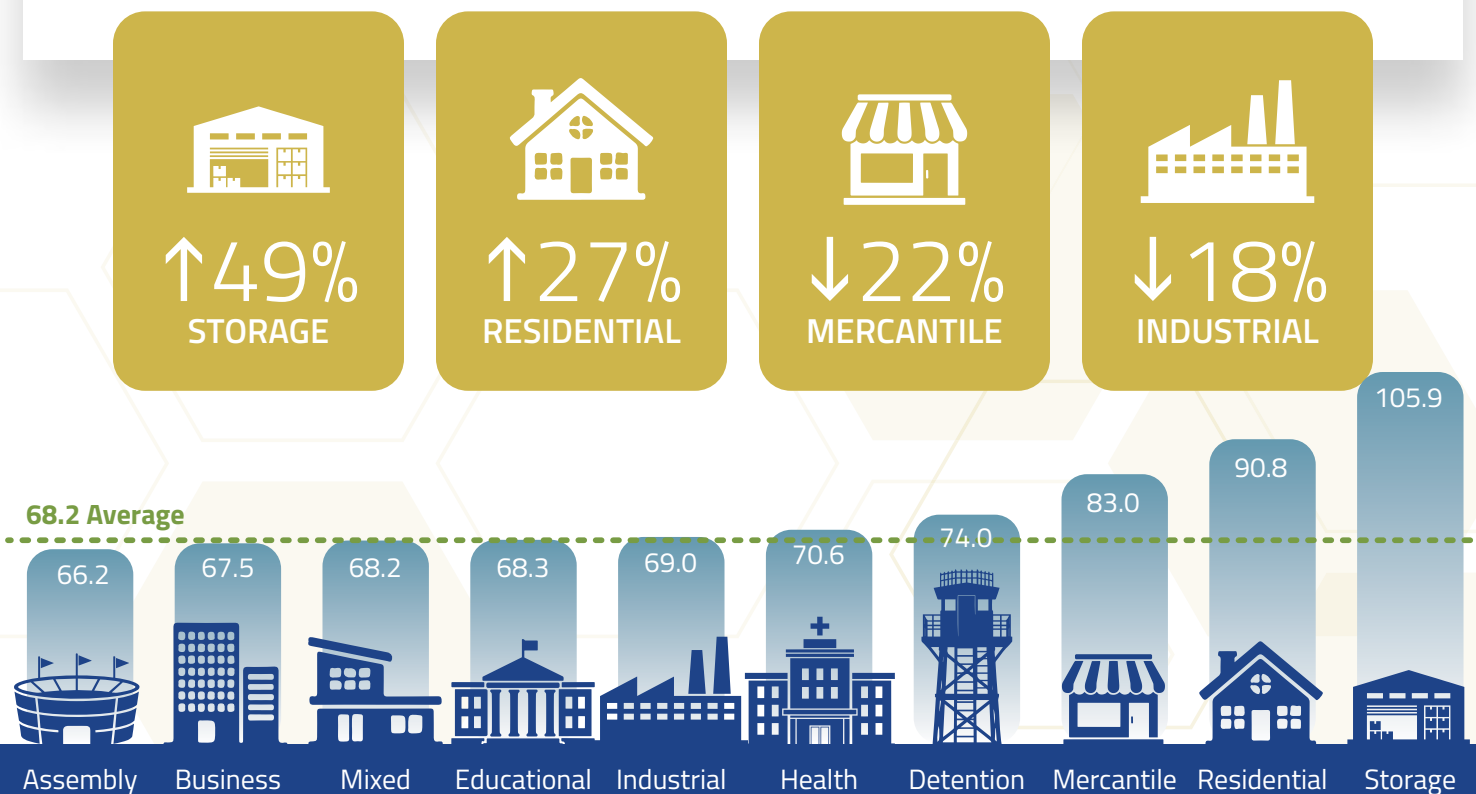
Time per SuppressionScan device shifted both up and down in 2025, with several occupancies showing clear changes in per device times. The overall increase was 4 seconds per device (7.5%).

NOTABLE INCREASES IN 2025

- **Storage:** Average time per device returned to a peak last seen in 2020 with a significant 49% increase from 71 to 106 seconds per device from 2024 to 2025. This marks Storage SuppressionScan devices as the highest time per device of all occupancies for 2025.
- **Residential:** The average rose 27% back to the peak in 2023, going from 71 to 91 seconds per device from 2024 to 2025.

NOTABLE DECREASE IN 2025

- **Mercantile:** After a steady upward trend from 2021 to a peak in 2024, the average decreased 22% from 107 to 82 seconds per device from 2024 to 2025.
- **Industrial:** Continuing a downward trend, the average fell another 18% from about 84 seconds in 2024 to 69 seconds per device.



Average Inspection Times per Device in Seconds

Devices Tested per Inspection

Devices tested per inspection measures the average number of devices evaluated during a single inspection visit within a given occupancy type and application category. It enables direct comparisons of inspection workload across occupancies on a common per-inspection basis. This metric helps distinguish whether changes in total inspection time are driven by differences in device volume rather than changes in device complexity or inspection efficiency. When viewed alongside inspection time and inspection time per device, it provides important context for interpreting shifts in inspection scope over time.

HOW TO INTERPRET CHANGES IN DEVICES TESTED PER INSPECTION

- An increase in devices tested per inspection indicates that each inspection is covering more devices on average. This can reflect higher device density within occupancies or larger structures with more devices being brought into the BuildingReports ecosystem.
- A decrease in devices tested per inspection suggests that each inspection is covering fewer devices on average, which may indicate narrower inspection scope, or an increase in structures with fewer tracked devices.



FireScan

85 Average



Number of Devices Inspected per Inspection



KEY INSIGHTS

Most occupancy types remained stable, with an average relative increase of only 0.24 devices (2.8%).

NOTABLE INCREASE IN 2025

- **Detention:** The largest increase of 23 devices was seen in Detention facilities from 84 to 107 devices per inspection (a 28% increase).

NOTABLE DECREASE IN 2025

- **Health:** Leading all occupancies for most devices tested, Health occupancies saw the greatest decrease of 18 devices per inspection from 210 to 192 (an 8.5% decrease). This continues a downward trend that started in 2022.



↑2.8%
AVERAGE
INCREASE



↑28%
DETENTION



↓8.5%
HEALTH



KEY INSIGHTS

SafetyScan devices tested per inspection trended downward by a modest 1.12 devices (a 2.9% decrease) on average across all occupancies for 2025.

NOTABLE DECREASES IN 2025

- **Assembly:** The average decreased by 4 devices from 31 to 27 (a 13% decrease). This reduction fits within a strong multi year pattern of fewer SafetyScan devices per inspection in assembly occupancies.
- **Storage:** Continuing to lead in device volume, the average fell by 3 devices from 40 to 37 (a 7.5% decrease).



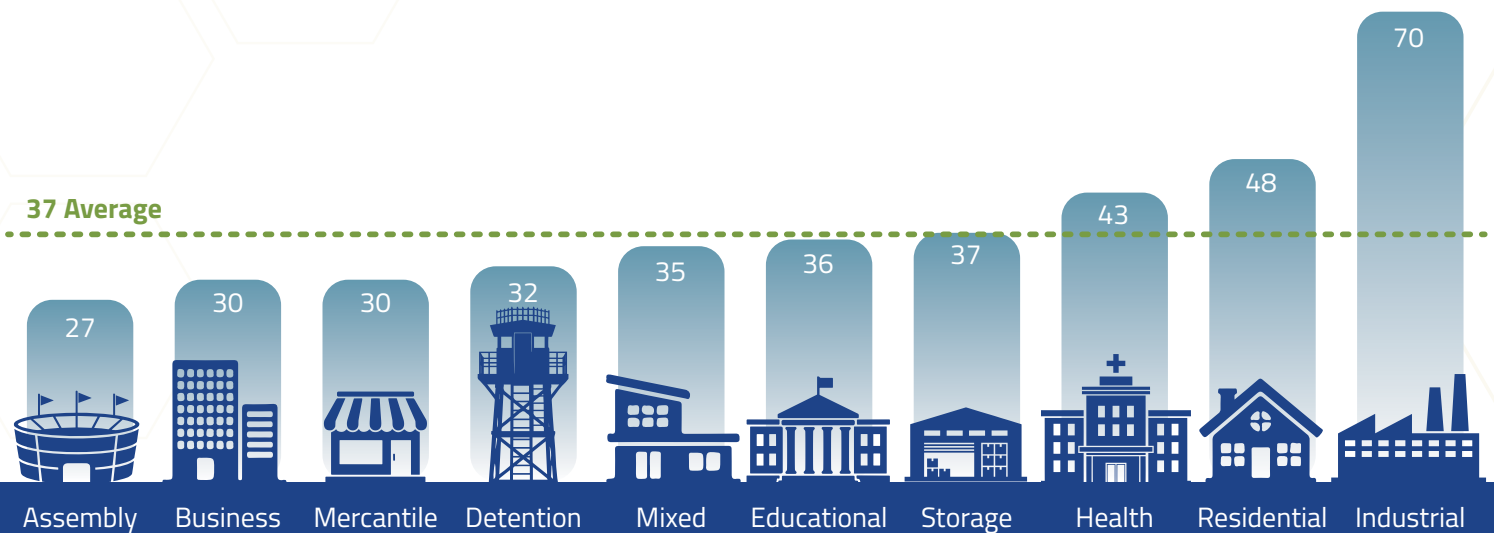
↓2.9%
DEVICE
DECREASE



↓13%
ASSEMBLY



↓7.5%
STORAGE



Number of Devices Inspected per Inspection



SecurityScan

KEY INSIGHTS

SecurityScan devices tested per inspection saw an increase of 4.34 devices (a 5.4% increase) on average across all occupancies.

