

The Impact of CCTV on Crime

A Review of the Evidence

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9/02/2012

Prepared at the Request of Mayor Francis G. Slay and Public Safety Director Eddie Roth for the City of Saint Louis as part of the Public Safety Partnership

Introduction

Over the past fifteen years, there has been a pronounced increase in the use of closed circuit television surveillance camera systems (henceforth CCTV) to monitor public space and prevent crime throughout many Western nations.¹ The United Kingdom employs an estimated 4.2 million CCTV surveillance cameras to monitor public space² and number of other countries, including Australia,³ Germany,⁴ Japan,⁵ Norway,⁶ and Sweden,⁷ have large scale CCTV programs in place as well. Within the United States, estimates of the number of CCTV programs are not available at the present time. However, numerous sources indicate that the number of U.S. CCTV programs is increasing at a rapid pace throughout the nation due to an influx of federal funding. These same sources also highlight that the popularity of CCTV is no longer limited to large, urban centers.⁸

What is CCTV?

CCTV is a surveillance technology consisting of networks of cameras and various components dedicated to recording, transmitting, and monitoring video images.⁹ Cameras employed in new systems typically have high definition image quality, the ability to pan, tilt, and zoom, the capability to record in color, and, in some cases, infrared technology.¹⁰ Cameras may be fixed (permanently installed in a single location), redeployable (relocated around a power source in a single area), or mobile (able to be placed in a vehicle and transported with relative ease).¹¹ Many cameras include flashing blue lights and/or signage informing persons entering areas under surveillance that they are being monitored and recorded.¹² Images captured by cameras may be transmitted to a central location via cable or wireless links or may be stored on site for later retrieval.¹³ Cameras may be actively monitored, whereby a person watches a live

feed from one or more cameras, or may be passively monitored, whereby camera footage is stored and retrieved at a later date or time.¹⁴

Theory behind CCTV

Proponents of CCTV argue that these systems prevent crime in several ways. First and foremost, potential offenders may be less likely to engage in criminal activity in the presence of cameras because they believe their chances of being caught are greater.¹⁵ Second, the presence of cameras may encourage more people to frequent a location, increasing the number of 'eyes on the street'. This may also increase the level of risk potential offenders associate with offending in an area, thus reducing the likelihood they will offend. Third, CCTV may be used to direct police officers or security personnel to areas where suspicious activity is taking place. This may increase the odds that offenders are caught in the act. The presence of police officers or security personnel may also prevent potential offenders from committing criminal acts. Fourth, the presence of cameras may encourage persons in the area to take security precautions, thus reducing the likelihood they will be victimized.¹⁶ Finally, CCTV may embolden members of the general public to intervene in crimes.¹⁷

General effectiveness of CCTV

The first systematic review of CCTV evaluations was conducted under the direction of the British Home Office. The authors of this review located 22 evaluations examining the effectiveness of CCTV at reducing crime in four countries. Of these 22 evaluations, half (11) found a reduction in crime following the implementation of CCTV, 5 found an increase in crime, and the remaining 7 found no effect on crime. After analyzing and synthesizing the results from these studies, the authors found that, as a whole, the presence of CCTV in an area was related to an 8% reduction in crime when compared to similar areas without CCTV. However, because of

the rigid requirements of statistical evidence, the authors could not show that the likelihood of obtaining this result was greater than that which would have been achieved by chance.¹⁸

Soon after, the British Home Office commissioned a multi-site, national evaluation of CCTV in the United Kingdom. An analysis synthesizing the results from the 14 CCTV projects included in the evaluation found that in only two of the locations could the reduction in crime be statistically attributed to the presence of CCTV.²⁰ A later analysis combined the evaluations included in this British national study with 27 evaluations from several other countries, including the United States. The authors found that CCTV reduced crime in 15 of the studies, increased crime in 3 of the studies, and had no effect in the remaining 23. When considering the results of all the studies simultaneously, the presence of CCTV reduced crime by 16%.²¹

More recently, several evaluations of the impact of CCTV on crime in the United States have been conducted. An evaluation of two CCTV sites in Los Angeles revealed no impact of these systems on crime.²² An evaluation of Philadelphia's pilot CCTV program found an overall 13% reduction in crime when examining the results of 8 sites simultaneously.²³ And a study of San Francisco's CCTV program found that CCTV reduced property crimes in the areas under examination by 23% but did not impact other types of crime.²⁴

