


F I N N

THE JOHN F. FINN INSTITUTE
FOR PUBLIC SAFETY, INC.

Weston's Video Surveillance Project: An Outcome Evaluation

**Sarah J. McLean, Ph.D.
Robert E. Worden, Ph.D.
MoonSun Kim, Ph.D.
Tara L. Garmley**

June, 2008

423 New Karner Rd
Suite 5
Albany, NY 12205
PH: 518-456-6323
FAX: 518-456-6312

**Robert E. Worden, Ph.D.
Director**

**Sarah J. McLean, Ph.D.
Associate Director**

The John F. Finn Institute for Public Safety, Inc., is an independent, not-for-profit and non-partisan corporation, whose work is dedicated to the development of criminal justice strategies, programs, and practices that are effective, lawful, and procedurally fair, through the application of social science findings and methods. The Institute conducts social research on matters of public safety and security – crime, public disorder, and the management of criminal justice agencies and partnerships – in collaboration with municipal, county, state, and federal criminal justice agencies, and for their direct benefit. The findings of the Institute’s research are also disseminated through other media to criminal justice professionals, academicians, elected public officials, and other interested parties, so that those findings may contribute to a broader body of knowledge about criminal justice and to the practical application of those findings in other settings.

The Finn Institute was established in 2007, building on a set of collaborative projects and relationships with criminal justice agencies dating to 1998. The first of those projects, for which we partnered with the Albany Police Department (APD), was initiated by John Finn, who was at that time the sergeant who commanded the APD’s Juvenile Unit. Later promoted to lieutenant and assigned to the department’s Administrative Services Bureau, he spearheaded efforts to implement problem-oriented policing, and to develop an institutional capability for analysis that would support problem-solving. The APD’s capacity for applying social science methods and results thereupon expanded exponentially, based on Lt. Finn’s appreciation for the value of research, his keen aptitude for analysis, and his vision of policing, which entailed the formulation of proactive, data-driven, and – as needed – unconventional strategies to address problems of public safety. Lt. Finn was fatally shot in the line of duty in 2003. The Institute that bears his name honors his life and career by fostering the more effective use of research and analysis within criminal justice agencies, just as Lt. Finn did in the APD.

Introduction

In recent years, the use of surveillance technology has become an increasingly popular crime control intervention (Nieto, 1997). Public surveillance has been embraced especially in the United Kingdom, where “over 1 million closed circuit television (CCTV) cameras have been installed in towns and cities” since the 1980s, “with an estimated 500 or more being added to this figure every week CCTV cameras can now be found in most urban high streets, town squares, and shopping centres, as well as in many offices, car parks, and stores.” (Goold, 2004). In the United States, a 2001 survey of law enforcement agencies conducted by the International Association of Chiefs of Police showed that 80 percent reported using some form of Closed Circuit Televisions (CCTV), though it appears that the most prevalent application of video surveillance by U.S. law enforcement was the taping of traffic stops (NIJ Journal Issue 248, July 2003). Major American cities such as New York, Chicago and Baltimore have created massive surveillance networks - New York City's already large system of public and private cameras in downtown Manhattan is expected to reach 3,000 by 2010, and Chicago's system already includes nearly 2,000 cameras (Lirtzman, 2007; Howlett, 2004). Many other cities have also turned to the use of public surveillance as a tool that can prevent crime through deterring would-be offenders, improve the apprehension and prosecution of offenders, and enhance homeland security. Additionally, municipalities that install cameras anticipate that their presence will reduce fear among community members.

Alarming crime rates and increased fear among community members in the city of Weston prompted the adoption of this new and innovative approach to fighting crime and restoring safety to the streets. The surveillance project in Weston, a medium-size northeastern city in the United States, began several years ago with a total of five pole-, window- and building-mount cameras supported with funds from the U.S. Department of Housing and Urban Development, awarded to the Weston County District Attorney's office. The cameras were located in an area of the city, which, at that time, was plagued with a high crime rate, particularly concentrated around drug markets. The project has expanded rapidly with support from federal, state, and private sponsors.

In 2007, under the auspices of a grant award to Weston from the State, we undertook an outcome evaluation of the video surveillance project. The outcome evaluation drew primarily on police data on crime and calls for service for an analysis of the impacts of the project's camera surveillance on crime and disorder, forming the basis for an assessment of how well the project is meeting its objectives, and of how it might better meet its objectives. This report summarizes the findings of our evaluation.