NOTABLE INCREASE IN 2025

- **Health:** Leading all occupancies, the average increased by 66 devices from 131 to 197 (a 50% increase). This is the largest gain in the group and marks a reversal in a downward trend from 2022.

NOTABLE DECREASE IN 2025

- **Detention:** The average decreased by 21 devices from 96 to 75 (a 22% decrease), reversing an upward trend that had continued since 2022.



↑5.4%
DEVICE
INCREASE



↑50%
HEALTH



↓22%
DETENTION

58 Average



Number of Devices Inspected per Inspection



KEY INSIGHTS

SprinklerScan devices tested per inspection moved in different directions for 2025.

NOTABLE INCREASES IN 2025

- **Industrial:** Seeing the largest increase in 2025, the average rose by 2.5 devices per inspection from 38.7 to 41.2 (a 6.5% increase).
- **Mercantile:** The average increased by 2.2 devices from 32.9 to 35.1 (a 6.7% increase).

NOTABLE DECREASE IN 2025

- **Detention:** With the greatest decrease from 2024, the average fell by 2.6 devices from 45.6 to 43.0 devices (a 5.7% decrease), reversing an upward trend seen since 2022.

IMPORTANT NOTE: SprinklerScan data may not represent every individual sprinkler head within a facility. The BuildingReports mobile inspection and web-based reporting system does not require each sprinkler head to be barcoded to be scanned or inspected.



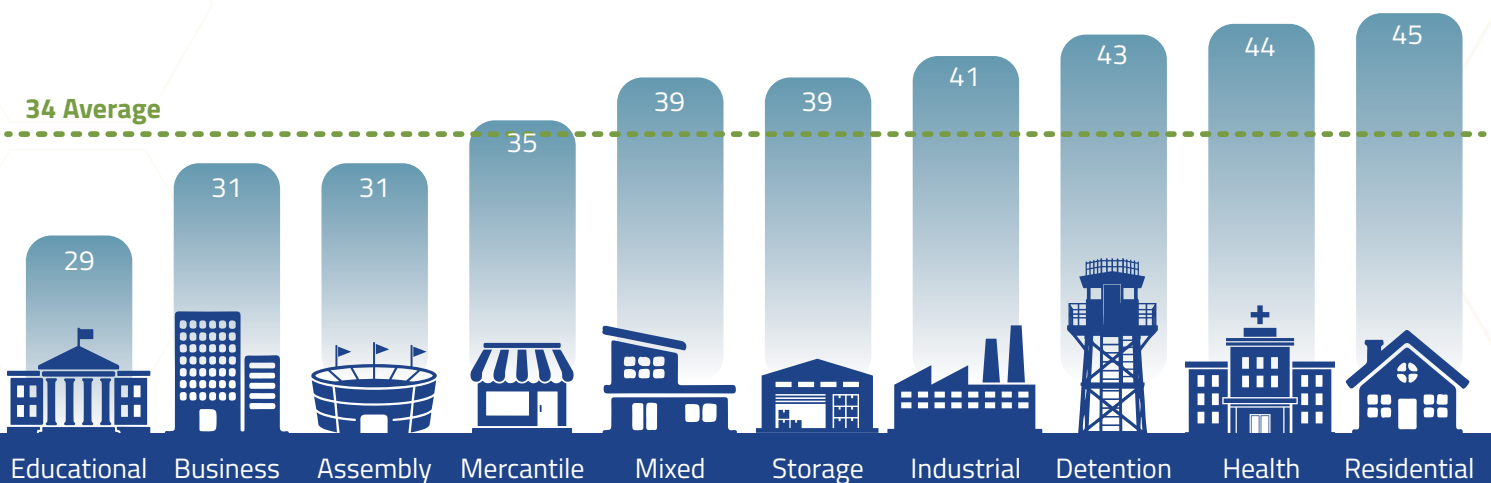
↑6.5%
INDUSTRIAL



↑6.7%
MERCANTILE



↓5.7%
DETENTION



Number of Devices Inspected per Inspection



SuppressionScan

KEY INSIGHTS

Devices tested per inspection were relatively steady in 2025 for SuppressionScan devices, with most occupancies seeing modestly lower test volumes. The overall average increase of 5.6% (0.49 devices) is due to an outlier: Detention devices.

NOTABLE INCREASE IN 2025

- **Detention:** The largest increase across occupancies, the average increased by 7 devices per inspection from 10.7 to 17.7 (a 65.4% increase). This marks a return to higher test volume seen before 2024.

NOTABLE DECREASE IN 2025

- **Mercantile:** The largest decrease, the average decreased by 2 devices from 12.5 to 10.5 devices (a 16% decrease).



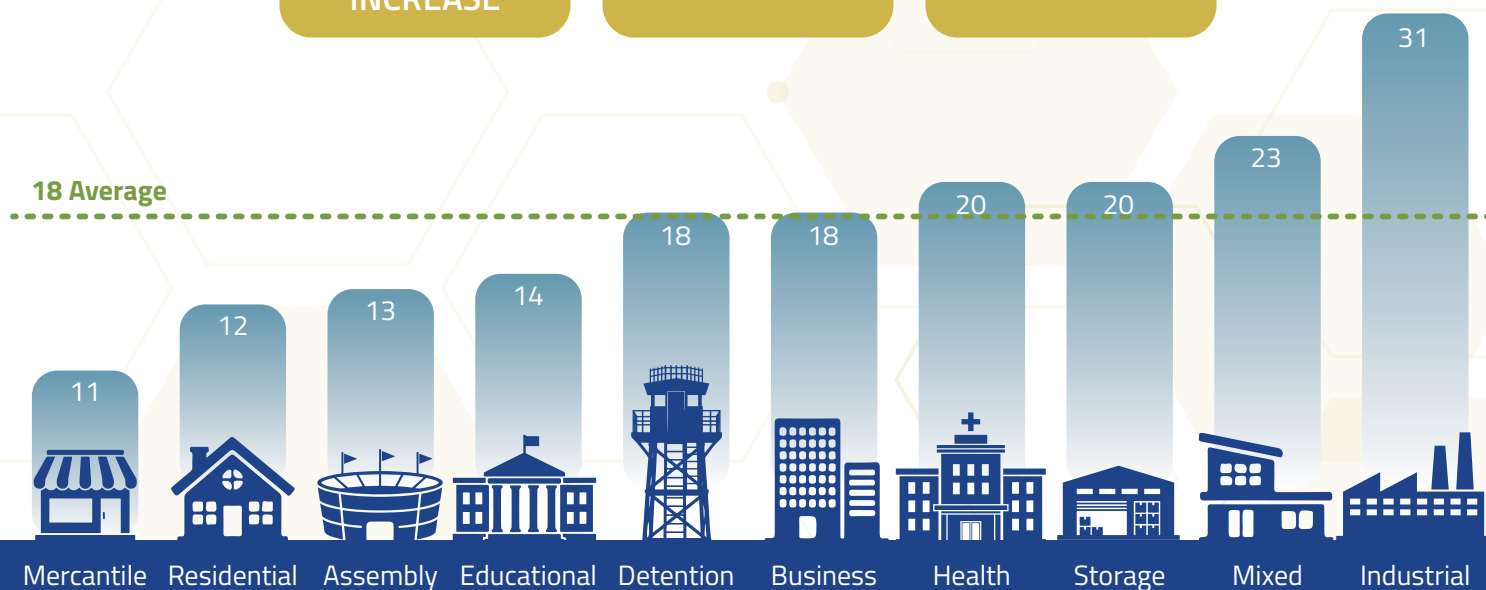
↑5.6%
OVERALL
INCREASE



↑65.4%
DETENTION



↓16%
MERCANTILE



Number of Devices Inspected per Inspection

Device Failure Rates

Device failure rate measures the percentage of inspected devices that are found in a noncompliant, deficient, or failed condition within a given occupancy type and application category. It is calculated by dividing failed devices by total devices inspected and expressing the result as a percentage. This metric serves as a direct indicator of reliability and compliance risk in the built environment. The callouts and visuals that follow highlight where device failure rates shifted most significantly by device application category and occupancy, with particular emphasis on how 2025 compares with 2024 in the context of the broader six-year trend.