Finally, The Urban Institute recently published a comprehensive evaluation of CCTV surveillance programs in three U.S. cities: Baltimore, Maryland; Chicago, Illinois; and Washington, DC. The evaluation found that the presence of cameras reduced average combined crime counts in three of the four Baltimore locations by 20%, 25%, and 35% respectively, but had no impact in a third. Similarly, one of the two Chicago locations evaluated in the study experienced a 13% drop in the number of overall crimes, while no reduction in crime was attributed to the presence of CCTV at a second location. In Washington DC, deadly weapon and

violent crime decreased after the introduction of CCTV, but the reduction in these crimes could not be attributed to the presence of the cameras alone.²⁵

While many of the results reported above are inconclusive at best or contradictory at worst, this may stem from the tendency of academic evaluators to lean toward caution in their language due to the standards of statistical inference.²⁶ If we move beyond rigid statistical interpretation, it is safe to state that the majority of the CCTV systems evaluated in the above studies reduced crime to some degree. Very few of the areas monitored by CCTV systems displayed an increase in crime after the implementation of CCTV, and these increases may be due to the use of police records by evaluators. Cameras increase the likelihood that crimes are recorded and as a result may make law enforcement agencies aware of crimes that would otherwise go unreported, thus raising the number of officially recorded crimes.²⁷

Impact on investigations and prosecutions

While the primary goal of the vast majority of CCTV programs is to deter potential offenders from committing crimes in the first place, these systems also benefit investigators and prosecutors in the identification and conviction of offenders after crimes have taken place.²⁸ Recordings from CCTV in Baltimore, Maryland and Chicago, Illinois have assisted investigators in recovering weapons used in the commission of crimes, have been used to compel witnesses to testify, and have captured images of getaway vehicles. Unfortunately, this utility is often hampered by the technical limitations of cameras, such as poor image quality, lack of night recording capability, or recordings which cannot be zoomed in on after-the-fact without loss of clarity. At the present time, the limited use of camera footage in courtroom cases has prevented researchers from determining the degree to which CCTV cameras actually assist in the solving and prosecution of cases.²⁹

Displacement and diffusion of benefits

One of the key criticisms leveled at CCTV programs is the notion of crime displacement. Displacement refers to situations wherein efforts to decrease opportunities for crime do not actually reduce crime, but change where, how, and when crime is committed.³⁰ A number of the studies reviewed for this report looked for evidence of displacement of crime and, when considered together, found that the implementation of CCTV was not associated with an increase in crime in areas surrounding those under surveillance.³¹

Diffusion of benefits is a term criminologists use to refer to phenomena where the reduction in crime associated with a crime prevention measure extends beyond the actual area influenced by the measure. Of the studies reviewed for this report examining CCTV for diffusion of benefits, the majority found no indication that the implementation CCTV reduced crime in the areas outside of their surveillance.³² However, one study found evidence of diffusion of crime reducing benefits into areas surrounding two CCTV sites in Baltimore, Maryland³³ and a second study revealed a decrease in crime in areas located near two CCTV sites in Philadelphia, Pennsylvania.³⁴

Specific effectiveness of CCTV

Offense Type

The majority of the evaluations reviewed for this report found that CCTV has the most impact on property crimes, especially those involving vehicles, and drug crimes.³⁵ While these evaluations found little or no impact of CCTV cameras on violent offenses, these assessments must be viewed with caution as the low number of these crimes may inhibit the ability of statistical tests to detect changes in crime rates.³⁶

Passive versus active monitoring

As described above, CCTV systems may be monitored in either an active or passive manner. Typically, monitoring of CCTV systems consists of a combination of both methods, with cameras following preset 'tours' and recording during times when live operators are not viewing camera output and controlling camera movements. Active monitoring increases the likelihood that crimes may be prevented or stopped in progress. Active monitoring may also assist later investigations and prosecutions as live monitors have the ability to direct cameras to focus on and record pertinent details that may be overlooked by preset camera tours.³⁷ The majority of researchers agree that systems featuring some degree of active monitoring are more successful at reducing crime than systems characterized solely by passive monitoring.

