

**Problem-Oriented Guides for Police  
Response Guide Series  
No. 4**



# **Video Surveillance of Public Places, 2nd Edition**

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## About the Response Guide Series

The *Response Guides* are one of three series of the *Problem-Oriented Guides for Police*. The other two are the *Problem-Specific Guides* and *Problem-Solving Tools*.

The *Problem-Oriented Guides for Police* summarize knowledge about how police can reduce the harm caused by specific crime and disorder problems. They are guides to preventing problems and improving overall incident response, not to investigating offenses or handling specific incidents. Neither do they cover all the technical details about how to implement specific responses. The guides are written for police—of whatever rank or assignment—who must address the specific problems the guides cover. The guides will be most useful to officers who

- understand basic problem-oriented policing principles and methods,
- can look at problems in depth,
- are willing to consider new ways of doing police business,
- understand the value and the limits of research knowledge, and
- are willing to work with other community agencies to find effective solutions to problems.

The *Response Guides* summarize knowledge about whether police should use certain responses to address various crime and disorder problems, and about what effects they might expect. Each guide

- describes the response,
- discusses the various ways police might apply the response,
- explains how the response is designed to reduce crime and disorder,
- examines the research knowledge about the response,
- addresses potential criticisms and negative consequences that might flow from use of the response, and
- describes how police have applied the response to specific crime and disorder problems, and with what effect.

The *Response Guides* are intended to be used differently from the *Problem-Specific Guides*. Ideally, police should begin all strategic decision-making by first analyzing the specific crime and disorder problems they are confronting, and then using the analysis results to devise particular responses. But certain responses are so commonly considered and have such potential to help address a range of specific crime and disorder problems that it makes sense for police to learn more about what results they might expect from them.

Readers are cautioned that the *Response Guides* are designed to *supplement* problem analysis, not to *replace* it. Police should analyze all crime and disorder problems in their local context before implementing responses. Even if research knowledge suggests that a particular response has proved effective *elsewhere*, that does not mean the response will be effective *everywhere*. Local factors matter a lot in choosing which responses to use.

Research and practice have further demonstrated that, in most cases, the most effective overall approach to a problem is one that incorporates several different responses. So a single response guide is unlikely to provide you with sufficient information on which to base a coherent plan for addressing crime and disorder problems. Some combinations of responses work better than

others. Thus, how effective a particular response is depends partly on what other responses police use to address the problem.

These guides emphasize effectiveness and fairness as the main considerations police should take into account in choosing responses, but recognize that they are not the only considerations. Police use particular responses for reasons other than, or in addition to, whether or not they will work, and whether or not they are deemed fair. Community attitudes and values, and the personalities of key decision-makers, sometimes mandate different approaches to addressing crime and disorder problems. Some communities and individuals prefer enforcement-oriented responses, whereas others prefer collaborative, community-oriented, or harm-reduction approaches. These guides will not necessarily alter those preferences, but are intended to better inform them.

These guides have drawn on research findings and police practices in the United States, the United Kingdom, Canada, Australia, New Zealand, the Netherlands, and Scandinavia. Even though laws, customs and police practices vary from country to country, it is apparent that the police everywhere experience common problems. In a world that is becoming increasingly interconnected, it is important that police be aware of research and successful practices beyond the borders of their own countries.

Each guide is informed by a thorough review of the research literature and reported police practice.

For more information about problem-oriented policing, visit the Center for Problem-Oriented Policing online at [www.popcenter.org](http://www.popcenter.org). This website offers free online access to:

- the *Problem-Specific Guides* series
- the companion *Response Guides* and *Problem-Solving Tools* series
- special publications on crime analysis and on policing terrorism
- instructional information about problem-oriented policing and related topics
- an interactive problem-oriented policing training exercise
- an interactive *Problem Analysis Module*
- online access to important police research and practices
- information about problem-oriented policing conferences and award programs.

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## Introduction

The purpose of this guide is to provide an overview of the use of closed-circuit television (CCTV) systems as a problem-oriented policing response to a crime problem. This guide explores the benefits and problems associated with CCTV and summarizes the findings of numerous CCTV evaluations (see appendices A and B).

The public is now used to being watched by surveillance technology in many commercial and semi-public establishments such as banks, casinos, convenience stores, and shopping malls. About three-quarters of small businesses record who comes into their location on CCTV.<sup>1</sup> There are systems that recognize license plates on moving vehicles and systems that monitor traffic flow and catch people violating traffic laws. There is also widespread use of police body-worn cameras. Although these systems fall under the label of video surveillance technology, they are not included in the discussion, as this guide is intended for the reader considering CCTV as a crime prevention option for a broader range of property and personal crimes in public places. Examples of relevant public spaces include:

- Public parks
- Pedestrianized streets in city centers
- Outdoor public parking areas
- Residential neighborhood streets
- Public transport interchanges
- Areas outside public facilities such as sports arenas and subway stations

Although some see CCTV as a panacea to crime and disorder in public places, others view the growth of CCTV as an intrusion, with visions of an Orwellian ‘Big Brother’ invading personal privacy. This guide will help you better understand the effectiveness of CCTV and address some constitutional and privacy concerns. After you read this guide, you should not only be aware of the strengths and weaknesses of CCTV in a public setting, but also be able to answer many of the public’s concerns.

### *What Is CCTV?*

Closed circuit television (CCTV) is a surveillance technology. More specifically, it is “a system in which a number of video cameras are connected in a closed circuit or loop, with the images produced being sent to a central television monitor or recorded.”<sup>2</sup> Technological advancements now allow CCTV systems to work on wireless networks, operated remotely, and be watched from several locations.<sup>3</sup> The term closed circuit television was originally used to differentiate between public television broadcasts and private camera-monitor networks. These days CCTV is used as a generic term for a variety of video surveillance technologies including Police Observation Devices (POD) or Portal Overt Digital Surveillance Systems (PODS).

Although some systems are extremely sophisticated, employing bullet-proof casing, color recording, night-vision capability, motion detection, gunshot detection, and advanced zoom and automatic tracking capacities, many existing systems are more rudimentary. More common CCTV installations include a number of cameras connected to either a control room where human operators watch a bank of television screens or an unmonitored data storage system.

Many (but not all) will have a recording facility that works by

- Recording the images from a selected camera
- Using multiplex recording where the image switches from camera to camera thus allowing one tape to see every camera view on a rotating basis
- Employing digital technology to record images from multiple cameras at once

Often an operator can pan, tilt, and zoom a number of cameras. As the technology has developed, cameras with a full range of movement and control facilities have become the norm, and it is likely there will be continual improvements in optical and digital zoom, color, and pixel<sup>a</sup> resolution, all of which will enhance image quality.

Including the human element, we can categorize systems into *passive*—where banks of recording devices record images that can be replayed if a crime is reported, though nobody actively monitors the images, and *active*—where a person sits and monitors a series of displays in real time. In reality, many systems are a hybrid, where recording devices record all images, and an operator scans from monitor to monitor, concentrating on some and ignoring others.



With an overt CCTV camera, the public (and offenders) can clearly see the surveillance camera and determine the direction in which it is facing.

Although most CCTV schemes employ overt cameras, which are obvious (see Figure 1), it is possible to find systems in which cameras are mounted into protective shells or within frosted (polycarbonate) domes. Often termed semi-covert, these camera systems make it more difficult for people under surveillance to determine if they are being watched, as it is usually difficult or impossible to figure out in which direction the camera is facing (see Figure 2). Some cameras employ dummy lenses to conceal the surveillance target. The advantage of using a one-way transparent casing is that it provides for the possibility of retaining the overt impression of surveillance—and hence a deterrent capacity—without having to place a camera in every housing or to reveal to the public (and offenders) the exact location under surveillance.<sup>4</sup>

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<sup>a</sup> A pixel is an abbreviation of *picture element*. Pixel resolution refers to the quality of an image. For example, a digital camera with a resolution of 640 pixels wide by 480 pixels high will record a better-quality image than a camera with a resolution of 320 x 240 pixels. Higher resolution images are generally of better quality, but increased storage capacity is required for better quality recording.





This semi-covert CCTV camera may have a crime prevention advantage over an overt system because offenders can never be sure in which direction that camera is facing.

In addition to the cameras, the cabling to feed images to the monitors, and the recording devices, a CCTV system also requires an operator to watch the monitors or review the recordings. Because of this, a full description of CCTV should not ignore the human element. Reviewing video, acting on the information, and preparing video evidence for court or investigations all create a potential need for ongoing office space and personnel costs over and above any initial capital expenditure. There may also be extra demands placed on local law enforcement as a result of increased surveillance of an area. With increased surveillance, more public-order crime may come to the notice of police. With technological and personnel costs, CCTV comes at a considerable price. Though the technological costs continue to fall, the human costs do not. Therefore, you must give CCTV serious consideration before you purchase and install a system to combat a crime problem. A later section details some of the factors to consider before deploying a CCTV solution.

In summary, there is a range of CCTV configurations available. A complete CCTV system (for the purposes of this report) comprises:

- One or more cameras that view a public area
- A mechanism to transmit video images to one or more monitors
- Video monitors to view the scene—usually accompanied by recording devices such as a time-lapse video recorder or computer hard drive for digital images
- A viewer or camera operator, such as a police officer or security guard

Variations to this basic configuration include:

- The ability to transmit images across the Internet
- Motion sensors that activate the camera when activity is detected
- Normal or infrared lighting to enhance picture quality at night
- A pan-and-tilt capacity that allows an operator to change the camera's viewing direction, zoom, and focus

More-advanced systems can include limited facial recognition technologies or estimate the location of firearm incidents, though more advanced systems often rely on other technology. For example, a facial recognition program is of limited value unless it is linked to a computer

database of suspect photos. Intelligence systems that can detect unusual activity (such as fights in the street) are also under development.<sup>5</sup>

In addition to determining if you want to install a CCTV system (and what type), you should consider how sophisticated you want it to be and if you have the resources to support it.

## How CCTV Aims to Prevent Crime

A CCTV system is not a physical barrier. It does not limit access to certain areas, make an object harder to steal, or a person more difficult to assault and rob, yet it is still an example of situational crime prevention. It does have some crime prevention capacity in the right situations. Although CCTV has many functions, the primary preventative utility is to trigger a perceptual mechanism in a potential offender. It seeks to change offender perception so the offender believes if he commits a crime, he will be caught. In other words, CCTV aims to increase the perceived risk of capture, a factor which, assuming the offender is behaving in a rational (or limited rational) manner, will de-motivate the potential offender.<sup>6</sup> For this crime prevention process to succeed, two elements must exist:

1. The offender must be aware of the cameras' presence.
2. The offender must believe the cameras present enough risk of capture to negate the rewards of the intended crime.

Consider the first element. If, for example, a CCTV system is initiated to stem a perceived increase in disorder crime in a town center, the crime prevention mechanism requires that potential offenders know they are being watched. Evidence suggests that even though implementers install a system, have a publicity campaign, and place signage, there is no guarantee the population will be aware of the cameras. In Glasgow, Scotland 15 months after 32 cameras were installed in the city center, only 41 percent of those interviewed were aware of the cameras.<sup>7</sup> These findings are similar to other research that found only one-third of respondents were aware they were within the vision of a public-street CCTV system.<sup>8</sup>

Not only are there limitations with the public's perception of the location of cameras, the second element (the presence of cameras affecting offenders' perception of risk) is not guaranteed. In theory, CCTV should provide the capable guardianship necessary to prevent a crime, but this concept requires that offenders demonstrate rationality in their behavior. There is certainly the suggestion, and some qualitative evidence, that potential offenders who are under the influence of alcohol or drugs may not care or remember that they may be under surveillance.<sup>9</sup> This may be a factor in the reason CCTV appears to be more effective in combating property crime than disorder and violent offenses. However, as the media and social media increase their coverage of minor crimes caught on home surveillance cameras, potential offenders may recognize the increased risk of being caught for these crimes and think twice about committing them.<sup>10</sup>

An important consideration in the effectiveness of a surveillance technology is the type of crime to be tackled because this impacts criminals' ability to adapt. Although a CCTV system may reduce the likelihood of burglary at a commercial location within the range of the camera, there is some evidence that drug markets can continue operation in the presence of CCTV by changing their operating practices. For example, at one location some offenders met and discussed business in the cameras' presence but concluded the transaction at another site.<sup>11</sup> In other CCTV areas, however, drug crime that could not successfully relocate or adapt to the cameras was eradicated.