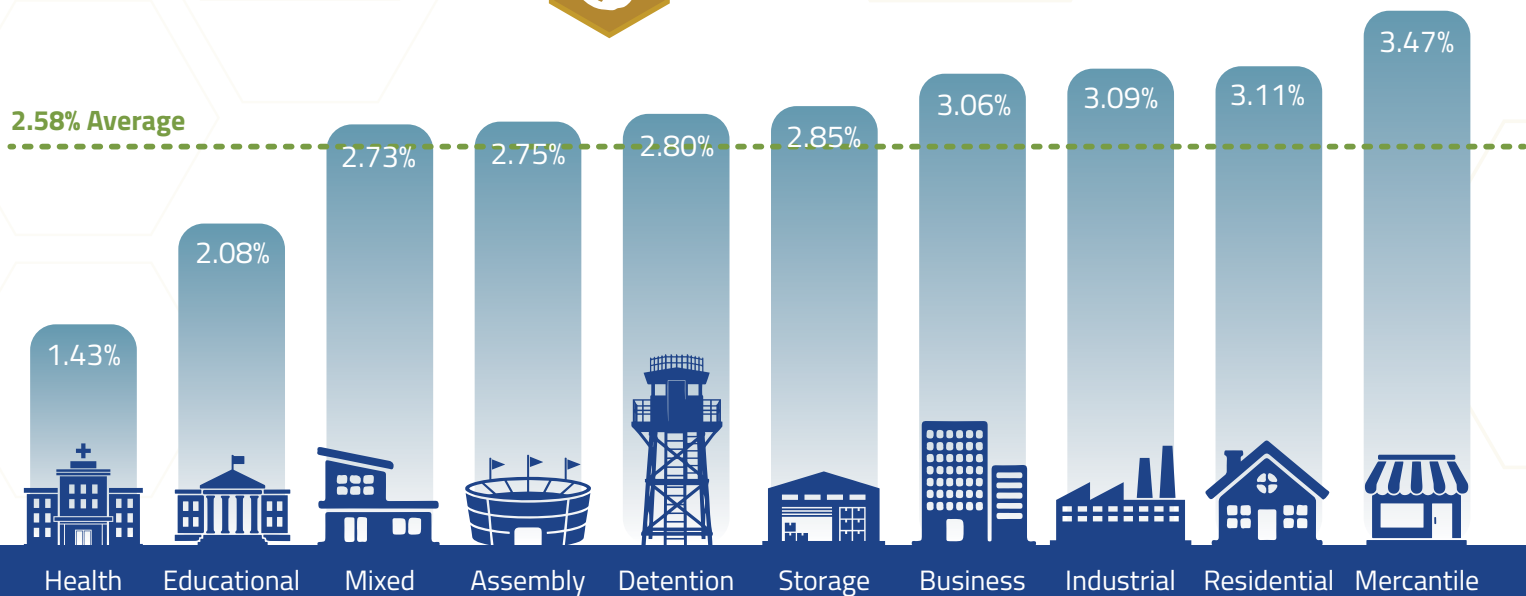
Because this metric aggregates all device types within a category, changes in failure rate reflect the overall mix and condition of devices in that occupancy, not a specific device type. Increases or decreases should be viewed as high-level risk signals rather than precise diagnostics of which individual devices are driving the change. To see a more detailed breakdown of top 10 devices by failure rate for each device category, see the device performance section on page 32.

HOW TO INTERPRET CHANGES IN DEVICE FAILURE RATE

- An increase in this rate means a higher share of devices in that category are failing in a given occupancy, indicating elevated reliability and compliance risk for that environment.
- A decrease in this rate means a smaller share of devices are failing, suggesting improved reliability, maintenance effectiveness, or successful remediation efforts within that occupancy.



FireScan



Device Failure Rate per Occupancy



FireScan

KEY INSIGHTS

FireScan device failure rates were mostly stable in 2025, with only a small increase of 0.06 percentage points on average across all occupancies.

NOTABLE DECREASE IN 2025

- **Detention:** The rate moved down 0.71 percentage points from 3.51% to 2.80% (a 20% relative decrease). This is the largest change in FireScan devices and brings Detention failure rates down from the higher band observed in prior years.



↑0.06%
AVERAGE
INCREASE



↓20%
DETENTION

KEY INSIGHTS

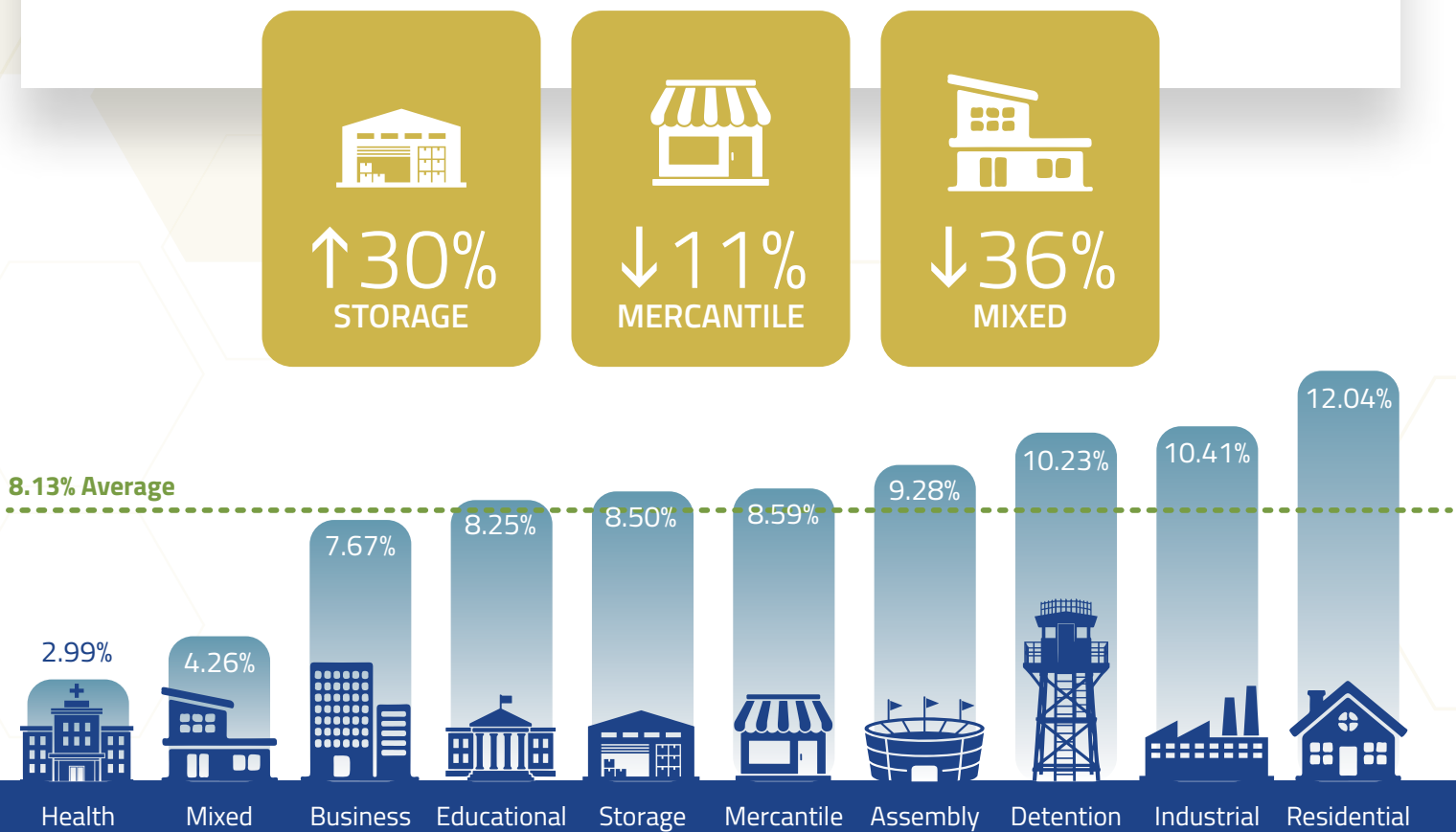
SafetyScan device failure rates generally moved lower in 2025, with a few occupancies showing sharper shifts that are worth calling out.

NOTABLE INCREASE IN 2025

- **Storage:** The rate increased by 1.98 points from 6.52% to 8.50% (a 30% relative increase). That rise stands out against a previously lower range and flags Storage as an emerging area of higher SafetyScan failure risk.

NOTABLE DECREASES IN 2025

- **Mercantile:** The rate declined by 1.07 points from 9.66% to 8.59% (an 11% relative decrease). This continues a clear multi year downward trend in mercantile SafetyScan failure rates.
- **Mixed:** The rate decreased by 2.35 points from 6.60% to 4.26% (a 36% relative decrease). This is the largest decline in rates among all occupancy types and meaningfully lowers Mixed failure rates compared with prior years.



Device Failure Rate per Occupancy



SecurityScan

KEY INSIGHTS

SecurityScan device failure rates moved lower in most occupancies in 2025, with a few segments experiencing especially sharp percentage changes.

NOTABLE INCREASE IN 2025

- **Storage:** The rate increased by 1.56 points from 0.77% to 2.33% (a substantial 201% relative increase). This jump lifts Storage well above its prior low baseline and signals a clear rise in observed failures for SecurityScan devices.

NOTABLE DECREASE IN 2025

- **Detention:** The rate declined by 1.99 points from 3.53% to 1.54% (a 56% relative decrease). That reduction sharply lowers detention failure rates compared with the higher levels seen in earlier years.