Nevertheless, the style of monitoring may have varying impact for systems with different goals. For example, two of the CCTV systems evaluated by the British Home Office national study suffered from relatively high camera-operator ratio, which reduced the potential for live monitoring. The first system was aimed at reducing alcohol-related offenses by depending on operators to locate offenses in real time and direct police officers to the area. The second system was aimed at reducing vehicle crime, which can be addressed by providing evidence to the police or by deterring would-be offenders with the presence of cameras. As a result of these aims, live monitoring of camera feeds was less crucial to the success of the second system at reducing crime.³⁸

Technical aspects of cameras

Many researchers argue that the effectiveness of CCTV depends on the technical aspects of cameras.³⁸ This may be especially true when camera footage is used by investigators and prosecutors, as cameras featuring poor imaging capabilities and an inability to record at night or

in inclement weather may not produce recordings of sufficient quality to aid in the arrest and prosecution of offenders.⁴⁰ If cameras are intended to deter potential offenders, and are not intended to be used for investigations or prosecutions, then the presence of a camera alone should be adequate to achieve some degree of deterrence.⁴¹ Moreover, the majority of the studies reviewed for this report regard the number of cameras operating in a location and the degree to which these cameras cover an area as having more impact on crime reduction than the technical aspects of individual cameras.⁴²

Camera location

The location where cameras are utilized also influences the impact CCTV has on crime. For instance, evaluations of CCTV in other countries, predominantly the U.K., have found that the impact of these systems on crime is more pronounced in parking lots or commercial areas than in residential areas or large, housing complexes.⁴³ Evaluations of CCTV systems in the U.S. have found conflicting results regarding the influence of geographical location on camera effectiveness. For example, an evaluation of the CCTV program in Baltimore, MD found that total crimes declined after the implementation of the cameras in the downtown commercial district and in two of the residential areas under study but were not reduced in a third residential area.⁴⁴ Contradictory results such as these limit the ability of evaluators to make generalizations about the types of locations where the presence cameras will most successfully reduce crime. However, researchers agree that cameras are most effective when placed in a manner such that the areas within view of the cameras are unobstructed by features of the physical environment.⁴⁵

Conclusion

The studies reviewed for this report suggest some general findings regarding the impact of CCTV on crime:

- Generally speaking, CCTV has a small, desirable impact on crime.
- CCTV is more effective at combating property offenses than violence or public order crime.
- CCTV is more effective at preventing crime when cameras are actively monitored.
- The individual context of each location and the goal of each system influence the ultimate effectiveness of CCTV.
- CCTV is more effective in areas with higher concentrations of cameras and in areas where the coverage of cameras overlap.
- CCTV does not displace crime to other areas and, in some circumstances, the crime reduction benefits of CCTV extend beyond the range of cameras.

After reading this, you may feel that it is unclear what the ideal characteristics of a successful CCTV program are. It is important to remember that the attributes of a successful CCTV program in one location may not necessarily be those which are effective at combating crime in a second location. This is due to the number of differences which exist across geopolitical jurisdictions and settings. To be successful, a CCTV program must be planned with clear goals in mind and must be designed for the specific social, political, and cultural environment of an area.

Endnotes

1. National Institute of Justice (2003); Ratcliffe, Taniguchi, & Taylor (2009); Welsh & Farrington (2009).
2. Owen & Burke (2012); Welsh & Farrington (2009).
3. Wilson & Sutton (2003).
4. Welsh & Farrington (2009).
5. Ratcliffe (2006).
6. Winge & Knutsson (2003).
7. Blixt (2003).
8. Nieto, Johnston-Dodds, & Simmons (2002); Ratcliffe (2006); Savage (2007).
9. La Vigne, Lowry, Markman, & Dwyer (2011).
10. La Vigne et al. (2011); Ratcliffe (2006).
11. Gill & Spriggs (2005).
12. La Vigne et al. (2011); Welsh & Farrington (2009).
13. Ratcliffe et al. (2009).
14. Ratcliffe (2006).
15. La Vigne et al. (2011).
16. Gill & Spriggs (2005).
17. Farrington, Gill, Waples, & Arogmaniz (2007).
18. Welsh & Farrington (2002).
19. Gill & Spriggs (2005).
20. Farrington et al. (2007).
21. Welsh & Farrington (2009).
22. Cameron, Kolodinski, May, & Williams (2007).
23. Ratcliffe et al. (2009).
24. King, Mulligan, & Raphael (2008).
25. La Vigne et al. (2011).
26. Ratcliffe (2006).
27. Farrington et al. (2007).
28. Gill & Spriggs (2005); Ratcliffe (2006).
29. La Vigne et al. (2011).
30. Welsh & Farrington (2002).
31. Caplan, Kennedy, & Petrossian (2011); Farrington et al. (2007); La Vigne et al. (2011); Ratcliffe et al. (2009).
32. Caplan et al. (2011); Farrington et al. (2007).
33. La Vigne et al. (2011).
34. Ratcliffe et al. (2009).
35. Farrington, et al. (2007); Gill & Spriggs (2005); King et al. (2008); La Vigne et al. (2011); Ratcliffe (2006); Ratcliffe et al. (2009); Welsh & Farrington (2002, 2009).
36. Ratcliffe (2006).
37. La Vigne et al. (2011).
38. Gill & Spriggs (2005).
39. Farrington, et al. (2007).
40. La Vigne et al. (2011).
41. Ratcliffe (2006).
42. Caplan et al. (2011); Farrington et al. (2007); Gill & Spriggs (2005); La Vigne et al. (2011); Welsh & Farrington (2002, 2009).
43. Cameron et al. (2007); Farrington et al. (2007); Ratcliffe (2006); Welsh & Farrington (2002, 2009).
44. La Vigne et al. (2011).
45. *Ibid*; National Institute of Justice (2003).