Fake cameras have been employed in some instances. In one instance, crime was reduced on public buses after the installation of both active and dummy cameras onboard a number of buses (indeed crime reduced on more buses than the ones fitted with any cameras, a concept known as a diffusion of benefits).<sup>12</sup> It is therefore possible that fake cameras could achieve the same

preventative aim as active systems. However, if users of the space under surveillance are led to believe—through signs, for example—that they are being watched 24 hours a day and an incident occurs, the misrepresentation of a form of guardianship may have liability implications.

There is a second mechanism whereby CCTV has the potential to reduce crime. The cameras may be able to assist in the detection and arrest of offenders. This crime prevention mechanism requires that police can respond in a timely manner to any significant incidents identified by camera operators, and that the local criminal justice system can pursue the offenders' conviction. This mechanism will work if incarcerated offenders are prevented from committing further crimes within the CCTV area (or other local area). Although there may be some initial crime reduction due to the installation and publicity of a new system, offenders may soon learn what types of incidents elicit a police response and the speed of that response. The availability of local resources is therefore a factor in the success of this mechanism.

The desire to catch an offender in the act is often the rationale behind the placement of hidden cameras, as was used by police in New Orleans.<sup>13</sup> Undoubtedly CCTV evidence is convincing, though CCTV's ability to reduce overall crime levels through detection (rather than prevention) is less convincing and arguably a less effective way of impacting crime. For this mechanism to be effective, the implementer must believe arrests are the best way to solve a crime problem. There is some evidence from Australia that increasing arrests can have a short-term benefit, but the benefit fades in the long term without a more preventative policy.<sup>14, b</sup>

A third, more general mechanism by which CCTV may reduce crime is through an increase in collective efficacy. Welsh and Farrington<sup>15</sup> argue that if residents see CCTV cameras being installed in their neighborhood, this will signal to them a degree of investment in, and efforts to improve, their local area. They argue that this might lead to greater civic pride and optimism, and, as a result, lead to an increased level of informal social control among the local people. A counter to this argument is that overt cameras may instead lead to a neighborhood being labeled as high-crime, accelerating the process of social disorganization.

A fourth mechanism through which CCTV may reduce crime is through increased awareness on the part of potential victims. Seeing CCTV systems can remind individuals to take other security precautions such as locking car doors. The presence of CCTV systems may not only remind individuals to take precautions but may also make them more likely to do so because they do not want to be shamed for being seen not taking precautions. Finally, cautious people might also be drawn to areas where CCTV is present reducing their chance of victimization.<sup>16</sup>

## **Other Benefits**

A number of other benefits, beyond a reduction in crime, may be accrued from a CCTV system, including:

- Reduced fear of crime

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<sup>b</sup> It could also be argued that this worked only in a city that was geographically isolated, such that a rapid replacement of prolific offenders was not possible.

- Aid to police investigations
- Provision of medical assistance
- Place management
- Information gathering
- Diffusion of benefits

The following section describes these potential benefits in more detail.

### *Reduced Fear of Crime*

Numerous studies have tried to determine if the presence of cameras in public places reduces fear of crime in people who use the area. These studies, many of which interviewed people in the CCTV area, have examined whether consumer buying has increased in areas with new CCTV systems. The general argument is that the area will benefit from a positive economic impact when people feel safer. The findings are mixed but generally show there is some reduced level of fear of crime among people in CCTV areas, but *only* among people who were aware they were in an area under surveillance. Most studies exploring the perception of surveillance areas found that less than half the interviewees were aware they were in a CCTV area. In addition to differences based on awareness, the impact of CCTV on fear of crime may differ based on the gender of the individual. One study noted fear of crime was reduced for men and not for women when CCTV cameras were present.<sup>17</sup> Reduced fear of crime in an area may increase the number of people using the area, hence increasing natural surveillance.

### *Aid to Police Investigations*

Regardless of the potential for a CCTV system to have a role in crime prevention, it can still make a contribution in a detection role. There are numerous examples of CCTV tapes aiding in an offender's conviction. Camera footage can also help identify potential witnesses who might not otherwise come forward to police, help investigators narrow the time window when a crime occurred, establish a sequence of events, capture images of getaway vehicles, and help locate weapons used during the crime.<sup>18</sup> CCTV camera evidence can be compelling, though issues of image quality are a factor if CCTV images are used for identification purposes. If the cameras record an incident, and police respond rapidly and make an arrest within view of the camera (and the offender does not leave the sight of the camera), the recording of the incident can help investigators gain a conviction, usually through a guilty plea. The potential to assist in police investigations may also drive offenders away from committing offenses that take time, as they run a greater risk of capture.

### *Provision of Medical Assistance*

As a community safety feature, CCTV camera operators can contact medical services if they see people in the street suffering from illness or injury as a result of criminal activity (such as robberies and assaults) or non-crime medical emergencies. The ability to summon assistance is a public safety benefit of CCTV. In addition to summoning assistance, when live feeds are being monitored, operators can direct responding personnel to the individual once they are at the scene and can help them avoid any potential dangers.<sup>19</sup> Squires found that police are called about 10 to 20 times for every 700 hours of observation.<sup>20</sup>

### *Place Management*

CCTV can be used for general location management. The cameras can be used to look for lost children, to monitor traffic flow, public meetings, or demonstrations that may require additional police resources, or to determine if alarms have been activated unnecessarily thus removing the need for a police response. Actively monitored CCTV systems also allow for spotting a crime that is occurring before someone calls 911, promoting a quicker response.<sup>21</sup> Quicker responses at locations may also reduce the escalation of crime as it happens.<sup>22</sup> Some police commanders claim that assaults on police have reduced because the cameras allow them to determine the appropriate level of response to an incident, either by sending more officers to large fights, or by limiting the number of officers to a minor incident and avoid inflaming the situation.<sup>23</sup>

### *Information Gathering*

Cameras can also be used to gather intelligence and to monitor the behavior of known offenders in public places (such as shoplifters in public retail areas). Camera operators often come to know the faces of local offenders, and the cameras become a way to monitor their movements in a less-intrusive manner than deploying plainclothes police officers. For example, officers in one city were able to gather intelligence on the behavior of individuals selling stolen goods. This intelligence was gathered remotely by CCTV cameras and enabled police to interdict in an organized and coordinated manner.<sup>24</sup> Although intelligence gathering is a potential benefit of CCTV, the use of intelligence gathered from CCTV to control public order through surveillance is perceived by some to be a threat to civil liberties.<sup>25</sup>

### *Diffusion of Benefits<sup>c</sup>*

Current research has also considered the distinct possibility that if offenders are aware and cautious in the presence of cameras, they may be unaware of the extent of the cameras' capabilities. As a result, they may curtail their criminal activity in a wider area than that covered by the camera system. Studies have produced mixed results but at least some studies find small crime-reduction benefits in areas beyond the camera range, also known as buffer zones.<sup>26</sup> In effect, this extends the value of the cameras beyond their area of operation, a process criminologists call a *diffusion of benefits*.<sup>27</sup>

### **Unintended Consequences**

Although not discussed in the literature of companies that sell cameras, CCTV systems may also have some unintended consequences. These include:

- Displacement
- Increased suspicion or fear of crime
- Increased crime reporting

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<sup>c</sup> See Problem-Solving Tools Guide No. 10, [Analyzing Crime Displacement and Diffusion](#) for further information.

These possibilities are discussed in the following sections.

### *Displacement<sup>d</sup>*

There are many different types of displacement. Instead of a reduction in offenses, you may see offenders react by moving their offending to a place out of sight of the CCTV cameras. This is an example of spatial displacement. The evaluations in Appendix B suggest that spatial displacement can occasionally take place, but—as is the case with the general crime prevention literature<sup>28</sup>—the amount of crime displaced rarely matches the amount of crime reduced. There is usually a net gain for crime prevention. In all of the studies evaluated for this report, there is not a single example of a complete displacement of all crime from a CCTV area to a neighboring area. When displacement does take place, officers may have to develop new intelligence.<sup>29</sup> However, spatial displacement is not the issue many people think it is, and in most of the studies there is little evidence of spatial displacement.

A CCTV system may also force the criminal fraternity to be more imaginative and to diversify operations. For example, researchers reported that in a London drug market the presence of cameras encouraged the drug market to move to a system where orders were taken by mobile phone and then delivered, and as such “increase the speed and ingenuity of the drug transaction.”<sup>30</sup> This is an example of tactical displacement, where offenders change their *modus operandi* to continue the same criminal acts. Even though this particular introduction of CCTV may not be seen as an unqualified success, that the CCTV system forced a change in behavior is positive. CCTV is likely to have forced drug dealers to adopt a less effective way of conducting business, resulting in a net reduction in crime.

### *Increased Suspicion or Fear of Crime*

A second concern is the possibility of a negative public response to the cameras’ existence. In one survey, one-third of respondents felt that one purpose of CCTV was “to spy on people.”<sup>31</sup> In other surveys, some city managers were reluctant to advertise the cameras or have overt CCTV systems for fear they would make shoppers and consumers more fearful. In other words, it is hoped that most citizens will feel safer under the watchful eye of the cameras, but CCTV may have the reverse effect on some people. In one city where camera feeds were open to the public, citizens experienced increased fear of crime because they worried this access would allow potential offenders to observe their habits and routines, making them easier targets.<sup>32</sup>

Remember that the primary crime prevention mechanism appears to work by increasing a perception of risk in the offender. With their reluctance to advertise the system, some city managers may be inadvertently reducing the cameras’ effectiveness. By failing to advertise the cameras’ presence, fewer offenders will be aware of the system and so will not perceive an increase in risk. On the whole, however, the public appears to be strongly in favor of a properly managed surveillance system for public areas.

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<sup>d</sup> See Problem-Solving Tools Guide No. 10, [Analyzing Crime Displacement and Diffusion](#) for further information.

### *Increased Crime Reporting*

A third unintended consequence is the possibility that there will be an increase in recorded crime for some crime types. Many offenses have low reporting rates, especially minor acts of violence, graffiti, and drug offenses. CCTV operators are better placed to spot these offenses, and this can actually drive up their recorded crime figures, as happened with narcotics offenses in Oslo Central Train Station.<sup>33</sup> Individuals may also be more likely to report a crime if they know it might have been captured on CCTV.<sup>34</sup> This is not to say there was an increase in actual crime, just recorded or reported crime. This is a potential outcome, and you may need to prepare other people involved in a future CCTV system of this possibility, especially if the system is going to be evaluated in terms of crime reduction.



## Evaluations of CCTV

Several surveys have examined the perception of CCTV system managers and the public in regard to CCTV's crime prevention benefits.<sup>35</sup> These perceptions are usually positive, but evidence of actual crime reduction is harder to come by. In the early days of CCTV, many evaluations were carried out, but a number of significant methodological considerations draw into question their reliability. Problems included a lack of control areas, independence of researchers, and simplistic approaches to temporal crime patterns.

Establishing if CCTV reduces crime is often difficult because a problem-oriented policing solution is rarely implemented without incident or without other crime prevention measures being applied at the same time. The implementation can often run into problems and commence late or in piecemeal fashion; crime rates naturally vary and show evidence of seasonality and long- and short-term trends; offenders are not necessarily aware of the system or become aware at different times (a theoretically crucial mechanism to CCTV success); and there are quantitative challenges to the measurement and detection of displacement and diffusion of benefits. These issues make it difficult to detect the impact of CCTV alone. For example, although CCTV was a factor affecting the operation of four street drug markets in London (UK), the cameras were often used with other crime prevention/detection efforts, such as large-scale arrests of sellers and situational-crime-prevention measures.<sup>36</sup>

In some cases, the sheer lack of crime inhibits any robust evaluation. For example, the state of Illinois is reported to have spent \$4 million installing cameras at all interstate rest areas. The cameras are monitored by state police. However, both the Illinois Department of Transportation and the state police admitted that serious crime at rest areas is extremely rare, with the latter identifying about 50 total crimes per year at all rest areas in the state.<sup>37</sup> With such low crime rates, it may be impossible to demonstrate any crime-reduction benefit for the millions spent.

