

Expansion of Police Surveillance Technology

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Key Takeaways

- + Closed-circuit television (CCTV) video surveillance cameras have an overall modest, significant effect on reducing crime (likely around 13-15%), but no significant effect on violent crime specifically. The handful of studies finding an effect on serious violence report that CCTV cameras are paired with complementary proactive interventions, such as directed police patrol or improved street lighting.
- + Research evidence on automated license plate readers (ALPRs) is less developed. Well-designed field experiments consistently find no deterrent effect from ALPR patrols beyond that of typical patrol presence, and investigative contributions are often limited.
- + Both technologies work through deterrence and apprehension mechanisms that depend heavily on how they are implemented. Integration with proactive responses and adequate staffing matter more than the presence of cameras or readers alone.
- + Early evidence on law enforcement information centers shows more encouraging effects on serious violence than standalone CCTV or ALPR deployment, but the evidence base is small and concentrated in a handful of cities.

Background and Mechanisms

Police have increasingly incorporated surveillance technology such as closed-circuit television (CCTV) video cameras and automated license plate readers (ALPRs) to combat crime. Surveillance technologies are classified as situational crime prevention strategies that seek to alter the immediate environment and situational context of crime rather than offenders' underlying criminal motivations.¹ Within this framework, surveillance could plausibly reduce homicide through two mechanisms: deterrence, if offenders perceive an increased risk of detection, or apprehension, if CCTV footage or ALPR data leads to arrest.

The Research Evidence

CCTV is among the most rigorously studied situational crime prevention strategies, with three systematic reviews and meta-analyses conducted since 2002.² The most recent found that CCTV systems are associated with a roughly 13% reduction in overall crime relative to comparison areas. Critically, CCTV shows no significant effect on violent crime overall. Follow-up analyses further demonstrate that effects are highly contingent on implementation. Active monitoring, whereby live video feeds are watched in real time, produced significant reductions (~ -15%) while passive monitoring did not. CCTV programs pairing cameras with complementary interventions such as directed police patrol or improved street lighting produced significantly larger effects (~ -34%) than camera deployment alone.

Evaluations of CCTV published after the most recent systematic review and meta-analysis largely reinforce the findings around integration with proactive activities. Of 12 case-control evaluations published since that review (after 2019), only six reported significant crime reductions, four of which paired CCTV with additional interventions such as directed patrol³ or improved lighting and signage.⁴ Notably, the two studies where another police technology, specifically ALPR or gunshot detection systems, served as the sole complement to CCTV found no significant reductions in crime.⁵ This research suggests that stacking surveillance technologies together may not substitute for pairing surveillance with proactive human responses.

A separate, smaller literature examines CCTV's effect on apprehension. Piza et al. (2014)⁶ found that camera-detected in-progress crimes in Newark, NJ resulted in on-scene enforcement nearly twice as often as citizen 911 calls (33.1% vs. 17.0%), though there was no significant difference for violent crime incidents. Studies of systems in railway environments similarly find CCTV increases case clearance rates in retroactive investigations.⁷ In broader public settings, however, research demonstrates that apprehension effects are inconsistent and tend to concentrate in minor offense types rather than serious violence.⁸ Researchers caution against assuming that lessons from the research literature on CCTV and crime prevention (i.e., where active monitoring and complementary interventions largely drive effects) necessarily transfer to case clearance, given how comparatively few studies have rigorously tested CCTV's effect on apprehension.⁹

ALPR research is much less developed than CCTV research. ALPRs automatically scan large volumes of license plates and cross-reference them against multiple databases in real time, providing police substantial efficiency gains. However, studies consistently fail to detect an ALPR-specific deterrent effect once general patrol presence is accounted for.¹⁰ Some studies have found that ALPRs increase arrests,¹¹ but the effects are modest and ALPR-assisted cases account for only a fraction of overall investigative activity. For

example, one large-agency analysis found that ALPRs were documented in just 5-7% of eligible investigations, and that in those cases they contributed to case clearance about 19% of the time.¹² A more recent analysis found shooting clearance rates did not significantly change following the installation of ALPRs on all entrance and exit roadways in Atlantic City, NJ.¹³ A key challenge in this literature is that ALPR use varies widely among detectives, which presents methodological challenges for research testing the technology's effect on investigative outcomes.¹⁴