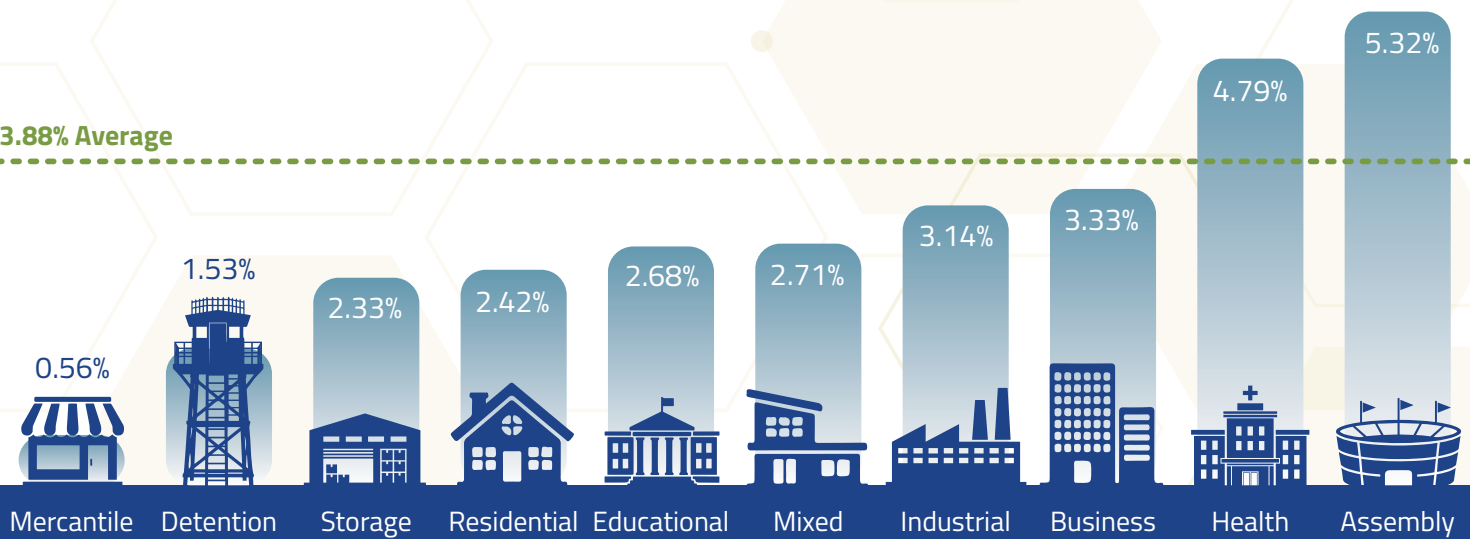


↑201%
STORAGE



↓56%
DETENTION

3.88% Average



Device Failure Rate per Occupancy



KEY INSIGHTS

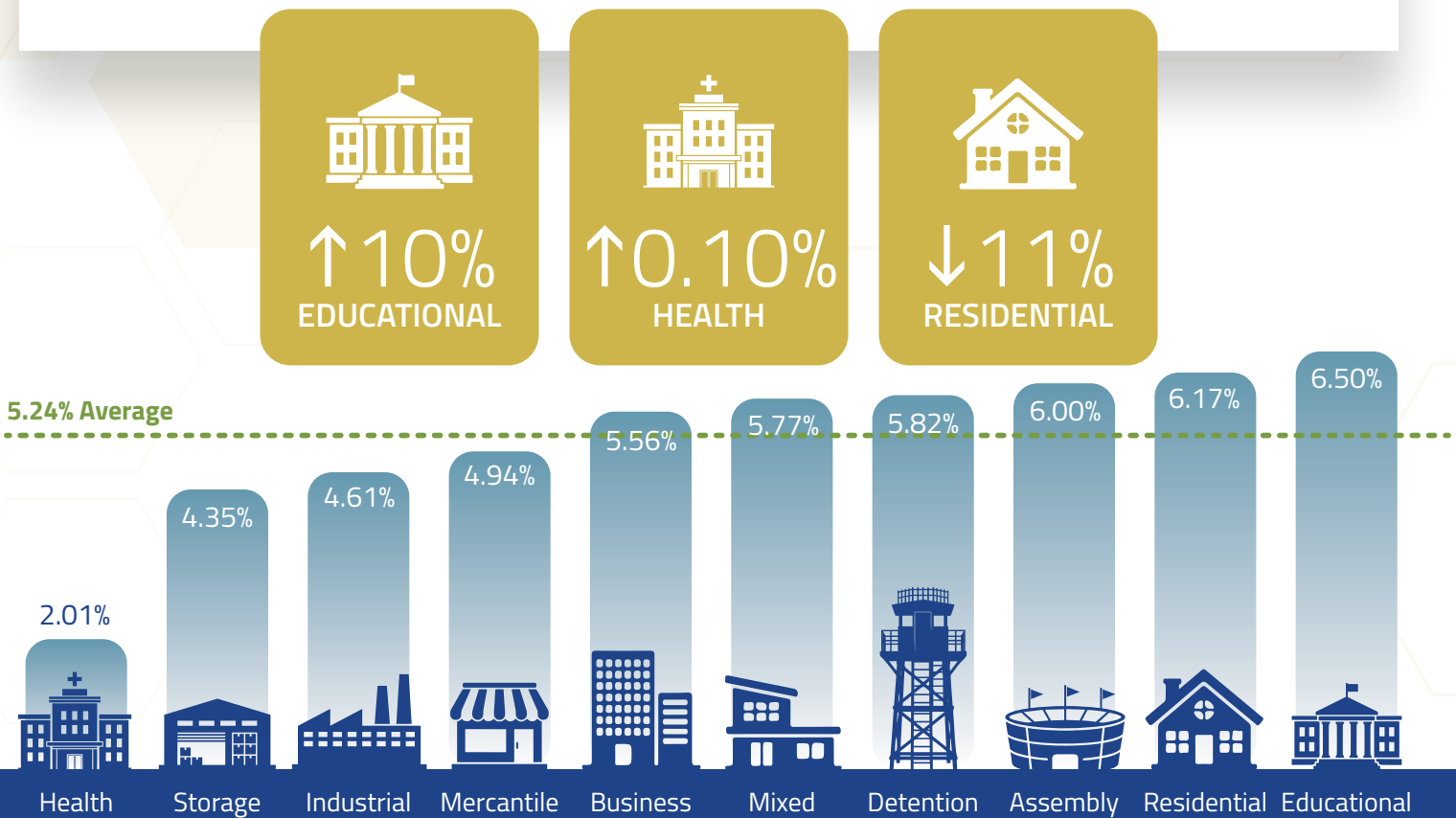
SprinklerScan device failure rates were relatively stable in 2025, with only a handful of occupancies showing shifts large enough to note.

NOTABLE INCREASES IN 2025

- **Educational:** Failure rates increased the most among all other occupancies for SprinklerScan devices by 0.59 points moving from 5.90% to 6.50% (a 10% relative increase). This continues an upward trend that started in 2022.
- **Health:** While increasing slightly by a tenth of a percentage point, this occupancy type continues the six-year trend of having the lowest failure rates.

NOTABLE DECREASE IN 2025

- **Residential:** The rate decreased by 0.77 points from 6.94% to 6.17% (an 11% relative decrease). This brings residential SprinklerScan failures down from the upper end of the range toward more moderate levels.



Device Failure Rate per Occupancy



SuppressionScan

KEY INSIGHTS

SuppressionScan device failure rates were mostly steady in 2025, with a few occupancies showing clearer movement.

NOTABLE INCREASE IN 2025

- **Detention:** SuppressionScan devices of this occupancy saw the greatest increase of 0.34 percentage points (a 16% relative increase) reversing the decrease seen in 2024.

NOTABLE DECREASE IN 2025

- **Mercantile:** The rate decreased by 1.40 points from 5.48% to 4.08% (a 26% relative decrease). This is the largest decrease among all occupancy types for SuppressionScan devices.

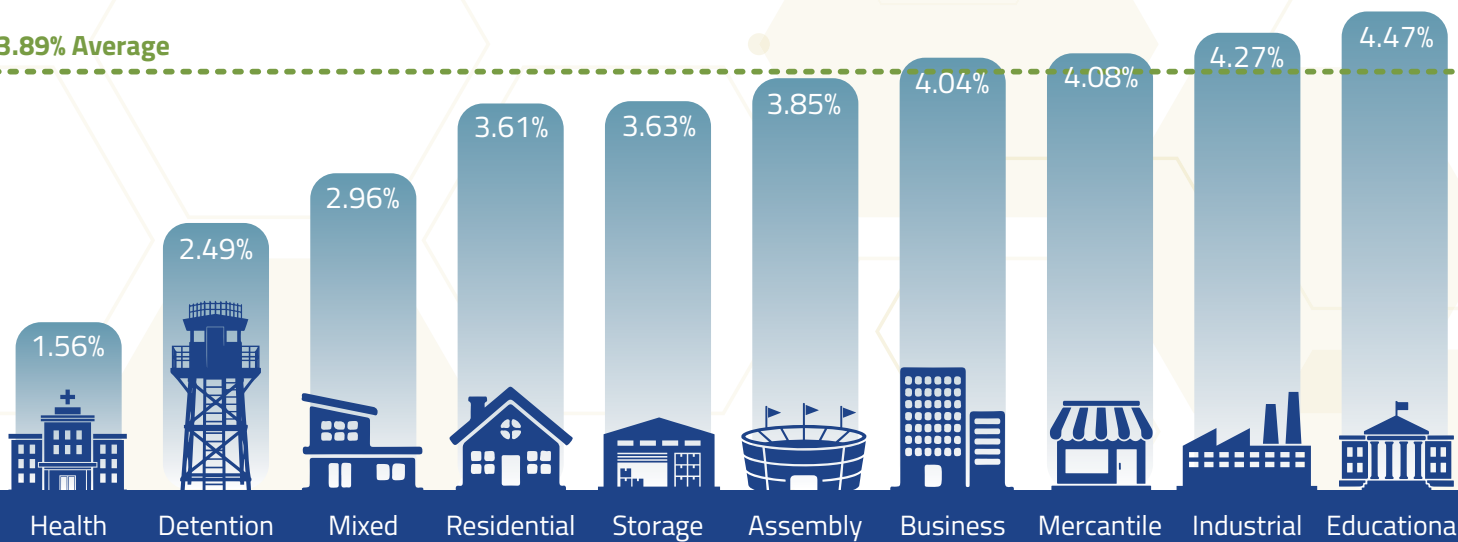


↑ 16%
DETENTION



↓ 26%
MERCANTILE

3.89% Average



Device Failure Rate per Occupancy

Device Performance

This section presents detailed, device level analysis based on data collected from the five BuildingReports ScanSeries applications. Its objective is to show high level failure reason categories by device type, supported by top ten device details.