Assessing the impact of CCTV is also complicated by the system's design. CCTV is designed to see crime. As a result, the cameras may detect offenses that police would not otherwise notice. This may inadvertently increase the reported-crime rate, especially for offenses that have low reporting rates. In the United States, the reporting rate of violent crime is only 41 percent.<sup>e</sup> A process by which police can become aware of street violence without having to rely on the cooperation of the general public may increase reporting rates substantially. This does not mean crime will go up, but it is possible *recorded* crime may rise, as was probably the cause for a significant increase in reported woundings and assault in more than one UK town.<sup>38</sup>

There have been a number of evaluation reviews (Appendix B) and more recently a number of meta-analyses (Appendix A). Phillips<sup>39</sup> concluded that CCTV can be effective against property crime, but the results were less clear regarding personal crime and public order offenses, and the results were mixed in regard to reducing fear of crime. Similarly, Welsh and Farrington's meta-analysis of 13 programs found five that appeared to work, three that appeared not to, and five that produced inconclusive results.<sup>40</sup> Piza and colleagues found in their meta-analysis overall modest

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<sup>e</sup> Only 40.9% of respondents said they had reported a violent victimization to the police (Bureau of Justice Statistics, 2020, Criminal Victimization, 2019, Table 6 at [www.bjs.gov/content/pub/pdf/cv19.pdf](http://www.bjs.gov/content/pub/pdf/cv19.pdf)).

significant reductions in crime with limited displacement and some diffusion of benefits, yet the results differ based on location and type of monitoring. Gill and Spriggs<sup>41</sup> evaluated 13 UK CCTV systems, finding that six demonstrated a relatively substantial reduction in crime in the surveilled area when compared to the designated control area. Of these six, only two showed a statistically significant reduction relative to the control zone.<sup>f</sup> In seven areas there was an increase in crime, though the increase could not be attributed to CCTV. Other potential causes for the crime increase included fluctuations in crime rates caused by seasonal, divisional, and national trends, and additional initiatives.

The evaluations in Appendix B and meta-analyses in Appendix A go some way to confirming these rather confusing findings. The general findings suggest that:

- CCTV is more effective at combating property offenses than violence or public order crime (though there have been successes in this area)
- CCTV appears to work best in small, well-defined areas (such as public car parks)
- The individual context of each area and the way the system is used appear to be important
- Active systems are better at reducing crime than passive systems
- Within one CCTV system there may be differences in effectiveness depending on the location
- Achieving *statistically significant* reductions in crime can be difficult (i.e., crime reductions that clearly go beyond the level that might occur due to the normal fluctuations in the crime rate are difficult to prove)
- CCTV systems may be able to diffuse benefits to buffer areas surrounding the cameras
- A close relationship with the police appears important in determining a successful system
- There is an investigative benefit to CCTV once an offense has been committed

Reading this, you may feel the answer is unclear. Academic evaluators tend toward caution in their language, as they understand there is often a complex pattern of factors that dictate whether a system is successful or not. The rigid requirements of statistical evidence often limit the conclusions that quantitative evaluators can draw.

To move beyond a strictly statistical interpretation, it is possible to say there was some evidence of crime reduction in most of the systems reported in the appendices. In other words, CCTV will almost certainly not make things worse (though crime *reporting* may increase), and there is a growing list of evaluations that suggest CCTV has had some qualified successes in reducing crime.

The important point is that the local context is central to determining the likelihood of success. For example, city streets with long, clear lines of sight may be more amenable to CCTV than short, narrow winding lanes with trees that might obscure camera views. The availability of police to respond to incidents in an appropriate manner may also be a local context that affects CCTV's success. Areas with high levels of property crime may be more amenable to CCTV than areas with low levels of public disorder. Smaller systems in well-defined areas may be more

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<sup>f</sup> And as the report authors note, “in one of these cases the change could be explained by the presence of confounding variables.”

effective than broad-ranging systems that cover large areas. Understanding your local context is central to a successful problem-oriented policing solution.

CCTV appears to be somewhat effective at reducing fear of crime, but only among a subset of the population. There are examples of a reduction in fear of crime among some people who are in CCTV areas, but it requires them to know they are in a surveillance area, and this is often not the case. Relying on CCTV to reduce fear of crime may require a significant and ongoing publicity campaign.<sup>8</sup> Reduction in fear of crime may also differ based on gender so campaigns may also need to focus on women who are less likely to have their fear reduced by CCTV.

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<sup>8</sup> See Problem-Solving Tools Guide No. 5, [Crime Prevention Publicity Campaigns](#) for further information.

## Implementation Considerations

Consider the following aspects of CCTV should you decide to employ CCTV at the response phase of your SARA (Scan, Analyze, Respond, Assess) model.<sup>h</sup>

### Is CCTV the Best Option?

In one survey, when asked to rank desired crime prevention strategies, the public was offered CCTV, more police officers patrolling on foot, more or brighter streetlights at night, or more private security patrols. CCTV ranked third behind more police patrols and more or brighter streetlights.<sup>42</sup> Cameras can provide surveillance over an area, but they may not necessarily act as a replacement for police officers, as they cannot offer the same range of services an officer can provide. Therefore, CCTV is best seen as an additional tool for law enforcement rather than a replacement for existing practices. Furthermore, implementation times can be significant: not only does it take time to requisition and install cameras, but operating procedures, space allocation, and staffing arrangements can be time-consuming and costly. CCTV is not a short-term fix, but an ongoing commitment.

The evaluations described in the appendices suggest that CCTV is not a panacea that works in all circumstances. In a number of cases, CCTV has not reduced crime. In others, it has. The context is therefore important. There may be other solutions that are cheaper, more flexible, and quicker to implement than CCTV. Are you seeking to protect a single, specific target? If so, a response geared directly to that target may suffice. A reinforced door or security grills may not look attractive, but they may be more cost-effective and quicker to install. Similarly, street closures can redirect traffic and have an impact on an area's crime level.<sup>i</sup> If, after thorough research and analysis, you determine CCTV is worth further consideration, there are a number of decisions to make, some of which follow.

### Deciding on a Camera Configuration

#### *Overt Systems*

Overt camera systems are common. The cameras are in view of the public and are often accompanied by signs indicating that people are now in a CCTV surveillance area. Overt systems have a strong crime prevention rationale but are more vulnerable to tampering and vandalism.

#### *Semi-Covert Systems*

These systems are in public view, but the cameras are concealed behind a one-way transparent casing. This approach retains most of the preventative rationale of the overt system, but the cameras have some protection. It also prevents the public from determining who is under

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<sup>h</sup> See [www.popcenter.org](http://www.popcenter.org) for more information on the [SARA model](#).

<sup>i</sup> See Response Guide No. 2, [Closing Streets and Alleys to Reduce Crime](#) for further information.

surveillance and allows you to conceal the exact number of cameras in a system, as you are not required to install a camera in every casing.<sup>j</sup>

### *Covert Systems*

With these systems, the aim is to hide camera locations. These systems are particularly well suited to crime detection; however, without public signage or a publicity campaign, they have little crime prevention function until word spreads within the offender community. These cameras are fairly immune to tampering.

### **Camera Functionality**

If *deterrence* is the primary goal, then the mere presence of a camera should be sufficient. It may not be necessary to spend vast sums on the latest technology. This holds true if another aim is to alert police to any incidents as a reactive information mechanism, and then rely on police or local security to deal with the incidents. If the aim is to aid in the *prosecution and conviction* of offenders, then it may be necessary to purchase a system with high-resolution cameras and recording equipment. Cameras that produce fewer frames per second are less expensive, but the resulting footage can appear choppy, making it harder to identify relevant information.<sup>43</sup> A suitable night-vision capability may also be required. Cameras that have power to provide, often at some distance, images of sufficient clarity to support an evidential case in court are considerably more advanced than cameras in the majority of current systems. These additional requirements will increase costs.

Additional features available include night vision, bullet-proof casing, motion detection, facial recognition, links to gunshot recognition systems, and even defensive mechanisms that detect when a camera is under attack and train other cameras to that location.<sup>44</sup> These features do not necessarily improve the crime-reduction function, though they may improve the system's survivability. They will also increase the costs.

Understanding the climate and geography of the area where you are placing cameras is also important in determining which type of camera or equipment is best suited for your location. For instance, wireless cameras may not be the best option in locations where it is difficult to get a signal.<sup>45</sup> It may be helpful to hire a qualified and experienced CCTV consultant to help you determine which camera and equipment will best suit your purposes.<sup>46</sup>

### **Publicity**

As stated previously, if the public—and especially the offending public—are not aware cameras are watching, the preventative aspect of CCTV will not function. Covert systems require no publicity, but you should consider the costs and the placement of any signage that advises the public about overt cameras. A media campaign can help, but can also be relatively short-lived: the media can rapidly lose interest in CCTV, especially if they are not permitted to have access to

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<sup>j</sup> You should consider the potential liability issues in the section “How CCTV aims to prevent crime.”

camera footage. Bear in mind that even with publicity, a number of surveys have shown that most of the public tend to be unaware they are in CCTV areas, so significant effort should be made to advertise the cameras' presence if you want to maximize the system's preventative aspect.

### **Where Should Cameras be Located?**

Guidelines are available for many of the activities involving CCTV<sup>47</sup>; however, guidelines for locating cameras are usually not provided. As a practical matter, crime analysis is not necessarily the sole determinant of CCTV camera locations. The cities of New York and Cincinnati, Ohio used town hall meetings and liaisons with the public to determine potential locations for CCTV installation.<sup>48</sup> Although police recorded-crime data are known to be incomplete, crime analysis still remains the most objective way to determine areas that may need CCTV. If caution is not exercised, it's possible cameras can be placed in locations that more reflect the influence of local politics and public misconceptions about fear of crime rather than actual crime hot spots. If schemes are orchestrated and primarily directed by local authorities, there is a risk police can be excluded from the crucial design stage, including the placement of cameras. If the system's measure of effectiveness is to reduce crime, then camera locations that are not primarily driven by the crime distribution are unlikely to demonstrate any significant crime-reduction benefits.

The choice of camera locations should, ideally, result from a high-quality crime analysis that not only incorporates a micro-level mapping of local crime patterns, but also an appreciation for the types of crime the system aims to target. It is also valuable to conduct a number of site visits that examine the lines of sight for cameras and identify any potential obstructions. If time permits, visits during different times of the year are advisable because spring and summer foliage can obscure a camera image that appears clear in winter, and Christmas lights and other seasonal holiday decorations can also impede the view from some cameras. The main determining factor should be the crime problem, and crime mapping systems can be fundamental in identifying crime hot spots and other areas of need.<sup>k</sup> The design of the space to be surveilled makes a difference in CCTV's success. If the city has multiple hot spots where cameras may be useful but not enough funds to install them at all locations, one option is to have a mobile unit such as Fort Lauderdale's Peacemaker which can be relocated as needed.<sup>49</sup>

### **Who Will Operate the System?**

One of the first decisions is whether the system will be actively or passively monitored. Active systems are more expensive to operate as they require staff to be continuously present, but they produce better results and allow for in-the-moment reactions. Additionally, they may reduce time spent on a case by allowing officers to gather evidence more quickly or, in some cases, allowing for apprehension of the suspect at the scene.

Although the aim of CCTV is to reduce crime, the actual operation of most schemes is split between police operators and civilian operators, who are either employees of the local authority

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<sup>k</sup> For readers unaware of crime mapping, the website of the National Institute of Justice Mapping and Analysis for Public Safety (MAPS) program offers a good introduction to the concept ([www.ojp.usdoj.gov/nij/maps](http://www.ojp.usdoj.gov/nij/maps)). See also Chainey and Ratcliffe (2005).

or city, or occasionally (as in a small Detroit CCTV scheme) local civilian volunteers.<sup>50</sup> In much of the literature from the UK, it appears police are less concerned with the system's ownership than by ensuring they are the system's primary and priority users. Because police rarely have the funds for complete systems, a common arrangement is for police to enter into partnerships with local authorities and city management.

If a civilian organization operates the cameras, then the system will be most effective when integrated into a police command-and-control system, so a coordinated response to identified incidents can be made timely and effectively. This means you should arrange for a direct communication link from the CCTV control location to local police. To ensure rapid communication, some civilian control facilities have police radios so they can communicate directly with officers on the street. An additional advantage is that operators with access to police communications can train their cameras on incidents that police become aware of without having to be contacted by police. For example, if a shop calls police to suspected shoplifters, or if police request further assistance to make arrests, the camera operators can train their cameras on the incident immediately upon hearing the information on the police radio.