Integrating Technologies in Law Enforcement Information Centers

The research evidence suggests standalone surveillance is unlikely to explain a national homicide decline. However, “standalone” may not reflect how modern surveillance technologies operate in practice. Surveillance technologies are increasingly integrated with other technologies and data systems in an attempt to leverage the benefits of all systems simultaneously.¹⁵ Law enforcement information centers—namely real-time crime centers (RTCCs) and crime information centers (CICs)—have enabled agencies to better integrate their crime analysis and technological capabilities.¹⁶

Research on RTCCs and CICs has begun to develop over the prior decade. These centers integrate camera feeds, ALPR data, gunshot detection, and predictive analytics within a centralized function directing real-time patrol and investigative responses. Multiple studies have analyzed the effect of Chicago's Strategic Decision Support Centers (SDSCs). Hollywood et al. (2019)¹⁷ found reductions of roughly 3%-17% across 10 categories of serious crime, including shootings and robberies, associated with the centers' opening. Arietti (2024)¹⁸ found that the SDSCs increased violent crime clearance rates by about 5%. Piza et al. (2025)¹⁹ found that while gunshot detection sensors and CCTV cameras (alone or together) did not improve clearance rates for fatal or nonfatal shootings, nonfatal shootings occurring within a district with an active SDSC were between 19% and 24% more likely to be cleared. Research on RTCCs outside of Chicago further demonstrates the centers can significantly increase violent crime clearance rates.²⁰

Recent Evidence and Relevance to Current Trends

The overall research evidence demonstrates that standalone surveillance does not consistently impact serious violence, but that law enforcement information centers may better leverage the benefits of disparate technologies to prevent and solve violent crime incidents. Therefore, surveillance technologies plausibly impacting the recent homicide decline would seemingly require widespread proliferation of centers such as RTCCs and CICs. Industry estimates show that about 300 agencies, under 1% of U.S. police agencies, adopted RTCCs as of 2025.²¹ This pales in comparison to the number of

agencies deploying CCTV (43%) or ALPR (22%) systems,²² though the agencies that do operate RTCCs may be those with the highest violent crime levels. The Atlas of Surveillance, for example, currently documents 241 RTCCs throughout the United States.²³ Cross-referencing this list with the Council on Criminal Justice's crime trends in U.S. cities dashboard²⁴ shows that 25 of the 40 large cities consistently reporting monthly crime data have RTCCs, and 17 of those 25 recorded homicide declines between 2019 and 2025. While this does not point to national trends, RTCC deployment seems to at least partially overlap with jurisdictions experiencing homicide declines. However, research demonstrates that RTCCs can vary greatly in terms of operating practices and staffing, meaning that centers may not be equally equipped to deliver crime control benefits.²⁵ All considered, the scientific research suggests that surveillance technology likely played a minimal role in the recent national homicide reduction.

Emerging Questions and Future Directions

Several questions remain central to understanding whether, and how, surveillance technology might contribute to reductions in serious violence. Existing evidence shows that CCTV affects violent crime primarily when paired with proactive human responses. Little is known, however, about how commonly agencies have shifted from passive deployment toward these practices. A related priority is offender apprehension, as research has concentrated on deterrence while effects on the apprehension of violent offenders remain understudied. Future research should measure whether the lessons from the prevention literature also govern apprehension.²⁶ Finally, RTCCs and CICs show encouraging results to date, but findings come from a small number of cities, and the centers vary widely in staffing and operating practices.²⁷ Which components and configurations best produce crime-control benefits remains an open question.

Prepared for CCJ Homicide Decline Research Summit

The United States has experienced a sharp decline in homicide since the middle of 2022. This dramatic and largely unexpected shift has sparked a high-stakes debate about what is driving it. To examine the plausibility of dozens of potential factors, CCJ convened a two-day summit in September 2026 with about 50 researchers from criminology, economics, public health, psychology, sociology, and related disciplines. This brief was prepared to inform discussions during the convening.

Endnotes

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