The analysis is presented using four chart types:

- Failure reason categories
- Top ten devices by:
 - Device failures per 100 inspections
 - Device failure rate
 - Inspection time per device

Note: Devices with fewer than 30 observations are excluded from the top ten device charts.

DEVICE FAILURE REASON CATEGORIES

ScanSeries uses free-text fields for device failure reasons, allowing inspectors to provide expressive, detailed descriptions, including support for multiple languages and local terminology. Using natural language processing techniques, 30,000 of the most frequent unique failure reasons have been standardized and grouped into 11 categories, enabling consistent analysis while preserving the nuance of the original entries.

Damaged

Examples: physical deterioration issues such as damage or wear, leaks or leak-down conditions, corrosion or rust, painted or caked equipment, broken or dented parts, damaged cylinders, discharges caused by damage, and speaker failure due to excessive wear.

Defective

Examples: functional or performance failures such as failed tests or operation, sensitivity or flow test failures, impairments or improper operation, inadequate coverage due to device failure, unsupervised (unlocked or unsealed) devices, circuit or coupling failures, contaminated or dirty detectors, failed annunciation or load tests, and programming or reporting issues where the system does not operate as intended.

Device or Component Missing

Examples: missing hardware or accessories such as missing devices, missing caps or valves, missing signage and labels or tags, missing parts or components, units removed for construction or taken out for repair and not present, extinguishers or hoses missing from their cabinets, and other cases where a required device, tool, or identification element is not installed or not on site.

Disconnected

Examples: power and communication disconnects such as disconnected wiring, no power or no power supply, no water supply, units unplugged, devices not wired correctly or not connected, no communication or no signal to the panel, did not report to the fire alarm control panel, no connection to associated air or mechanical units, and other conditions where the monitoring or control path is open or disabled.

Expired or Decommissioned

Examples: age and end-of-life conditions such as expired or out-of-date devices, date expired tags, decommissioned systems, no install date with visibly old equipment, out of service status due to age, dead or expired batteries, tags or labels past their expiry, obsolete or outdated devices needing replacement, nozzles or cylinders beyond service life, and similar cases where service life is over rather than the device simply malfunctioning.

Inaccessible or Blocked

Examples: access and obstruction issues such as devices covered or obstructed, inaccessible locations, doors locked or rooms occupied, access denied by site rules or customer, areas under construction, equipment that cannot be inspected or reached to test, and general no-access situations where inspection or functional testing cannot be performed.

Incompatible

Examples: application and code mismatches such as incompatible devices, incorrect size or rating, unauthorized field modifications, wrong sprinkler head or valve type, wrong hose or nozzle, improper or non-listed device applications, and other instances where equipment does not meet design, listing, or code compatibility requirements even if it currently operates.

Incorrect Description

Examples: labeling, programming, and description issues such as incorrect or missing labels, wrong or misleading panel text, outdated descriptions and addresses, programming errors, and cases where signage no longer matches the installed device.

Location Discrepancy

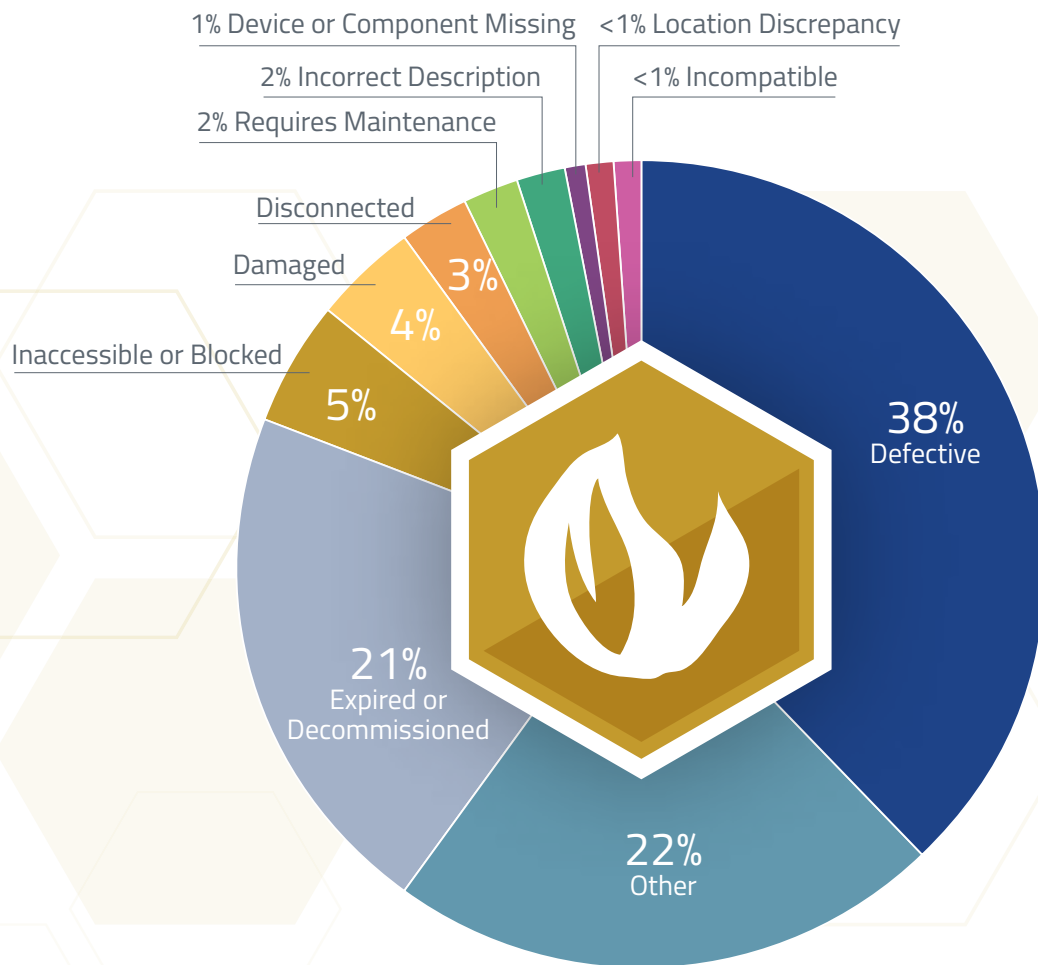
Examples: mapping and placement issues such as fail to locate or could not locate, devices that were not located or not found, change-of-location situations, location unknown, needs relocating, too close to ceiling fans or vents, wrong location relative to plans or drawings, and other cases where the physical position or documented location of the device is incorrect or noncompliant.

Requires Maintenance

Examples: maintenance or service required conditions such as inspections or hydrostatic tests due, scheduled multi year servicing, general maintenance flags, equipment needing remounting, relocation, adjustment, cleaning, charging, or battery replacement, programming or reprogramming needs, improperly mounted equipment requiring correction, coupling refit or tightening, gauge replacement or exercise, and other scheduled or corrective maintenance activities rather than outright failure.

Other

Examples: not specified and narrative notes such as blank or no data entries that are later remapped to Other, special note or see notes comments, customer requests, construction or covid-related context comments that do not map cleanly elsewhere, and any remaining reasons that do not match a more specific pattern and therefore fall into the default Other bucket.



NOTABLE DEVICES

Batteries: Across all occupancy types except Detention, batteries had the highest number of failures of all FireScan devices with 81 failing every 100 inspections on average. Batteries also had the highest failure rate of 15.9%, a 1.3 percentage point increase from 2024. This follows a consistent upward trend of increasing battery failure rates over the past 6 years. The top failure reasons were expired dates, failed tests, and damage.

Smoke Detectors: On average across all occupancies, despite having a failure rate of 1.1%, smoke detectors had the second highest number of failures per inspection with about one failure for every three inspections. In Detention facilities, smoke detectors failed at a higher rate than batteries; about one failure per inspection. Smoke detector deficiencies in 2025 were driven primarily by device performance issues, with failed sensitivity emerging as the most common specific failure reason, followed by failed test, failed operation, and programming error.