In some configurations, police monitor the cameras' video displays, which are fed to monitors at the local police station. Often, the police operator is whoever is on duty. These individuals are often not trained in the system's operation and have other duties to perform at the same time, limiting the actual surveillance.<sup>1</sup> As a result, the systems are less effective from a proactive stance, and become a reactive tool that merely aids the deployment of officers to incidents that have occurred.

One Detroit neighborhood plans for local volunteers to monitor cameras through a password-protected internet feed, though this proposal has raised civil liberty issues.<sup>51</sup> Similar concerns exist for a proposal in Soulard, a St. Louis neighborhood, that might allow any local resident to control the camera through an internet site.<sup>52</sup> The negative implications of this type of crime-reduction intervention from a civil-liberties perspective may outweigh any crime-reduction benefits. Although it does reduce ongoing human costs, you should not select this type of system without careful consideration. A public survey of the proposed idea may convince you not to proceed with a system monitored and controlled by the public.

### **Do You Have Both the Capital and Revenue Funds for Operation?**

Initial capital costs for CCTV systems fluctuate, though they are generally falling as the technology becomes more mainstream. In addition, government grants have made it easier to obtain funding for CCTV systems. However, if you do receive a grant, when the money runs out it is up to your department to provide funds for continued system operation.<sup>53</sup> Full system costs exceed the equipment price and often include software, vandalism protection, connecting to power supplies, network creation, and site preparation.<sup>54</sup> Human costs continue for the life of the scheme and are often difficult to contain. Once a CCTV system is operational, there is likely to be considerable reluctance to downsize or dismantle it. Ongoing maintenance, repairs, and upgrading

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<sup>1</sup> When a system is monitored by the police officer in charge of a station front desk, the system is not monitored when the officer attends to a police station visitor (Leman-Langlois, 2002).

costs may end up being more expensive than the initial setup, so it is important that you plan ahead for these expenses.<sup>55</sup> A CCTV system is a permanent cost. In one scheme three staff members were let go after 18 months of operation, due to a lack of ongoing operating funds.<sup>56</sup> When departments do not have enough funds for personnel, they may have to choose between having the operator monitor more cameras than the industry standard and not monitoring all of the cameras which may then impact the system's ability to effectively reduce crime.<sup>57</sup>

### **Do the Local Police Have the Resources to Respond to Any Incidents?**

There is scant evidence that CCTV significantly reduces public order and violent offenses, but the impact of these crimes can be reduced with a quick and effective police response, and this is a real potential benefit of CCTV. As interviews with offenders have shown, many are not deterred by the presence of CCTV<sup>58</sup>, though CCTV does work as a deterrent with offenders who have been caught with CCTV and are aware they were caught with CCTV. As a result, it is prudent to ensure an effective police response is available. This may require additional police resources for the long term, a cost that may need to be factored into CCTV running costs, or at least into the local community safety budget.

### **Who and What Should be Watched?**

None of the six CCTV schemes studied by Goold<sup>59</sup> had established effective systems of control and regulation, and the lack of police involvement in the early implementation stages increased the difficulties for police to regulate the systems according to their needs, or for the camera use to reflect police priorities. Goold also noticed that in police-managed CCTV schemes, civilian operators tended to use the cameras to follow individuals based on their behavioral attributes (demeanor, aggressiveness, behavior to others, running in a busy street, and so on) more so than in civilian-run schemes. Regardless of who ran the system, the majority of surveillance was conducted based on a target's behavioral or categorical attributes (age, dress, gender, race), or because the camera operator had personal knowledge of the individual based on contact with police officers.

As a guide, it is prudent for any system to have:

- Operational guidelines
- Employee vetting
- Effective training (in matters such as camera operation, recording practices, the length of time tapes are retained, and mechanisms to contact police)
- Established complaint procedures for concerned citizens
- A clear policy about whom and what are the subjects of targeting as well as consequences for camera misuse

With regard to the last item, a clear policy, intelligence on local crime patterns, and likely suspects based on thorough, sound, and objective crime analysis and intelligence appears essential. A policy based on an objective interpretation of the criminal environment would help deflect some of the (occasional) criticism that CCTV operators unfairly target marginalized populations.



There is one scenario that is rarely discussed but should be considered. What if the cameras capture images of police misconduct? This should be addressed for systems that are operated by police or local authorities. Hopefully this is only a hypothetical issue, but you should determine a policy. The majority of officers interviewed in one study said the cameras forced them to be more careful when on patrol.<sup>60</sup> It is possible that officers may be more reluctant to use reasonable force in circumstances that require a high level of force.

## **Evaluation**

Many funding sources that can provide the money for a CCTV scheme also require an evaluation of the scheme. An ideal evaluation would be a robust one that avoids most, if not all, of the criticisms leveled at poorer evaluations.<sup>61</sup> Although a “quick and dirty” evaluation conducted locally and with little methodological rigor may satisfy a grant’s minimum criteria, it is unlikely to be of wider benefit to the problem-oriented policing and crime-reduction community. Partnering with a local university, which can provide statistical and evaluative advice, is suggested. Having clear objectives for your system upfront can also help when you get to the evaluation stage.

You should also prepare the implementation team for an evaluation’s range of possible outcomes. In a number of cases, recorded crime has increased, but as stated earlier, this does not necessarily mean crime has increased. Consider the following scenario. A CCTV scheme is created to counter drug dealing in a local park. Drug dealing has a low reporting rate as both dealer and seller do not want police involvement. It is possible that much of the drug dealing in the park may stop because of the cameras’ introduction, but the cameras will also provide an opportunity for local police to spot and arrest those dealers initially unaware of the cameras. As a result, police arrests—the main source of drug-related recorded crime—can actually increase at first, inflating recorded crime figures even though drug dealing has actually declined.

## Managing Public Concerns

Some have suggested that with the growth of public-place CCTV and the already extensive network of private surveillance systems in the transport system, hospitals, commercial premises, schools, and so on, it is nearly impossible to escape surveillance.<sup>62</sup> This may be so, but we are probably some way yet from the type of overwhelming global surveillance network described in novels such as George Orwell's *1984*.<sup>63</sup> This does not mean a citywide or nationwide network of cameras maintaining surveillance on the public is a fictional idea to be dismissed: discussions have been held at U.S. federal government levels regarding the growth of cameras in the nation's capital.<sup>64</sup> Public anxiety is usually more focused on specific areas.

### Covert Cameras

Unlike overt cameras, which can be seen conducting surveillance of public areas, covert cameras are designed to be unseen. Although some consider covert cameras to be more intrusive, there are city managers who have used domed cameras (a semi-covert scheme) because they are deemed to be more discreet.<sup>65</sup> Some might argue there is less accountability with covert cameras because the general public has no way to determine the target of the surveillance, and this leads to concerns about privacy and the right to know if we are being watched by the government.

### Privacy and Legal Concerns

In the United States, privacy issues related to the use of CCTV surveillance are first and foremost in regard to the Fourth Amendment of the United States Constitution, which protects a citizen from unreasonable searches and seizures by the government. The emphasis is on the protection of people, not places. As a result, at least in terms of clearly public places, citizens cannot have an expectation of privacy. Surveillance of individuals in public places would therefore appear to be constitutionally acceptable.<sup>66</sup> This interpretation stretches only so far. In the case of *Katz v. United States*<sup>67</sup>, the Supreme Court overturned the conviction of a man convicted on evidence gleaned from an FBI electronic listening device fixed to the outside of a public telephone booth. As one concurring opinion pointed out, a court must determine whether a suspect had a reasonable expectation of privacy in his activities, and if so, would society be prepared to accept the privacy expectation as reasonable.<sup>68</sup> Reasonable expectations of privacy tend to be subjective but for the purposes of simple video (not audio) surveillance of public space, the use of CCTV in the United States would appear to be on solid ground constitutionally.

A number of cases support the use of technological devices to enhance the natural ability of vision and hearing police officers could employ on the street if they were there in person. It is likely the courts would not look so positively on surveillance technology that is able to intrude where a police officer could not reasonably expect to be able to see. Future video surveillance equipment that employs x-ray technology to examine inside and under clothing may violate Fourth Amendment protections.

More generally, concerns have been voiced in regard to the use of CCTV as a surveillance mechanism in public-order situations.<sup>69</sup> For example, some people expressed anxiety after New York City officials declared a desire to increase the number of cameras in operation before the 2004 Republican National Convention.<sup>70</sup> It would therefore seem prudent to stress to the public that a CCTV system is in place as a problem-oriented solution to an existing crime problem.

In summary, public agencies wishing to install CCTV systems in public places should consider these two key points:

- The area under surveillance should cover only clearly public areas.
- Surveillance equipment can use zoom, tilt, and pan to enhance video capture, and enhanced microphones to detect sound. However, technology that is able to intrude beyond reasonable limits of audio and visual capability may be constitutionally questionable.

This guide is not intended to provide advice on the legality of particular CCTV systems. Implementers should seek legal advice in their local area early in the process if they have concerns about the legality of introducing CCTV.<sup>71</sup>

Citizens may be especially wary of privacy concerns if there are no policies or guidelines for operating the system.<sup>72</sup> One of the easiest ways to reduce privacy and legal concerns is to have clear policies and guidelines such as those discussed previously. This will help reduce citizens' fears related to privacy concerns and can garner more support for CCTV systems. Involving the public in planning the system and educating them about it can also achieve this aim.

### **Ownership of Images**

The public is unlikely to support CCTV if there is a risk that video of them shopping on a public street when they should be at work will appear on the nightly news. With the increase of social media, residents may also be fearful that unethical officers will sell CCTV videos online or blackmail them.<sup>73</sup> Therefore, a policy should exist that covers when recorded images are released to the police, media, or other agencies in the criminal justice system as well as consequences for inappropriate release. Releasing video footage for any reason other than to achieve legitimate police objectives is not recommended. Footage kept for lengthy periods may be obtained by citizens who file public-record requests.<sup>74</sup> Therefore, policies should also be developed about how long footage is stored or kept.

### **Marginalized Populations**

The public may also be concerned that marginalized populations will be targeted by CCTV systems which may ultimately increase their contact with the criminal justice system. One concern is that racial bias will impact camera operators and certain groups will be targeted based on who they are rather than on what they are doing.<sup>75</sup> Similarly, there is concern that homeless individuals will unfairly become the targets of CCTV systems.<sup>76</sup> Again, the best way to address these concerns is through having specific policies related to who and what will be deemed suspicious and thereby justify police intervention.

### **Public-Private System Integration**

One cost-saving option for departments is to integrate a public system with private CCTV systems. This could involve video-security systems used by businesses or private citizens. Camera systems have become more affordable. Some police departments have formed

partnerships whereby businesses purchase the cameras and equipment, and the police department monitors the feed.<sup>77</sup> This partnership reduces public expenses while enhancing the police response to suspicious activity.

A more common integrated system involves police working with private citizens who have video surveillance at their homes, most commonly in the form of doorbell cameras. Although originally promoted as a way to stop package thefts, their affordability has led to increased demand for them.<sup>78</sup> The systems are designed to be easy to capture and share videos. Knowledge of increased presence of cameras and the ease of sharing the information can act as a deterrent to potential offenders. Once a crime occurs, having access to these videos allows officers to gather information that may help identify suspects, gather vehicle information and circumstantial evidence, and provide insight into the mode of operation.<sup>79</sup> As a result, several police departments have launched programs whereby residents can register their home video cameras. These programs are voluntary, and police do not have access to the feeds in real time but rather only obtain what the homeowner is willing to share.<sup>80</sup> Databases of camera locations are created, and if an incident happens near a residence, the police can ask for access to the footage.<sup>81</sup> Essentially, it creates another resource that police can tap into without having to spend money on cameras in residential areas, and saves time that would have otherwise been spent canvassing the neighborhood.

Some camera companies such as Ring list on their device control centers their partnerships with police departments and these departments can work with Ring to request footage from a specific owner.<sup>82</sup> Ring currently has a relationship with over 600 police departments.<sup>83</sup> If a department can receive footage from multiple homeowners in an area, they can map a suspect's steps through the neighborhood and retrace the route, looking for evidence.<sup>84</sup> Privately gathered surveillance footage is also not subject to Fourth Amendment or other constitutional issues which allows for the use of the footage without added worries about privacy concerns. One thing about these systems that warrants caution is the ease of sharing means residents may post videos online or send them to other media outlets without contacting the police first, which could jeopardize investigations or promote retaliation or vigilantism.<sup>85</sup> Therefore, departments seeking to embrace these systems should have campaigns or education programs informing residents of the importance of coming to the police first with the videos.