References

- Blixt, M. (2003). *The use of surveillance cameras for the purpose of crime prevention* (English summary). Stockholm: National Council for Crime Prevention.
- Cameron, A., Kolodinski, E., May, H., & Williams, N. (2007). *Measuring the Effects of Video Surveillance on Crime in Los Angeles*. CRB-08-007. Sacramento, CA: California Research Bureau.
- Caplan, J. M., Kennedy, L. W., & Petrossian, G. (2011). Police-monitored CCTV cameras in Newark, NJ: A quasi-experimental test of crime deterrence. *Journal of Experimental Criminology*, 7, 255-274.
- Farrington, D. P., Gill, M., Waples, S. J., & Argomaniz, J. (2007). The effects of closed circuit television on crime: Meta-analysis of an English national quasi-experimental multi-site evaluation. *Journal of Experimental Criminology*, 3, 21–38.
- Gill, M., & Spriggs, A. (2005). *Assessing the impact of CCTV* (Home Office Research Study, No. 292). London: Home Office.
- King, J., Mulligan, D. K., & Raphael, S. (2008). *CITRIS Report: The San Francisco Community Safety Camera Program*. Berkeley, CA: University of California Center for Information Technology Research in the Interest of Society.
- La Vigne, N. G., Lowry, S. S., Markman, J. A., & Dwyer, A. M. (2011). *Evaluating the Use of Public Surveillance Cameras for Crime Control and Prevention: Final Technical Report*. Washington, DC: The Urban Institute.
- National Institute of Justice. (2003). CCTV: Constant cameras track violators. *NIJ Journal*, 249, 16-23.
- Nieto, M., Johnston-Dodds, K., & Simmons, C. W. (2002). *Public and private applications of video surveillance and biometric technologies*. Sacramento, CA: California Research Bureau, California State Library.
- Owen, S. S., & Burke, T. W. (2011). Citizen monitors, CCTV, and the internet: A combination to consider. *The Police Chief*, 78, 18-26.
- Ratcliffe, J. H. (2006). *Video Surveillance of Public Places* (Problem-oriented guides for police, Response guides series no. 4). Washington DC: Center for Problem Oriented Policing.
- Ratcliffe, J. H., Taniguchi, T., & Taylor, R. B. (2009). The crime reduction effects of public CCTV cameras: A multi-method spatial approach. *Justice Quarterly*, 26, 747-770.

- Savage, C. (2007, August 12). US doles out millions for street cameras: Local efforts raise privacy concerns. *Boston Globe*. Retrieved August 26, 2008, from http://www.boston.com/news/nation/washington/articles/2007/08/12/us_doles_out_millions_for_street_cameras/
- Welsh, B. C., & Farrington, D. P. (2002). *Crime prevention effects of closed circuit television: A systematic review* (Home Office Research Study, No. 252). London: Home Office.
- Welsh, B. C., & Farrington, D. P. (2009). Public area CCTV and crime prevention: An updated systematic review and meta-analysis. *Justice Quarterly*, 26, 716-745.
- Wilson, D., & Sutton, A. (2003). Open-street CCTV in Australia. *Trends and Issues in Crime and Criminal Justice*, No. 271, 1-6.
- Winge, S., & J. Knutsson (2003). An Evaluation of the CCTV Scheme at Oslo Central Railway Station. *Crime Prevention and Community Safety: An International Journal*, 5(3), 49-59.