ALL OCCUPANCIES DEVICE FAILURES PER 100 INSPECTIONS

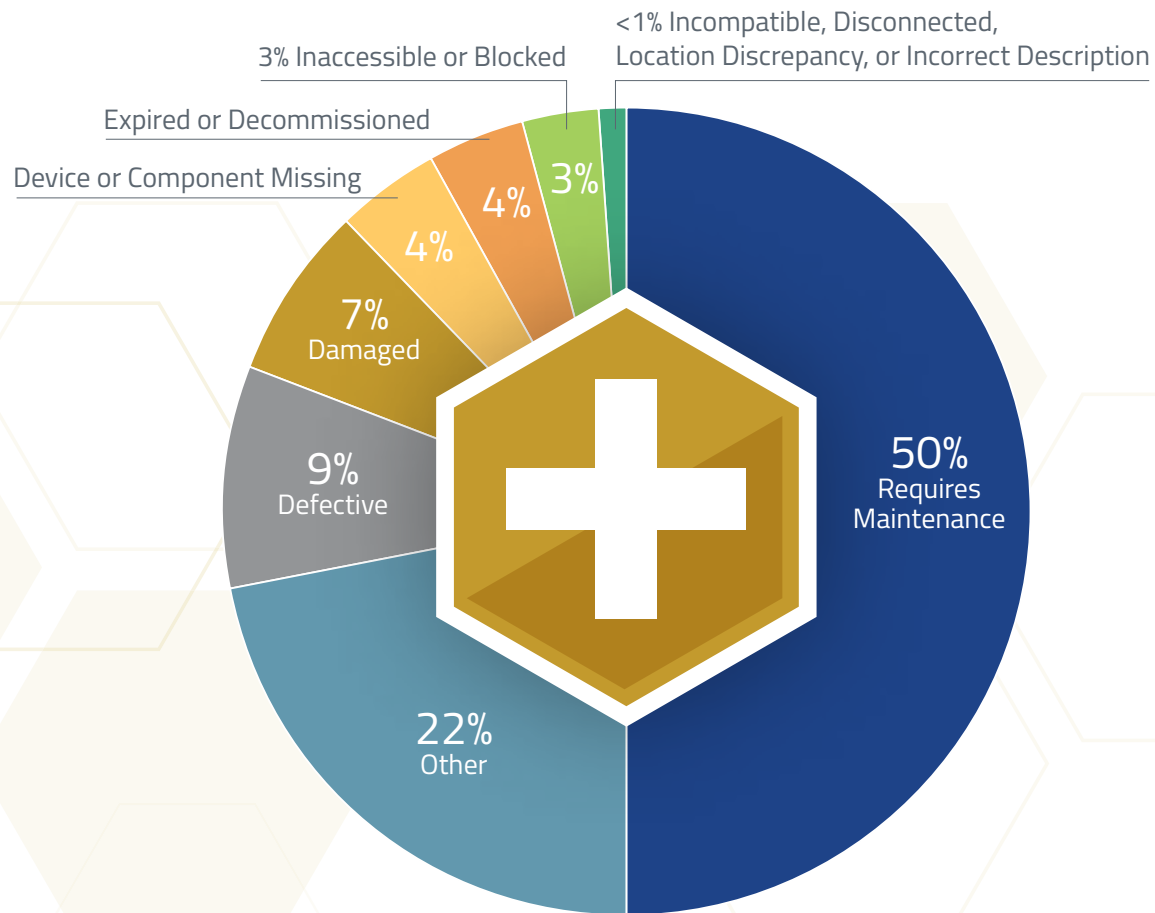
Device	Failures per 100 Inspections
Battery	81.47
Smoke Detector	32.54
Heat Detector	12.35
Pull Station	12.10
Duct Detector	9.58
Horn/Strobe	6.99
Smoke Alarm	4.52
Speaker/Strobe	4.28
Control Panel	3.91
Strobe	3.48

ALL OCCUPANCIES DEVICE FAILURE RATE

Device	Failure Rate
Battery	15.9%
Emergency Light	10.5%
No Entry Sign	10.0%
Stairwell Exit	9.8%
Call Station	9.5%
Exit Light	8.9%
Door Smoke Detector	8.7%
Building Automation	8.5%
Signage	7.6%
Smoke Alarm	7.0%

ALL OCCUPANCIES TIME PER DEVICE TEST (SECONDS)

Device	Time per Test (sec)
Knox Box	289.6
Printer	239.5
Generator Running	236.3
Multi-Sensor Alarm	201.3
Low Temperature	195.5
Microphone	181.6
Kitchen Hood	175.2
Beam Detector	170.6
Annunciator	166.6
Disconnect	162.9



NOTABLE DEVICES

Fire Extinguishers: For all occupancy types, fire extinguishers had the highest number of failures per inspection for SafetyScan devices. Across all occupancies, an average of 1.92 fire extinguishers failed per inspection, ranging from 0.96 failures per inspection in Health to 4.45 in Residential. 7.6% of all fire extinguishers tested failed in 2025; a slight decrease from 8.1% in 2024. Fire extinguisher deficiencies in 2025 were overwhelmingly driven by scheduled, time-based maintenance requirements, specifically hydrostatic testing and six-year maintenance/breakdowns, which far outnumbered physical damage, missing units, or access issues.

ALL OCCUPANCIES DEVICE FAILURES PER 100 INSPECTIONS

Device	Failures per 100 Inspections
Fire Extinguisher	191.53
Emergency Light	35.93
Exit Sign	16.88
Breathing Cylinder	14.61
Fire Hose	9.77
Special System	7.49
Cartridge Extinguisher	6.59
Shower Station	2.89
Breathing Apparatus	2.59
Eye Wash Station	2.08

ALL OCCUPANCIES DEVICE FAILURE RATE

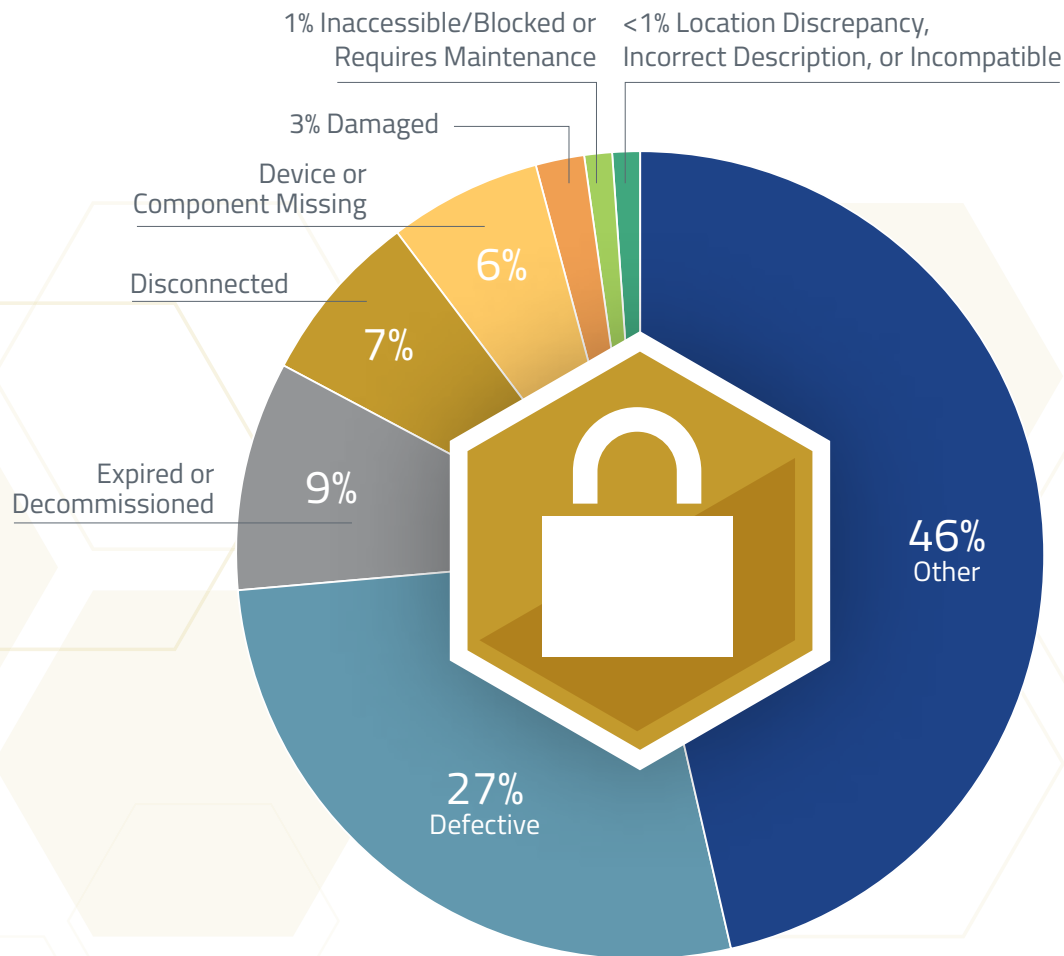
Device	Failure Rate
Medical Gas Outlet	36.36%
Cylinder	31.33%
O2 Tank	30.46%
Firestopping	29.47%
Breathing Cylinder	27.36%
Actuator	24.69%
Smoke Door	24.13%
Special System	22.62%
Fire Hose	20.44%
Fire Blanket	16.42%

ALL OCCUPANCIES TIME PER DEVICE TEST (SECONDS)

Device	Time per Test (sec)
Skin Prep Solution	615.54
Fire Smoke Damper	330.70
Defibrillator	300.86
Smoke Damper	294.12
Fire Damper	293.13
Pulse Oximeter	283.14
Roll Down Door	280.89
Regulator	277.01
Storage Container	270.13
Firestopping	268.27



SecurityScan



NOTABLE DEVICES

Batteries: While tested less frequently than batteries in the FireScan category, batteries classified under SecurityScan recorded the highest failure volume, averaging 35 failures per 100 inspections across all occupancies. 24.4% of these batteries tested failed, with expired dates, failed tests, and damage being the top reasons.

Electric Strikes: Over all occupancies, electric strikes failed at a rate of 14.5% in 2025 (down from 21.3% in 2024), with Health having a higher rate of 17.6%. In Health occupancies, this equated to about two electric strikes failing per inspection. Across the board, these 2025 failures were heavily dominated by door contact (DC) issues, particularly contacts that were missing, not working, or improperly installed and wired.