## **Future Systems**

Implementers should be aware that technology is always on the march, and a number of particular innovations are imminent.

Backscatter low-level x-ray imaging is a technology that provides the potential to see through clothing and detect weapons and other prohibited materials.<sup>86</sup> Facial recognition systems require a link to another computer system within a police department, such as a database containing photographs of wanted individuals. A facial recognition system tied to an existing bank of 140 cameras was first used in East London (UK) in 1998. In order to enhance facial recognition, some new 3D surveillance systems are being developed which may allow for better comparison to suspects in custody.<sup>87</sup> In addition to facial recognition, some programs can recognize other human characteristics such as walking or running gaits.<sup>88</sup> The newer stereo-photogrammetric video surveillance system is a low cost, easy-to-implement, and minimally invasive system that can determine the size, shape, and location of any object. All that is needed are two coupled cameras

and commercially available photogrammetric software which does not require any special skills to operate. The cameras only have to be calibrated once and the system is set.<sup>89</sup>

Beyond their use to identify specific fugitives, the next generation of CCTV camera images may also be analyzed by problem-recognition systems. Unlike basic motion-detection systems (which activate a camera when a sensor is tripped), problem-recognition systems are software programs that interpret video images from a CCTV camera. The program attempts to identify problems such as potential robberies or street brawls by seeking out unusual characteristics or patterns in digital images. They can also be programmed to identify out-of-place articles, such as abandoned packages or weapons.<sup>90</sup> This technology is helpful for passive systems, especially if the problem recognition is coupled with an enhancement in image quality.<sup>91</sup> Some cities are also considering the introduction of cameras with systems that can identify the source of firearm activity or 911-call locations and automatically train their cameras on the source of that activity.<sup>92</sup> Increased integration with private systems is also likely to continue. All of these next-generation systems will carry with them particular issues in terms of police response, the public's perception of safety, and may also influence the public's perception of the government's intrusion into private life.

## Conclusions

Although much of the professional literature from manufacturers tends to over-hype CCTV's benefits, robust evaluations, where they exist, are apt to be more circumspect. Companies that produce surveillance systems claim unqualified success, while cautious academics often say the opposite.<sup>m</sup> As noted from one study, "open-street CCTV can 'work' in limited ways, but is not a universal panacea. It works in different ways in different situations."<sup>93</sup> The evidence suggests that CCTV works most effectively when bundled with a package of other situational preventative measures.<sup>94</sup> That CCTV is often implemented with other measures makes conclusive evidence of CCTV's effectiveness difficult to confirm.

Media manipulation may play an important role in advertising a system, help increase public knowledge, and, therefore, reduce fear of crime. It may also inform offenders and increase their risk of perception. Advertising success also helps to maintain offender wariness as well as reinforce feelings of public safety (and the perceived added benefit of economic improvement).

Conclusions about effectiveness that can be cautiously drawn are:

- CCTV works best in small, well-defined sites (for example, public parking areas) rather than across large areas (such as housing estates)
- CCTV is more effective in combating property crime rather than violence or disorder
- A close relationship with the police will improve system effectiveness
- A good quality CCTV system can aid police investigations

Finally, you should consider the impact of a CCTV system from a societal view. It has been suggested that ever-increasing surveillance can make the local environment a less pleasant place to live.<sup>95</sup> Of course, it may also reduce fear of crime and increase public participation in public space. This may be an acceptable benefit from the ongoing costs of a CCTV scheme.

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<sup>m</sup> The authors of a recent UK Home Office study said "The most obvious conclusion to be drawn from the analysis in this chapter is that CCTV is an ineffective tool if the aim is to reduce overall crime rates and make people feel safer. The CCTV systems installed in 14 areas mostly failed to reduce crime (with a single exception), mostly failed to allay public fear of crime (with three exceptions) and the vast majority of specific aims set for the various CCTV schemes were not achieved. Despite all this we are reluctant to draw the simple conclusion that it failed." (Gill and Spriggs, 2005, page 61).

## Appendix A: Systematic Reviews of Video Surveillance in Public Places

As more research evaluating CCTV across the globe has been conducted, meta-analyses and systematic reviews have been developed to take stock of what is known about this large body of research. The table below provides the results from the meta-analyses to provide a more comprehensive understanding of what is currently known about CCTV. Studies are ordered with the most recent evaluations first.

<b>Evaluation</b>	<b>Settings included</b>	<b>Years covered</b>	<b>Number of studies included</b>	<b>Inclusion criteria</b>	<b>Effects on crime</b>
Welch, Piza, Thomas, & Farrington, 2020	Car park, city/town center, housing, residential, public transport, and other	1978-2018	76 studies	CCTV was the main focus of the intervention. A crime outcome measure was included. Research involved before and after measures for treatment and control areas which experienced at least 20 crimes pre-intervention.	CCTV programs operated by security personnel had the biggest reduction in crime
Piza, Welsh, Farrington, & Thomas, 2019	Car park, city/town center, housing, residential, public transport, and other	1977-2017	76 studies	CCTV was the main intervention. A crime outcome measure was used. Included before and after measures in treatment and control areas where at least 20 crimes were experienced pre-intervention.	CCTV is associated with a modest statistically significant reduction in crime. Displacement was not a common result (6 out of 50 studies) and in 15 studies there was evidence of diffusion benefits. The largest and most consistent effects were found in car parks. CCTV in residential areas was also associated with

Evaluation	Settings included	Years covered	Number of studies included	Inclusion criteria	Effects on crime
					significant reductions in crime. Actively monitored CCTV systems were associated with significant reductions and passive systems were not associated with reduction in crime.
Alexandrie, 2017	Parking facilities, supermarkets/mass merchant stores, soccer stadiums, subway stations, and public street settings	2008-2017	7 studies	Studies were either a randomized or natural experiments. The main outcome variable was a measure of crime. The main intervention method was video surveillance.	Overall crime reductions ranged from 24-28% in public streets and urban subway stations but no effects in parking facilities or subway stations. Most of the crime reduction was found for property crimes. Most of the studies found no effects of displacement or diffusion.
Welsh & Farrington, 2009	City/town centers, public housing, public transportation, car parks, and residential areas	1978-2007	44 studies	CCTV was the main intervention. There was an outcome measure for crime. All studies had, at a minimum, before and after measures in experimental and control areas.	CCTV caused a modest (16%) yet statistically significant decline in crime in experimental areas compared with control areas. CCTV in car parks resulted in a 51% decrease in crime. Other settings had small



Evaluation	Settings included	Years covered	Number of studies included	Inclusion criteria	Effects on crime
					nonsignificant effects from CCTV. CCTV is more effective in the UK than in other countries.
Farrington, Gill, Waples, & Argomaniz, 2007	Deprived housing estates, borough of mixed affluence, town/city center, hospital, car parks	Programs funded in 2001	14 studies	CCTV was one of the interventions used in all studies. Included a target area, buffer area, and control area with similar socio-demographic features and crime problems.	CCTV was only effective in reducing crime in car parks. CCTV was most effective in reducing vehicle crime. CCTV was particularly effective when also combined with improved lighting.

## **Appendix B: Site-specific Evaluations of Video Surveillance in Public Places**

The following table summarizes a number of CCTV systems and the results of their evaluations. It is not an exhaustive list, as some studies may have been inadvertently omitted during the literature search for this guide. Also, a number of studies have been excluded. The main reasons for exclusion were when the evaluation report did not include sufficient information to corroborate any reported crime reduction, or where the evaluation was conducted by a party perceived to be heavily invested in the system.<sup>n</sup> This commonly occurred when a system was reported as a success in a newspaper article based solely on the comments of a city manager or local police department. When some evaluations reported findings that did not appear to accurately reflect the changing pattern of crime, they were either excluded, or the language was changed to a more general tone. As a result of this last caveat, if you require further information you should refer to the original study reports. This is the best way to judge the reliability of the findings and conclusions, as the quality of studies varies considerably.

The table below emphasizes studies that have a strong quantitative component. This is not intended to negate the value of qualitative analysis, but to reflect the likely audience for the report. Most CCTV systems are implemented to tackle, at least as one aim, levels of reported crime. These are usually apparent in police recorded-crime records and so the table reflects more positively on reports that demonstrate they have examined and evaluated recorded-crime statistics in a robust manner. Studies are ordered by implementation date, with the most recent first.

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<sup>n</sup> This is not to suggest or imply an inappropriate behavior on the evaluator's part. Simply, the evaluator's impartiality cannot be guaranteed and, therefore, the evaluation was excluded.

Location	Camera organization	Implement-ation	Effect on crime	Effect on fear of crime	Operation	Evaluation	Research design
Gothenburg, Sweden	28 cameras in 3 neighborhoods, 5 cameras are at each spot, 4 are fixed and 1 is movable	January 2018 and April 2018	CCTV was associated with a reduction in violence but no significant change in property crime or crime clearance. Effects vary by site.	No information available	Cameras can be actively monitored but the extent to which this occurred is unknown	Gerell (2020)	Changes in crime and crime clearance in the 3 neighborhoods are compared to 6 control neighborhoods. Weighted displacement difference models are used to understand changes in crime and chi-square test are conducted for changes in crime-clearance rates.
Philadelphia, Pennsylvania	86 CCTV cameras grouped into 13 clusters	January 2003 and December 2012	Cameras had no effect on the level of violent street felonies. No significant impact was found for disorder crimes.	No information available	Cameras have a patrol function where they patrolled a specific area but can also be operated by the camera monitor. Cameras also recorded all footage 24 hours a day 7 days a week and footage was stored for 12 days.	Ratcliffe & Groff, 2019	A quasi-experimental repeated measure design which considered counts of crime events for both violent street felonies and disorder crimes in 13 spatial units of 120 temporal periods using a multilevel random effects model

Location	Camera organization	Implementation	Effect on crime	Effect on fear of crime	Operation	Evaluation	Research design
Newark, New Jersey	64 CCTV cameras grouped into 38 schemes	July 2011 and September 2011	The experimental strategy was associated with significant reduction in violent crime and social disorder in treatment areas compared to control areas	No information available	Cameras were monitored normally by 2 camera operators. During the experiment an additional operator was added to monitor treatment cameras.	Piza, Caplan, Kennedy & Gilchrist, 2015	A randomized block design control trial was used to assign each of the 38 CCTV schemes to either treatment or control group. Schemes were grouped into pairs based on their calls for service for violent crime, social disorder, and narcotics activity.
Surrey, British Columbia	12 cameras were installed at the car park: 11 fixed and one adjustable camera	August 2009	Police data did not show much of an impact in of CCTV. Insurance data also do not show much of an impact.	No information available	Camera recordings were stored for 7 days and were available upon request	Reid & Andresen, 2014	Structural break tests employed via linear regression were used to assess three trends in a variety of spatial units controlling for seasonal effects
Newark, New Jersey	73 dome cameras in plain view of pedestrians	March 2008 and July 2008	No significant difference between strategically and randomly place cameras. Significant decrease in auto thefts. No significant displacement and	No information available	No information available	Caplan, Kennedy, & Petrossian, 2011	Quasi-experimental design. Geographic information system mapping was used to create the 73 camera and control location boundaries. Crime data was compared for 13 months before and after camera installation.

Location	Camera organization	Implementation	Effect on crime	Effect on fear of crime	Operation	Evaluation	Research design
			small diffusion benefits.				
Malaga, Spain	17 cameras in the two square miles of the main shopping center	March 2007	CCTV system did not significantly reduce crime. There is a possible displacement effect occurring and is more evident for crimes against property.	No significant difference in the fear of being a victim of crime	Cameras are pan, tilt, zoom high resolution models	Cerezo, 2013	Quasi-experimental design. Included experimental area, control area, and buffer areas. Considered both crime rates and victimization rates.
Philadelphia, Pennsylvania	2 different camera types were used in the pilot program: 8 pan, tilt, zoom and 10 regular cameras. Cameras were located at 10 different sites.	January 2005 and August 2007	The introduction of CCTV cameras was associated with a 13% reduction in all crime in the target areas. However, not all sites showed a benefit from the camera placement.	No information available	The 8 pan, tilt, zoom cameras were actively monitored. 10 cameras did not allow for live monitoring although officers nearby with the correct	Ratcliffe, Taniguchi, & Taylor, 2009	Two different evaluation techniques are used: hierarchical linear modeling and weighted displacement quotients

Location	Camera organization	Implement-ation	Effect on crime	Effect on fear of crime	Operation	Evaluation	Research design
					equipment could theoretically view feed from cameras. The system recorded up to 5 days of activity.		
Philadelphia, Pennsylvania	10 cameras monitored by police department installed in 4 areas and 8 cameras that record continuously installed in 8 locations	July 2006	13% reduction in crime through end of August 2017 overall. 4 camera sites had no reduction and 4 sites reduced crime and diffused benefits to surrounding streets.	No information available	10 cameras monitored by officers. 8 cameras officers can monitor from in patrol cars while nearby and cameras feed set continuously to hard drive.	Ratcliffe & Taniguchi, 2008	Hierarchical linear modeling was used to control for seasonal effects and preexisting temporal trends at each camera location. In order to also assess the effects of different cameras at different locations weighted displacement quotient analysis was utilized.
Los Angeles, California	5 cameras in Hollywood Boulevard & 6 cameras in Jordan Downs	February 2005 for Hollywood Boulevard, and October 2006 for Jordan Downs	Not statistically significant differences for violent crime, property crime, or displacement	No information available	All cameras were active monitoring systems	Cameron, Kolodinski, May & Williams, 2008	Quasi-experimental design to examine monthly crime data before and after the introduction of CCTV. Areas were categorized into target, buffer, or control areas. Relative effect size statistical tests were conducted.

<b>Location</b>	<b>Camera organization</b>	<b>Implement-ation</b>	<b>Effect on crime</b>	<b>Effect on fear of crime</b>	<b>Operation</b>	<b>Evaluation</b>	<b>Research design</b>
Schenectady, New York	11 cameras with locations determined based on spatial concentration of crime	October 2003 – January 2007	Total crime did decrease in the 150-foot area around the camera. Cameras were associated with declines in person rather than property crime. Cameras were very successful at reducing disorder. Cameras that were more visible were better at reducing crime. Mixed results were found for displacement and diffusion benefits.	No information available	Cameras operated on a patrol sequence with an average of 7 present viewing locations. Little viewing of live feed and footage was stored for 2 weeks.	McLean, Worden, & Kim, 2013	Interrupted time series analysis was conducted. Each of the 4 time periods where cameras were introduced were treated as interventions in the model.
Kabukicho, Tokyo, Japan	No information available	March 2002	Reduction in vehicle crime, slight reduction in violence, substantial reduction in larceny, within 50 meters of cameras	No information available	No information available	Harada et al., 2004	Geocoding crime events improved accuracy and better determined which crimes were within the CCTV area

Location	Camera organization	Implementation	Effect on crime	Effect on fear of crime	Operation	Evaluation	Research design
Cincinnati, Ohio	Cameras sited in 3 city locations	Early 1999	Some reduction in calls for service and anti-social behavior in 2 sites (one with some diffusion), but an increase in anti-social behavior in a third location, as well as some displacement on implementation	No information available	No information available	Mazerolle et al., 2002	An ARIMA time series analysis of data derived from interpretation of video footage was combined with police incident data
Oslo, Norway	6 cameras	January 1999	Decrease in robbery/theft from person and bicycle theft	None	Civilians working at a police station	Winge & Knutsson, 2003	The data have some limitations, and the surveys are not large; however, the incident data were examined for experiment, control, and displacement areas
East Brighton, UK	10 cameras in a housing project	Summer 1998	Crime continued a long-term increase	Feelings of lack of safety continued after CCTV's introduction	No information available	Squires, 2003	Some factors were out of the researchers' control. There were potentially significant differences between pre- and post-survey groups, and the crime analysis does not break down the data into more meaningful offense categories.
Greater Easterhouse, Glasgow, Scotland	Not reported	May 1998	No overall crime reduction. Drug offenses and violent crime increased, but at a lower rate than in other areas. Other crime types not	No information available	Civilian operators working at a police station	Hood, 2003	Adequate, but not all quantitative results reported



Location	Camera organization	Implementation	Effect on crime	Effect on fear of crime	Operation	Evaluation	Research design
			reported in the paper.				
Camberwell, London, UK	17 cameras in a town center	January 1998	Street, vehicle, and violent crime decreased at a faster rate than before CCTV's introduction, while the buffer and comparison areas saw an increase in crime	Of public surveyed, who knew about the cameras, 69% felt safer	Civilian, based at a public car park and linked to a police station	Sarno et al., 1999	4 years of crime data examined and supported with numerous qualitative approaches
East Street, London, UK	12 cameras covering a street market	January 1998	Vehicle crime and criminal damage decreased, though street crime increased (mainly in theft from the person; robberies decreased)	Of public surveyed who knew about the cameras, 53% felt safer	Civilian, based at a public car park and linked to a police station	Sarno et al., 1999	4 years of crime data examined and supported with numerous qualitative approaches
Five UK towns	Varied	March to July 1997	Assault-related emergency room visits decreased, recorded violence increased, suggesting that police intervention due to CCTV surveillance	No information available	No information available	Sivarajasingam, Shepherd, & Matthews, 2003	2 years of pre-and post-intervention data were explored for 5 experiment and 5 control towns and cities

Location	Camera organization	Implementation	Effect on crime	Effect on fear of crime	Operation	Evaluation	Research design
			increased arrests and reduced the escalation of violence				
Iford, Essex, UK	Town center. Number of cameras not available.	May/June 1997	Reduction over 5 months for every crime type examined. Lesser reductions outside implementation area for a number of crime types. Crime in the CCTV area also declined compared to the same months in the previous year.	Modest improvement after CCTV implementation	No information available	Squires, 1998	A longer data period would have been able to correct the apparent seasonality
Elephant and Castle, London, UK	34 cameras around a shopping center	January 1997	Recorded crime fell 17% in both target and buffer areas. Steep decline in street robberies attributed to CCTV.	Of public surveyed who knew about the cameras, about 60% felt safer.	Civilian, based at a shopping center and linked to a police station	Sarno et al., 1999	4 years of crime data examined and supported with numerous qualitative approaches

Location	Camera organization	Implementation	Effect on crime	Effect on fear of crime	Operation	Evaluation	Research design
Amsterdam, The Netherlands	29 cameras, in 3 areas, with variable viewing hours	Early 1997 to mid-2001	General reduction in crime levels. Some displacement to other areas, though still a net reduction. Some immediate diffusion of benefits.	Slight improvement in only one area	Variable hours, with two systems operational only during peak hours	Flight, Heerwaarden, & Soomeren, 2003	The systems were evaluated by means of an analysis of police records for one year before, and one year after CCTV implementation at each site, though the quantitative data were not fully explored
Gillingham, UK	7 town center cameras	1997	Reduction in vehicle crime and robberies	No information available	Civilian	Griffith, n.d.	The evaluation compared crime rates in the target area with a comparison site in a similar town with 5 years of aggregated data
Peckham, London, UK	14 cameras in a public retail area	October 1995	Inconclusive, due to limitations in access to recorded crime data	Of public surveyed who knew about the cameras, about 60% felt safer	Civilian, based at a public car park and linked to a police station	Sarno, Hough, & Bulos, 1999	Crime analysis was complicated by limited access to crime data due to the introduction date of a crime recording system. Researchers did manually gather data for a pre- and post-implementation period. Limitations in crime data outside the researchers' control.
Burnley, UK	No information available	1995	Substantial decline in most crime types. Some diffusion effect for most crime types.	No information available	No information available	Armitage, Smyth, & Pease, 1999	The study used a long-time series of data and also explored hourly temporal patterns
Glasgow, Scotland	32 city center cameras	November 1994	Marginal, though the system has helped with some	Marginal	Civilian	Ditton et al., 1999	3 years of crime data had seasonal variation removed before trend analysis, and pre- and post-surveys were conducted in control areas

Location	Camera organization	Implementation	Effect on crime	Effect on fear of crime	Operation	Evaluation	Research design
			major crime investigations				
Newcastle Upon Tyne, UK	16 city center cameras	December 1992	Reduction in burglary (57%), theft from vehicle (50%), vehicle theft (47%), and criminal damage (34%). Reductions occurred in areas outside the CCTV area, but not to the same level.	No information available	Police and civilians in a police station	Brown, 1995	Crime data examined for 26 months before, and 15 months after, implementation
Airdrie, Scotland	12 town center cameras	November 1992	Overall, 21% reduction, especially crimes of dishonesty and vandalism. Some crime types increased, but this may be due to increased detections.	No information available	Civilian operators working at a police station	Short & Ditton, 1996	Researchers controlled for seasonality and used a long-time series before and after CCTV implementation

<b>Location</b>	<b>Camera organization</b>	<b>Implement-ation</b>	<b>Effect on crime</b>	<b>Effect on fear of crime</b>	<b>Operation</b>	<b>Evaluation</b>	<b>Research design</b>
Birmingham, UK	9 city center cameras initially	1991-1992	Apparent crime control benefits (in robbery, burglary, and theft from person). Possible displacement of robbery and theft from person out of the area, as well as displacement of offending from vehicle theft to theft from vehicles. Some evidence of reduced personal victimization in CCTV area.	A positive change only in people who were aware the cameras had been installed	Civilian staff employed by the police	Brown, 1995	Nearly 4 years of data were used for the study, but the data were aggregated only to monthly beat counts
London, UK	4 different drug markets. Camera organization changed by site.	1990s	Effective in dispersing drug markets in 2 areas; in a third, users appear to have adapted to the cameras' presence	No information available	No information available	Edmunds et al., 1996	Not able to assess from the information provided

Location	Camera organization	Implementation	Effect on crime	Effect on fear of crime	Operation	Evaluation	Research design
King's Lynn, UK	60 cameras around the town	1987-1994	Vehicle crime continued ongoing reduction and reduced at a more significant rate compared to the surrounding police division. Burglary reduced in the evaluated CCTV area. Within 2 years, vehicle crime in the camera areas declined to nearly zero.	No information available	Civilian	Brown, 1995	The evaluation was limited to cameras overlooking car parks only. The number of crime events is low, limiting the application of any statistical measures.

In 2005 a large UK Home Office study was published (Gill & Spriggs, 2005). This study evaluated 13 CCTV projects comprising 14 separate systems. The systems were implemented in a variety of ways, including at public car parks, in town centers, in residential areas and housing estates, and in hospital areas. Furthermore, the systems varied in type. Some were fixed, others redeployable. Some were digital, others analogue. Some were monitored full time, others for less than 24 hours a day. The variations in the system therefore had an impact on the success of the system. The table below aims to concisely summarize the ten systems relevant to this report.

Research design: Strong. Police recorded crime statistics were examined in both the target area and the comparison areas. Some projects were also evaluated for displacement effects. Where possible (as was the case in nearly all studies) at least one to two years of pre-and post-intervention crime data were gathered. Time-series techniques were used to control for seasonal fluctuations. In 12 of the areas, public attitude surveys explored the public's perceptions of the CCTV systems and fear of crime. Researchers also identified other crime prevention measures taking place in the evaluation areas so the individual contribution of CCTV could be explored. Note that in the original report the names of the locations were changed to preserve anonymity.