ALL OCCUPANCIES DEVICE FAILURES PER 100 INSPECTIONS

Device	Failures per 100 Inspections
Batteries	35.49
Electric Strike	27.68
Camera	21.36
Door	21.15
Reader	19.03
Magnetic Lock	14.16
Door Contact	12.27
Battery	7.71
Electric Lock	5.86
Code Blue	5.28

ALL OCCUPANCIES DEVICE FAILURE RATE

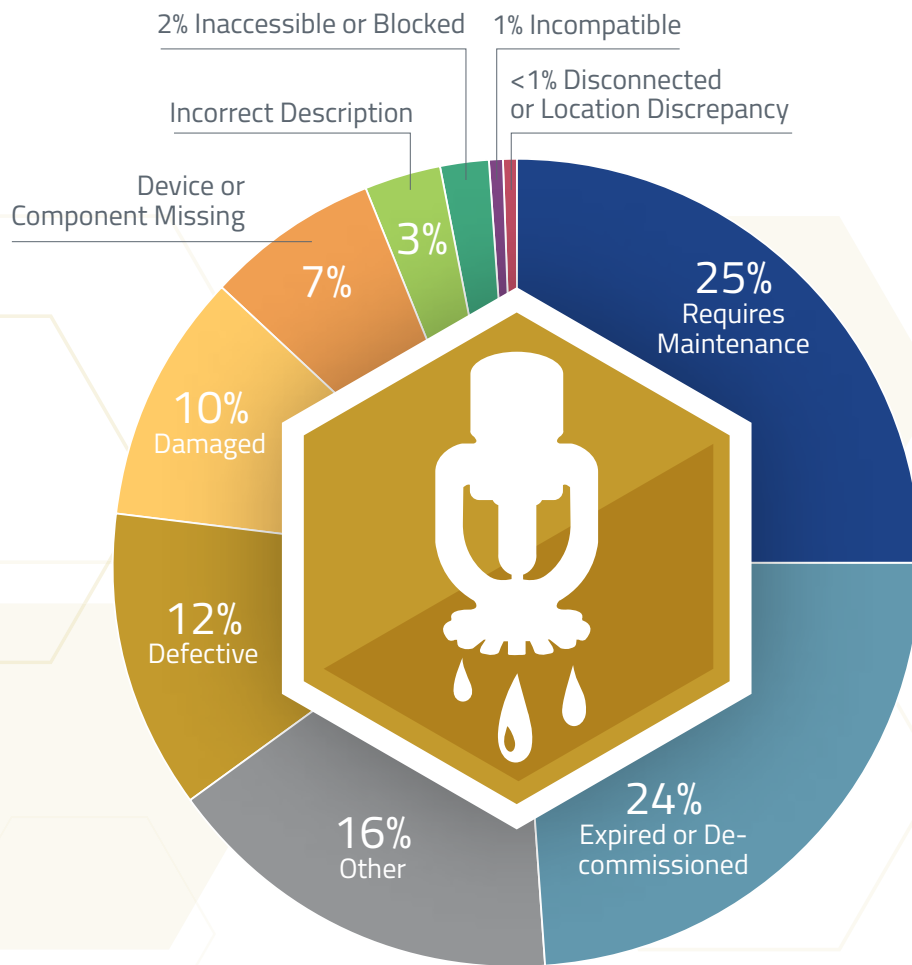
Device	Failure Rate
Emergency Call Box	34.05%
Battery	24.35%
Exit	24.27%
Radio	17.29%
Magnetic Lock	15.41%
Batteries	14.71%
Electric Strike	14.54%
Keyswitch	11.18%
Printer	10.91%
Door	9.98%

ALL OCCUPANCIES TIME PER DEVICE TEST (SECONDS)

Device	Time per Test (sec)
Wireless Mesh Network Radio	475.74
ERCES Power Supply	351.15
Parking	320.90
Fence	306.79
Battery Box	301.04
Entrance	298.12
NVR	294.83
Client Station	278.01
Video Monitor	272.55
PTZ Unit	267.69



SprinklerScan



NOTABLE DEVICES

Gauges: Among SprinklerScan devices, gauges had the highest average failure volume in 2025, with 47 failures per 100 inspections across all occupancies except Mercantile. This ranged from 24 failures per 100 inspections in Mercantile to 74 failures per 100 inspections in Mixed occupancies. The overall device failure rate was 10.2% (down from 10.8% in 2024). The overwhelming majority of these failures were driven by scheduled maintenance requirements, with expired dates and 5-year service intervals accounting for most deficiencies, followed by damage, wear, and missing or defective gauges.

ALL OCCUPANCIES DEVICE FAILURES PER 100 INSPECTIONS

Device	Failures per 100 Inspections
Gauge	47.21
Check Valve	13.56
Piping	13.19
Control Valve	11.39
Fire Dep't Connection	9.23
Waterflow Switch	6.21
Backflow Prevention	5.27
Tamper Switch	5.02
Signage	4.64
Drain	4.32

ALL OCCUPANCIES DEVICE FAILURE RATE

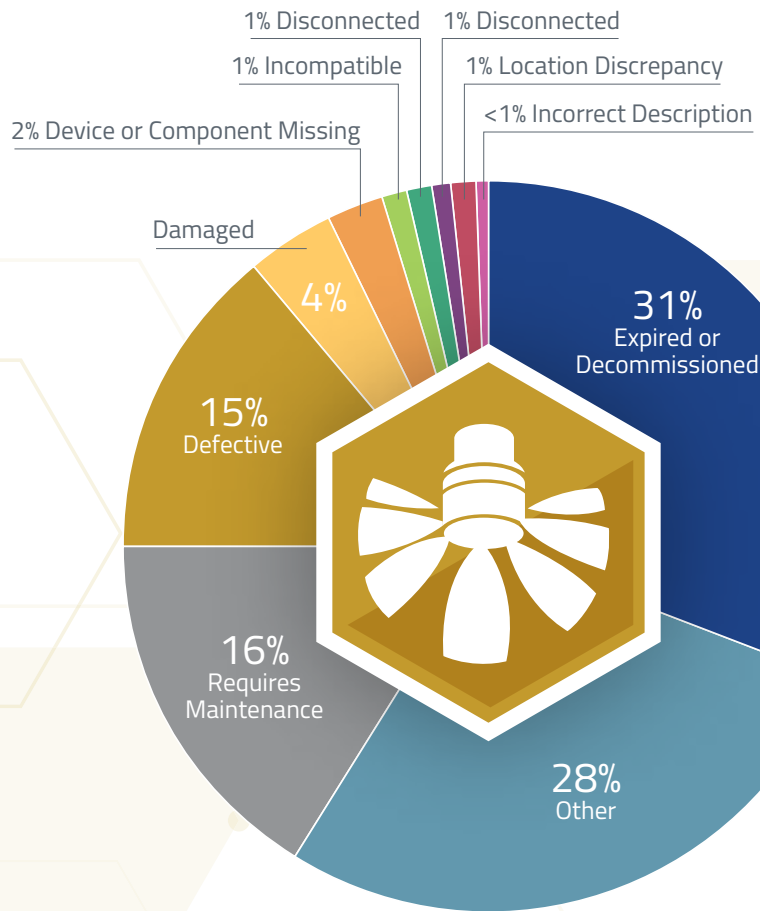
Device	Failure Rate
Impairment	97.34%
Beacon	42.11%
Flow Meter	25.50%
Special Sprinkler	25.21%
Antifreeze System	19.94%
Manual Desiccant	18.11%
Dry Sprinkler	15.16%
System Documents	14.95%
Standard Response	14.54%
Piping	14.42%

ALL OCCUPANCIES TIME PER DEVICE TEST (SECONDS)

Device	Time per Test (sec)
Hydraulic Driver	440.50
Fire Hydrant	267.20
Impairment	258.03
Backflow Prevention	250.61
System Documents	229.98
Pump Test	200.33
Combination Standpipe	194.41
Flow Meter	190.94
Antifreeze System	183.10
Fire Hose	169.65



SuppressionScan



NOTABLE DEVICES

Cylinders: Among SuppressionScan devices, cylinders had the highest average failures per inspection in 2025 at 1 per 10 inspections across all occupancies, with a device failure rate of 7.3% (down from 8.1% in 2024). Across occupancies, this ranged from 3.7 failures per 100 inspections in Health to 11.5 in Business. The overwhelming majority of these failures were driven by scheduled maintenance requirements, with expired dates accounting for most deficiencies, followed by required maintenance.

Batteries: Ranking second, batteries averaged 8.48 failures per 100 inspections, with a device failure rate of 13.2% (up from 12% in 2024). Battery failures varied significantly across occupancies, ranging from 2 per 100 inspections in Assembly to 19.8 in Storage. The top failure reasons were expired dates and failed tests, followed by age-related failures, damage/wear, and defective units.

Hoses: Coming in third, hoses averaged 7.7 failures per 100 inspections, with a device failure rate of 18.1% (up from 14.5% in 2024). Across occupancies, hose failures ranged widely from 0.87 per 100 inspections in Health to 44.23 in Industrial, with expired dates as the primary failure reason, followed by required maintenance and hydrostatic testing due dates.