<b>Location</b>	<b>Camera organization</b>	<b>Effect on crime</b>	<b>Effect on fear of crime</b>
City outskirts	47 cameras installed in a deprived area of residential, park, hospital, and light industrial land use	Significant reduction in crime	14% fewer respondents reported being worried about crime after CCTV installation. Other measures less clear.
South City	51 cameras added to an existing system in a mixed affluent/deprived city center area in southern England	10% reduction in crime, though there was a 12% reduction in the control area with no CCTV. Increased public order.	About 7% fewer respondents reported being worried about crime after CCTV installation
Shire Town	12 cameras installed in the town center of a Midlands former mining town	Crime reduced 4% in the town, while it increased 3% in the control site	12% fewer respondents at night and 4% during the day reported being worried about crime after CCTV installation. Greater reduction at night in control area.
Market Town	9 evaluated cameras. 2 new cameras, with further cameras added to an existing system, in the center of an affluent market town.	Crime increased 18% in the town, while only increasing 3% in the comparison site	No information available
Borough Town	40 new cameras installed in a small-town center aiming to reduce retail crime, alcohol problems, and criminal damage	No change in crime in the town center, while crime increased 14% in the comparison area	Fear of crime reduced
Northern Estate	11 new cameras introduced to a deprived public housing project in northern England	Crime decreased by 10% in the target area (especially burglary). Crime in the comparison area increased by 21%.	3% fewer respondents reported being worried about crime after CCTV installation. Similar reductions in control area.
Eastcap Estate	12 new cameras (10 evaluated) implemented into a deprived public housing project in southeast England	Crime increased in the target area, but only by 2% compared to a 5% increase in the control site. Some displacement within the target area.	3% increase in feelings of safety, matched with a similar level in control areas
Dual Estate	14 cameras (10 evaluated) installed to 3 areas of a deprived public housing project in southeast England	Crime increased 4% in the target area, and decreased 19% in the control area, suggesting a statistically significant difference	About 9-10% fewer respondents reported being worried about crime after CCTV installation. Significantly better findings than in control area.
Borough	8 new cameras used in a redeployable system which could be attached to any lamp post across a mixed/affluent residential area of southeast England	Crime increased by 73% in the target area, a statistically significant difference from the more modest 12% increase in the control area	No information available
Deploy Estate	11 new redeployable cameras implemented to different areas of a deprived public housing project	A 21% increase in crime recorded in the housing estate, compared to only a 3% increase in the control area	A slight improvement in those worried about crime in one area of the project compared to the comparison area. No change in the other area.





## References

- Aguilar, J. (2018). "Why Colorado Police Want to Know About Your Home Security Camera: Castle Rock, Brighton Latest to Ask Residents to Register Their Outdoor Security Cameras with the Police." *Denver Post*. Oct. 2.
- Alexandrie, G. (2017). "Surveillance Cameras and Crime: A Review of Randomized and Natural Experiments." *Journal of Scandinavian Studies in Criminology and Crime Prevention* 18(2):210–222.
- Anderson, J., and A. McAtamney (2011). *Considering Local Context When Evaluating a Close Circuit Television System in Public Spaces*. Trends & Issues in Crime and Criminal Justice, 430. Canberra: Australian Government Australian Institute of Criminology.
- Armitage, R., G. Smyth, and K. Pease (1999). "Burnley CCTV Evaluation." In N. Tilley (ed.), *Surveillance of Public Space: CCTV, Street Lighting and Crime Prevention*, Vol. 10. Monsey, NY: Criminal Justice Press.
- Bennett, T., and L. Gelsthorpe (1996). "Public Attitudes Towards CCTV in Public Places." *Studies on Crime and Crime Prevention* 5(1):72–90.
- Bodipo-Memba, A. (2004). "Fighting Blight in Southwest Detroit." *Detroit Free Press*. Apr. 19.
- Bowers, K. J., and S. D. Johnson (2003). "Measuring the Geographical Displacement and Diffusion of Benefit Effects of Crime Prevention Activity." *Journal of Quantitative Criminology* 19(3):275–301.
- Brown, B. (1995). *CCTV in Town Centres: Three Case Studies*. Crime Detection and Prevention Series, Paper 68. London: Home Office.
- Byers, C. (2018). "Your Home Surveillance System Is Changing How Police Work Across St. Louis Region." *St. Louis Post-Dispatch*. Oct. 4.
- Cameron, A., E. Kolodinski, H. May, and N. Williams (2008). *Measuring the Effects of Video Surveillance on Crime in Los Angeles*. Sacramento: California Research Bureau.
- Caplan, J. M., L. W. Kennedy, and G. Petrossian (2011). "Police-monitored CCTV Cameras in Newark, NJ: A Quasi-experimental Test of Crime Deterrence." *Journal of Experimental Criminology* 7(3):255–274.
- Cavoukian, A. (2001). *Guidelines for Using Video Surveillance Cameras in Public Places*. Toronto, Canada: Information and Privacy Commissioner.
- Cerezo, A. (2013). "CCTV and Crime Displacement: A Quasi-experimental Evaluation." *European Journal of Criminology* 10(2):222–236.
- Chainey, S. P., and J.H. Ratcliffe (2005). *GIS and Crime Mapping*. London: Wiley and Sons.

- Chiu, S. H., C. P. Lu, and C. Y. Wen (2006). "A Motion Detection-based Framework for Improving Image Quality of CCTV Security Systems." *Journal of Forensic Science* 51(5):1115–1119.
- Cho, J. T., and J. Park (2017). "Exploring the Effects of CCTV upon Fear of Crime: A Multi-level Approach in Seoul." *International Journal of Law, Crime, and Justice* 49: 35–45.
- Clancey, G. (2009). *Consideration for Establishing a Public Space CCTV Network*. Research in Practice Resource Manual, No. 8. Canberra: Australian Institute for Criminology.
- Clarke, R. V., and D. B. Cornish (1985). "Modeling Offenders' Decisions: A Framework for Research and Policy." In N. Morris (ed.), *Crime and Justice: An Annual Review of Research*, Vol. 6. Chicago: University of Chicago Press.
- Clarke, R. V., and D. Weisburd (1994). "Diffusion of Crime Control Benefits." In R. V. Clarke (ed.), *Crime Prevention Studies*, Vol. 2. Monsey, NY: Criminal Justice Press.
- Davies, S. G. (1996). "The Case Against: CCTV Should Not be Introduced." *International Journal of Risk, Security and Crime Prevention* 1(4):327–331.
- Ditton, J., E. Short, S. Phillips, C. Norris, and G. Armstrong (1999). *The Effect of Closed Circuit Television on Recorded Crime Rates and Public Concern about Crime in Glasgow* (Final report). Edinburgh: The Scottish Office.
- Edmunds, M., M. Hough, and N. Urquia (1996). *Tackling Local Drug Markets. Crime Detection and Prevention Series*, Paper 80. London: Home Office.
- Fahrenthold, D. (2006). "Federal Grants Bring Surveillance Cameras to Small Towns: Village in Vermont Has Almost as Many as D.C." *Washington Post*. Jan. 19.
- Farrington, D. P., M. Gill, S. J. Waples, and J. Argomaniz (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(1): 21–38.
- Fenton, J. (2009). "Crime a Tale of Two Cities: Baltimore, Britain and the Eyes of the Law. Criticism and Praise for CCTV Ripple Across the Atlantic." *Baltimore Sun*. Dec. 31.
- Flight, S., Y. v. Heerwaarden, and P. v. Soomeren (2003). "Does CCTV Displace Crime? An Evaluation of the Evidence and a Case Study from Amsterdam." In M. Gill (ed.), *CCTV*. Leicester: Perpetuity Press.
- Gerell, M. (2020). "CCTV in Deprived Neighborhoods – A Short-time Follow-up of Effects on Crime and Crime Clearance." *Nordic Journal of Criminology*.
- Gibelli, D., D. De Angelis, P. Poppa, C. Sforza, and C. Cattaneo (2017). "A View of the Future: A Novel Approach for 3D-3D Superimposition and Quantification of Differences for Identification from Next-Generation Video Surveillance Systems." *Journal of Forensic Sciences* 62(2): 457–461.

- Gill, M., and K. Loveday, K (2003). "What do Offenders Think about CCTV?" *Crime Prevention and Community Safety: An International Journal* 5(3):17–25.
- Gill, M., and A. Spriggs (2005). *Assessing the Impact of CCTV*. Home Office Research Study, Number 292. London: Home Office Research, Development and Statistics Directorate.
- Goold, B. J. (2004). *CCTV and Policing: Public Area Surveillance and Police Practices in Britain*. Oxford: Oxford University Press.
- Green, L. (1995). "Cleaning Up Drug Hot Spots in Oakland, California: The Displacement and Diffusion Effects." *Justice Quarterly* 12(4):737–754.
- Griffith, M. (n.d.). *Town Centre CCTV: An Examination of Crime Reduction in Gillingham, Kent*. University of Reading.
- Hamilton, B. (2004). "Hidden Eyes of Our apple: No Escaping City Security Cameras." *The New York Post*, May 2, p. 5.
- Hall, C. (2018). "How Doorbell Cams are Creating Dilemmas for Police, Neighborhoods." *Detroit Free Press*. Aug. 23.
- Harada, Y., S. Yonezato, M. Suzuki, T. Shimada, S. Era, and T. Saito (2004). *Examining Crime Prevention Effects of CCTV in Japan*. Paper presented at the American Society of Criminology Annual Meeting, Nov. 17-20, Nashville, Tennessee.
- Harris, C., P. Jones, D. Hillier, and D. Turner (1998). "CCTV Surveillance Systems in Town and City Centre Management." *Property Management* 16(3):160–165.
- Hermann, P. (2010). "Cameras Another Point of Police-Prosecutor Contention." *Baltimore Sun*. Apr. 7.
- Herrman, J. (2020). "The Policing of the American Porch." *The New York Times*. Jan. 19.
- Hickey, T. J., C. Capsambelis, and A. LaRose (2003). "Constitutional Issues in the Use of Video Surveillance in Public Places." *Criminal Law Bulletin* 39(5):547–568.
- Hoffman, L. (2006). "Government Use of Cameras in Public Places on the Rise." *Scripps Howard News Service*. Aug. 6.
- Hohmann, J. (2008). "Washington, D.C., Puts Itself Under Surveillance." *Los Angeles Times*. Jun. 16.
- Home Office (1994). *CCTV: Looking Out For You*. London: Home Office.
- Honess, T., and E. Charman (1992). *Closed Circuit Television in Public Places*. Police Research Group: Crime Prevention Unit Series, Number 35. London: Home Office.

- Hood, J. (2003). "Closed Circuit Television Systems: A Failure in Risk Communication?" *Journal of Risk Research* 6(3):233–251.
- Koskela, H. (2000). "'The Gaze Without Eyes': Video Surveillance and the Changing Nature of Urban Space." *Progress in Human Geography* 24(2):243–265.
- Lai, J. (2018). "Livestreaming Police Surveillance Video Sparks Privacy, Racial Profiling Concerns." *Philadelphia Inquirer*. May 9.
- Lantigua-Williams, J. (2016). "Using a Green Light to Bring Crime to a Stop: A New Public-safety Experiment in Detroit Employs High-Definition Surveillance Cameras to Deter Criminals but Raises Questions in the Process." *Atlantic Monthly*. May 19.
- La Vigne, N. G., S. S. Lowry, A. M. Dwyer, and J. A. Markman (2011a). *Using Public Surveillance Systems for Crime Control and Prevention: A Practical Guide for Law Enforcement and Their Municipal Partners*. Washington, D.C.: Urban Institute.
- La Vigne, N. G., S. S. Lowry, J. A. Markman, and A. M. Dwyer (2011b). *Evaluating the Use of Public Surveillance Cameras For Crime Control and Prevention – A Summary*. Washington, D.C.: Urban Institute.
- Lee, J. (2009). "Study Questions Whether Cameras Cut Crime." *The New York Times*. Mar. 3.
- Leman-Langlois, S. (2002). "The Myopic Panopticon: The Social Consequences of Policing Through the Lens." *Policing and Society* 13(1):43–58.
- Makkai, T., J. H. Ratcliffe, K. Veraar, and L. Collins (2004). ACT Recidivist Offenders. *Research and Public Policy Series*, 54:83.
- Mazerolle, L., D. Hurley, and M. Chamlin (2002). "Social Behavior in Public Space: An Analysis of Behavioral Adaptations to CCTV." *Security Journal* 15(3):59–75.
- McCoppin, R. (2002). "Illinois Focuses on Safety with Cameras at Rest Stops." *Chicago Daily Herald*, Aug. 26, p. 11.
- McLean, S. J., R. E. Worden, and M. Kim (2013). "Here's Looking at You: An Evaluation of Public CCTV Cameras and Their Effects on Crime and Disorder." *Criminal Justice Review* 38(3):303–334.
- Norris, C., and G. Armstrong (1999). *The Maximum Surveillance Society*. New York: Berg.
- Orwell, G. (1949) *Nineteen Eighty-Four, a Novel*. Secker and Warburg: London.
- Piza, E. L., J. M. Caplan, L. W. Kennedy, and A. M. Gilchrist (2015). "The Effects of Merging Proactive CCTV Monitoring with Direct Police Patrol: A Randomized Controlled Trial." *Journal of Experimental Criminology* 11:43–69.

- Piza, E. L., B. C. Welsh, D. P. Farrington, and A. L. Thomas (2019). "CCTV Surveillance for Crime Prevention: A 40-Year Systematic Review with Meta-Analysis." *Criminology & Public Policy* 18:135–159.
- Phillips, C. (1999). "A Review of CCTV Evaluations: Crime Reduction Effects and Attitudes Towards its Use. In N. Tilley (ed.), *Surveillance of Public Space: CCTV, Street Lighting and Crime Prevention*, Vol. 10. Monsey, NY: Criminal Justice Press.
- Poyner, B. (1988). "Video Cameras and Bus Vandalism." *Journal of Security Administration* 11(2):44–51.
- Poyner, B. (1999). "Situational Crime Prevention in Two Parking Facilities." *Security Journal* 2(2):96–101.
- Ratcliffe, J. H. (2002). "Burglary Reduction and the Myth of Displacement." *Trends and Issues in Crime and Criminal Justice*, No. 232, 6.
- Ratcliffe, J. H., and E. R. Groff (2019). "A Longitudinal Quasi-experimental Study of Violence and Disorder Impacts of Urban CCTV Camera Clusters." *Criminal Justice Review* 44(2):148–164.
- Ratcliffe, J. H., & Makkai, T. (2004). "Diffusion of Benefits: Evaluating a Policing Operation." *Trends and Issues in Crime and Criminal Justice* 278:1–6.
- Ratcliffe, J., and T. Taniguchi (2008). *CCTV Camera Evaluation: The Crime Reduction Effects of Public CCTV Cameras in the City of Philadelphia, PA Installed During 2006*. Philadelphia: Temple University.
- Ratcliffe, J. H., T. Taniguchi, and R. B. Taylor (2009). "The Crime Reduction Effects of Public CCTV Cameras: A Multi-method Spatial Approach." *Justice Quarterly* 26(4):746–770.
- Reid, A. A., and M. A. Andresen (2014). "An Evaluation of CCTV in a Car Park Using Police and Insurance Data." *Security Journal* 27(1):55–79.
- Rodriguez, I. (2012). "Police Roll Out Video Surveillance Truck Called The Peacemaker." *Sun Sentinel*. Jan. 27.
- Russo, P., E. Gualdi-Russo, A. Pellegrinelli, J. Balboni, and A. Furini (2017). "A New Approach to Obtain Metric Data from Video Surveillance: Preliminary Evaluation of a Low-cost Stereo-photogrammetric System." *Forensic Science International* 271: 59–67.
- Sarno, C., M. Hough, and M. Bulos (1999). *Developing a Picture of CCTV in Southwark Town Centres: Final Report*. London: Criminal Policy Research Unit, South Bank University.
- Seifert, D. (2020). "Ring Adds Privacy Dashboard to App in Response to Security Concerns." *The Verge*. Jan. 6.

- Selna, R., and D. Bulwa (2009). "S. F. Spy Cameras No Help in Violent Crime." *San Francisco Chronicle*. Jan. 12.
- Short, E., and J. Ditton (1996). *Does Closed Circuit Television Prevent Crime? An Evaluation of the Use of CCTV Surveillance Cameras in Airdrie Town Centre*. Edinburgh: The Scottish Office Central Research Unit.
- Short, E., and J. Ditton (1998). "Seen and Now Heard—Talking to the Targets of Open Street CCTV." *British Journal of Criminology* 38(3):404–428.
- Sivarajasingam, V., J. P. Shepherd, and K. Matthews (2003). "Effect of Urban Closed Circuit Television on Assault Injury and Violence Detection." *Injury Prevention* 9(4):312–316.
- Smithson, S. (2004). "Peeping Bob: Souldard Residents Worry Big Brother Will Come Knocking with Kraillberg's Camera Plan." *Riverfront Times*. Apr. 21.
- Squires, P. (1998). *An Evaluation of the Ilford Town Centre CCTV System*. Brighton, UK: Health and Social Policy Research Centre.
- Squires, P. (2000). *CCTV and Crime Reduction in Crawley: Follow-up Study 2000*. Brighton, UK: Health and Social Policy Research Centre.
- Squires, P. (2003). *An Independent Evaluation of the Installation of CCTV Cameras for Crime Prevention in the Whitehawk Estate, Brighton*. Brighton, UK: Health and Social Policy Research Centre.
- Surette, R. (2005). "The Thinking Eye: Pros and Cons of Second Generation CCTV Surveillance Systems." *Policing: An International Journal of Police Strategies and Management* 28(1):152–173.
- Thomas, L. W. (2018). *Legal Implications of Video Surveillance on Transit Systems*. Washington, D.C.: The National Academies Press.
- Thompson, S. (2009). "Surveillance Cameras Cut Crime Downtown, but Monitoring Them is Getting Too Expensive." *The Dallas Morning News*. Apr. 21.
- Tilley, N. (1997). "Whys and Wherefores in Evaluating the Effectiveness of CCTV." *International Journal of Risk, Security and Crime Prevention* 2(3):175–185.
- Usher, N. (2003a). "Video Surveillance Comes to Big Easy." *San Diego Union-Tribune*, Aug. 24, p. A14.
- Usher, N. (2003b). "Who's Watching You?" *Times-Picayune*, Aug. 9, p. 1.
- U.S. House of Representatives (2002). *Privacy v. Security: Electronic Surveillance in the Nation's Capital* (Hearing 107-166, Testimony of John D. Woodward, Jr.). Washington D.C.: Committee on Government Reform: Subcommittee on the District of Columbia.

- Welsh, B. C., and D. P. Farrington (2002). *Crime Prevention Effects of Closed Circuit Television: A Systematic Review*. Home Office Research Study, Number 252. London: Home Office Research, Development and Statistics Directorate.
- Welsh, B. C., and D. P. Farrington (2004). "Surveillance for Crime Prevention in Public Space: Results and Policy Choices in Britain and America." *Criminology and Public Policy* 3(3):497–526.
- Welsh, B. C., D. P. Farrington, and S. A. Taheri (2015). "Effectiveness and Social Costs of Public Area Surveillance for Crime Prevention." *Annual Review of Law and Social Science* 11:111–130.
- Welsh, B. C., E. L. Piza, A. L. Thomas, and D. P. Farrington (2020). "Private Security and Closed-circuit Television (CCTV) Surveillance: A Systematic Review of Function and Performance." *Journal of Contemporary Criminal Justice* 36(1):56–69.
- Winge, S., and 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.

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## Endnotes

- <sup>1</sup> Usher (2003a).
- <sup>2</sup> Goold (2004: 12).
- <sup>3</sup> La Vigne et al. (2011a).
- <sup>4</sup> Leman-Langlois (2002).
- <sup>5</sup> Surette (2005).
- <sup>6</sup> Clarke and Cornish (1985).
- <sup>7</sup> Ditton et al. (1999: 24).
- <sup>8</sup> Honess and Charman (1992: 6).
- <sup>9</sup> Short and Ditton (1998).
- <sup>10</sup> Byers (2018).
- <sup>11</sup> Edmunds, Hough, and Urquia (1996).
- <sup>12</sup> Poyner (1988).
- <sup>13</sup> Usher (2003b).
- <sup>14</sup> See Makkai et al. (2004).
- <sup>15</sup> Welsh and Farrington (2004).
- <sup>16</sup> Cameron et al. (2008); Welsh, Farrington, and Taheri (2015).
- <sup>17</sup> Cho and Park (2017).
- <sup>18</sup> Selna and Bulwa (2009); La Vigne et al. (2011b); Aguilar (2018).
- <sup>19</sup> Hermann (2010).
- <sup>20</sup> Squires (2000).
- <sup>21</sup> Hermann (2010).
- <sup>22</sup> Cameron et al. (2008); Lee (2009).
- <sup>23</sup> Brown (1995: 7).
- <sup>24</sup> Brown (1995: 14).
- <sup>25</sup> Harris et al. (1998).
- <sup>26</sup> For example, see Caplan, Kennedy, and Petrossian (2011); McLean, Worden, and Kim (2013); Ratcliffe and Taniguchi (2009).
- <sup>27</sup> For example, see Clarke and Weisburd (1994); Green (1995); Ratcliffe and Makkai (2004).
- <sup>28</sup> For example, see Ratcliffe (2002).
- <sup>29</sup> Fenton (2009).
- <sup>30</sup> Edmunds, Hough, and Urquia (1996: 16-17).
- <sup>31</sup> Honess and Charman (1992: 17)
- <sup>32</sup> Lai (2018).
- <sup>33</sup> Winge and Knutsson (2003).
- <sup>34</sup> Welsh, Farrington, and Taheri (2015).
- <sup>35</sup> For example, see Honess and Charman (1992).
- <sup>36</sup> Edmunds, Hough, and Urquia (1996: 27).
- <sup>37</sup> McCoppin (2002).
- <sup>38</sup> Brown (1995: 59); Short and Ditton (1998).
- <sup>39</sup> Phillips (1999).
- <sup>40</sup> Welsh and Farrington (2002, 2004).
- <sup>41</sup> Gill and Spriggs (2005) and see Appendix B.
- <sup>42</sup> Bennett and Gelsthorpe (1996: 87).
- <sup>43</sup> Selna and Bulwa (2009).
- <sup>44</sup> Davies (1996).
- <sup>45</sup> Clancey (2009); Anderson and McAtamney (2011).

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- <sup>46</sup>Clancey (2009).
- <sup>47</sup>For example, see Cavoukian, 2001.
- <sup>48</sup>Mazerolle, Hurley, and Chamlin (2002).
- <sup>49</sup>Rodriguez (2012).
- <sup>50</sup>Bodipo-Memba (2004).
- <sup>51</sup>Bodipo-Memba (2004).
- <sup>52</sup>Smithson (2004).
- <sup>53</sup>Fahrenthold (2006); Hoffman (2006); Hohmann (2008).
- <sup>54</sup>La Vigne et al. (2011a).
- <sup>55</sup>La Vigne et al. (2011b).
- <sup>56</sup>Ditton et al. (1999: 8).
- <sup>57</sup>Fahrenthold (2006); Thompson (2009).
- <sup>58</sup>Gill and Loveday (2003).
- <sup>59</sup>Goold (2004).
- <sup>60</sup>Goold (2004: 180).
- <sup>61</sup>See Tilley (1997).
- <sup>62</sup>Norris and Armstrong (1999).
- <sup>63</sup>Orwell (1949).
- <sup>64</sup>U.S. House of Representatives (2002).
- <sup>65</sup>Goold (2004: 86).
- <sup>66</sup>Thomas (2018).
- <sup>67</sup>389 U.S. 347.
- <sup>68</sup>For a detailed discussion of various cases, see Hickey, Capsambelis, and LaRose (2003: 549).
- <sup>69</sup>Harris et al. (1998).
- <sup>70</sup>Hamilton (2004).
- <sup>71</sup>La Vigne et al. (2011a).
- <sup>72</sup>Fahrenthold (2006); Hoffman (2006); Cameron et al. (2008); Hohmann (2008); Clancey (2009); La Vigne et al. (2011a); Welsh, Farrington, and Taheri (2015).
- <sup>73</sup>Hoffman (2006).
- <sup>74</sup>Cameron et al. (2008).
- <sup>75</sup>Cameron et al. (2008).
- <sup>76</sup>Welsh, Farrington, and Taheri (2015).
- <sup>77</sup>Lantigua-Williams (2016).
- <sup>78</sup>Herrman (2020).
- <sup>79</sup>Hall (2018).
- <sup>80</sup>Aguilar (2018); Byers (2018).
- <sup>81</sup>Aguilar (2018); Byers (2018); Hall (2018).
- <sup>82</sup>Seifert (2020); Herrman (2020).
- <sup>83</sup>Seifert (2020).
- <sup>84</sup>Byers (2018).
- <sup>85</sup>Hall (2018).
- <sup>86</sup>Leman-Langlois (2002).
- <sup>87</sup>Gibelli et al. (2017).
- <sup>88</sup>Clancey (2009).
- <sup>89</sup>Russo et al. (2017).
- <sup>90</sup>Surette (2005).
- <sup>91</sup>Chiu, Lu, and Wen (2006).
- <sup>92</sup>Fenton (2009).
- <sup>93</sup>Ditton et al. (1999: 61).
- <sup>94</sup>Home Office (1994).
- <sup>95</sup>Koskela (2000).