ALL OCCUPANCIES DEVICE FAILURES PER 100 INSPECTIONS

Device	Failures per 100 Inspections
Cylinder	10.26
Battery	8.48
Hose	7.67
Kitchen System	7.14
Cartridge	3.84
Fire Extinguisher	3.49
Agent Tank	3.33
Nozzle	2.36
CO2 Tank	1.99
Fusible Link	1.73

ALL OCCUPANCIES DEVICE FAILURE RATE

Device	Failure Rate
Carbon Dioxide System	22.18%
Door Fan Test	21.31%
Hose	18.11%
Inspector's Test	17.56%
Leak Detector	15.31%
Battery	13.22%
Foam System	11.99%
Dry Chemical System	11.00%
Halon System	10.22%
Emergency Light	9.95%

ALL OCCUPANCIES TIME PER DEVICE TEST (SECONDS)

Device	Time per Test (sec)
Foam Tank	253.83
Gas Detection	225.42
Foam Distribution Device	214.55
Inspector's Test	184.90
Low Water	171.29
Emergency Light	145.64
Fire Extinguisher	139.63
Exit Sign	138.99
Pre-Action System	125.90
Air Compressor	122.63



Appendix

Device Failure Rate

Application	Occupancy Type	2020	2021	2022	2023	2024	2025
FireScan	All	2.31%	2.33%	2.43%	2.40%	2.42%	2.58%
	Assembly	2.58%	3.01%	3.19%	2.51%	2.56%	2.75%
	Business	2.92%	2.80%	2.93%	3.10%	2.97%	3.06%
	Detention	2.17%	1.73%	2.20%	3.54%	3.51%	2.80%
	Educational	1.98%	2.02%	1.92%	1.95%	1.97%	2.08%
	Health	1.09%	1.27%	1.27%	1.06%	1.22%	1.43%
	Industrial	2.96%	3.06%	3.14%	3.08%	2.77%	3.09%
	Mercantile	3.92%	3.25%	5.05%	4.29%	3.07%	3.47%
	Mixed	2.05%	2.42%	2.57%	2.37%	2.82%	2.73%
	Residential	2.96%	2.87%	3.24%	3.00%	3.00%	3.11%
SafetyScan	Storage	4.58%	2.76%	2.95%	4.23%	2.85%	2.85%
	All	9.22%	8.33%	7.77%	8.08%	8.70%	8.13%
	Assembly	8.12%	9.13%	9.82%	10.14%	10.57%	9.28%
	Business	8.18%	8.50%	8.12%	7.65%	8.01%	7.67%
	Detention	11.87%	10.64%	9.79%	11.70%	12.10%	10.23%
	Educational	10.85%	9.81%	8.23%	8.59%	9.05%	8.25%
	Health	3.57%	3.04%	2.72%	3.00%	4.25%	2.99%
	Industrial	12.40%	9.73%	8.67%	10.40%	10.84%	10.41%
	Mercantile	16.67%	15.30%	14.54%	11.87%	9.66%	8.59%
	Mixed	6.38%	5.74%	5.46%	4.97%	6.60%	4.26%
SecurityScan	Residential	11.38%	11.38%	11.14%	11.28%	12.59%	12.04%
	Storage	7.09%	5.92%	7.10%	6.62%	6.52%	8.50%
	All	2.89%	3.26%	3.99%	4.53%	5.53%	3.88%
	Assembly	3.49%	2.02%	2.67%	2.23%	4.38%	5.32%
	Business	3.43%	3.25%	3.28%	3.09%	3.75%	3.33%
	Detention	2.73%	2.78%	3.85%	7.17%	3.53%	1.54%
	Educational	4.85%	7.26%	4.50%	2.70%	4.06%	2.68%
	Health	2.31%	2.88%	4.03%	5.83%	8.73%	4.79%
	Industrial	4.32%	3.77%	5.13%	4.74%	4.18%	3.14%
	Mercantile	3.88%	5.19%	14.53%	13.95%	0.95%	0.56%
SprinklerScan	Mixed	2.52%	1.82%	4.07%	3.21%	3.76%	2.71%
	Residential	2.60%	3.69%	4.91%	3.52%	3.28%	2.42%
	Storage	0.26%	3.88%	3.02%	0.75%	0.77%	2.33%
	All	4.91%	4.88%	5.06%	5.53%	5.32%	5.24%
	Assembly	6.36%	7.15%	6.58%	6.56%	6.26%	6.00%
	Business	5.25%	5.35%	5.39%	5.40%	5.59%	5.56%
	Detention	7.84%	6.71%	7.79%	7.22%	6.37%	5.82%
	Educational	6.13%	5.65%	5.06%	5.57%	5.90%	6.50%
	Health	2.02%	1.73%	1.83%	1.71%	1.88%	2.01%
	Industrial	4.40%	4.30%	4.22%	4.95%	4.42%	4.61%
SuppressionScan	Mercantile	5.50%	4.94%	5.46%	5.35%	5.03%	4.94%
	Mixed	5.20%	4.50%	7.97%	8.78%	6.10%	5.77%
	Residential	5.53%	5.52%	6.14%	8.43%	6.94%	6.17%
	Storage	5.21%	5.71%	4.89%	5.58%	4.21%	4.35%
	All	3.38%	3.33%	3.47%	3.88%	3.86%	3.89%
	Assembly	3.83%	3.84%	3.40%	3.06%	3.74%	3.85%
	Business	3.46%	3.51%	3.60%	4.04%	3.96%	4.04%
	Detention	7.78%	1.43%	2.23%	2.44%	2.15%	2.49%
	Educational	4.28%	4.13%	4.49%	3.90%	4.11%	4.47%
	Health	1.93%	2.15%	1.78%	1.74%	1.59%	1.56%
SuppressionScan	Industrial	3.88%	3.72%	3.44%	4.44%	4.32%	4.27%
	Mercantile	6.56%	3.39%	3.57%	4.68%	5.48%	4.08%
	Mixed	1.80%	1.25%	2.82%	3.34%	3.76%	2.96%
	Residential	4.91%	5.27%	5.50%	4.25%	3.38%	3.61%
	Storage	5.31%	5.45%	4.03%	2.10%	3.40%	3.63%

Inspection Time (Minutes)

Application	Occupancy Type	2020	2021	2022	2023	2024	2025
FireScan	All	157.59	156.66	152.94	146.73	137.00	131.82
	Assembly	219.03	215.60	169.22	150.80	128.05	119.95
	Business	127.33	127.41	125.59	118.97	114.45	113.53
	Detention	151.05	161.85	159.66	153.35	121.07	169.72
	Educational	154.33	159.04	176.42	191.03	193.14	164.88
	Health	320.33	324.76	343.12	325.06	293.11	265.78
	Industrial	95.42	99.61	94.61	87.99	83.25	106.98
	Mercantile	125.62	126.94	170.42	127.63	86.53	92.98
	Mixed	142.01	137.97	133.82	148.01	147.38	149.34
	Residential	148.01	138.93	108.94	107.95	102.63	100.83
SafetyScan	Storage	100.46	79.45	70.91	80.35	63.65	69.35
	All	93.76	87.75	82.72	79.92	78.06	73.98
	Assembly	76.91	75.94	72.14	68.46	71.29	62.31
	Business	73.50	71.28	69.24	65.10	64.02	61.83
	Detention	77.85	109.96	81.21	92.02	104.62	93.53
	Educational	77.13	78.87	75.47	79.69	80.45	78.89
	Health	87.17	86.70	73.16	69.20	73.13	67.72
	Industrial	184.80	151.16	139.27	150.63	145.15	138.48
	Mercantile	74.43	64.91	76.19	70.30	60.92	61.51
	Mixed	62.14	64.85	63.70	58.50	63.58	58.42
SecurityScan	Residential	103.03	103.33	107.31	103.04	106.83	107.36
	Storage	68.02	61.68	59.00	54.27	51.52	52.24
	All	88.50	87.14	84.41	104.24	111.11	115.57
	Assembly	72.03	125.81	50.25	55.03	66.63	60.58
	Business	63.41	64.76	67.06	75.12	75.93	63.13
	Detention	237.44	255.56	106.53	79.21	170.99	150.35
	Educational	85.77	115.08	57.49	59.12	90.47	71.94
	Health	167.70	161.07	187.19	240.15	261.10	323.00
	Industrial	128.91	107.98	61.20	123.87	215.59	239.63
	Mercantile	64.32	66.60	101.97	78.04	45.73	40.46
SprinklerScan	Mixed	66.98	63.04	68.73	93.42	88.96	83.00
	Residential	70.86	68.58	64.67	79.61	62.89	79.99
	Storage	28.92	43.78	26.71	22.36	18.76	36.54
	All	52.28	50.68	49.78	50.49	48.52	49.31
	Assembly	62.24	58.05	55.42	50.33	48.34	45.61
	Business	47.32	46.14	44.68	45.34	43.90	44.27
	Detention	57.16	60.12	66.56	63.29	63.32	64.14
	Educational	40.01	39.33	40.07	42.79	44.01	44.93
	Health	62.87	62.89	64.11	62.47	60.13	59.78
	Industrial	63.69	59.34	62.41	61.01	54.96	62.58
SuppressionScan	Mercantile	48.46	47.92	53.09	57.11	54.24	62.08
	Mixed	55.84	55.42	49.96	45.45	47.88	54.64
	Residential	61.01	59.84	57.42	65.10	61.45	58.89
	Storage	80.34	65.40	58.47	53.54	51.94	47.99
	All	26.01	26.70	26.40	23.30	21.05	20.24
	Assembly	23.81	26.20	23.15	16.97	14.10	13.99
	Business	23.93	24.03	23.18	22.13	20.03	20.01
	Detention	34.18	41.41	25.35	28.25	11.55	21.78
	Educational	18.31	17.25	16.69	15.88	13.84	15.43
	Health	24.87	24.75	28.66	25.09	23.05	22.97
	Industrial	40.94	45.71	57.55	43.62	45.28	35.88
	Mercantile	20.55	18.82	22.24	20.52	22.40	14.55
	Mixed	45.39	51.23	30.36	21.81	23.58	25.68
	Residential	14.13	12.31	14.67	19.33	13.47	17.91
	Storage	43.68	53.68	31.78	19.82	20.78	34.72



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