Camera Surveillance

The presence of cameras may reduce crime through a number of different mechanisms. Camera footage may be used to identify, prosecute and convict offenders, yielding an incapacitation effect, preventing the crimes that incarcerated offenders would commit if they were free. Cameras, and their threat of detection, might serve to deter would-be offenders, so long as the cameras are visible and/or publicity about cameras is sufficient to raise offenders' awareness. Furthermore, cameras might prompt or amplify the effects of other crime prevention activities; increases in the number of citizens in an area, due to the presence of cameras, may, in turn, cause target hardening and related reductions in offending, producing deterrence through natural surveillance (Ratcliffe, 2006). More generally, the use of camera surveillance corresponds with an emphasis on place-based crime reduction strategies that focus on crime hot-spots. Evidence from independent, scientific evaluations suggests that strategically focusing enforcement efforts on the places, people, and conditions associated with violent crime is effective. Camera surveillance applies the logic of crime and place research as cameras are typically found in hot spots in an effort to modify behavior in hot spot locations, and to reduce opportunities for criminal activity (Mazerolle, Hurley and Chamlin 2001).

The United Kingdom has been at the forefront of using cameras to monitor public space and, thus, our understanding of how camera surveillance works is based mainly on experience and research there. Extant evidence from evaluation research on the crime-reduction effects of camera surveillance is inconclusive, subject to two contrasting interpretations, one stressing that the figurative crime control glass is half-full, and the other emphasizing that the glass is half-empty (Tilley, 1997). The half-empty view holds

that the research indicates that cameras do not work all the time, while the corresponding half-full perspective is that cameras work some of the time.

A systematic review of the studies of camera surveillance, which included 22 evaluations, concludes that camera surveillance reduces crime only to a small degree (Welsh & Farrington, 2004) and the authors go on to note that there is some debate over the rigorousness of the studies that have detected an effect (for more detail see Armitage, Smyth, and Pease, 1999 and Ditton and Short, 1999). Many conclude that cameras are not associated with a reduction in crime (Sivarajasingam, et. al., 2003). To the extent cameras have been associated with crime reductions, the effect is most pronounced for pre-meditated or planned crimes, suggesting a deterrent effect (Gil and Spriggs, 2005). Moreover, studies suggest that camera surveillance is most suited for small, defined areas (e.g. parking garages) and for property crimes (Ratcliffe, 2006; Welsh & Farrington, 2004, Brown, 1995). While cameras may create short-term deterrent effects, reductions in crime have decayed over time as publicity and awareness of cameras decrease (Brown, 1995). Proactive camera usage may also decrease crime, though to date there are few rigorous evaluations of which we are aware assessing the efficacy of the more proactive applications of cameras. One study of violence detection through the use of camera surveillance did find that cameras were associated with increased police detection of violence and a reduction in injuries (Sivarajasingam, et. al., 2003).

As with other place-based crime prevention strategies, we would be properly concerned about the potential for camera surveillance to displace crime. The most pessimistic view is that crime is not prevented but rather relocated, with displacement that is immediate and complete, producing no crime-reduction benefit at all. Displacement is more complicated than that, however. Crime may be *spatially* displaced to areas that do not have public surveillance, *temporally* displaced to times when cameras themselves are less visible or when darkness degrades the camera images, and *tactically* displaced in that one method of committing a crime is substituted for another presumed to be less susceptible to surveillance (e.g. movement of open air drug

markets indoors). Spatial displacement could be delayed and/or incomplete, as offenders adapt to the strategy, and inasmuch as other locations are probably not as conducive to criminal activity, any such displacement yields crime reduction benefits. Moreover, some forms of displacement may be, at the margin, beneficial; tactical displacement of open-air drug markets to covert, more discreet drug markets, for example, may be preferable, in that the latter are associated with fewer public nuisances. One of the most inclusive reviews of the literature on the issue concludes that “displacement is a possible, but not inevitable consequence of crime prevention. Further, if displacement does occur, it will be limited in size and scope” (Hesseling 1995). Research that has analyzed the displacement effects of camera surveillance has not detected geographic displacement (Does Closed Circuit Television Prevent Crime, 1998; Welsh, and Farrington 2002; Ratcliffe, 2006). Moreover, recent research has shown that some place-oriented interventions produced not a displacement effect but rather a “diffusion of benefits”: the positive, crime prevention effects of the interventions “spilled over” into surrounding areas.

Research Design

Our evaluation design is based on the principle that if the Video Surveillance Project (VSP) has affected crime and disorder, the evaluation should maximize the likelihood of detecting the effects. Thus we cast a wide net around potential outcome variables, and specify conditions under which any effects might be most pronounced.

Information Sources

Data for our outcome evaluation were gathered in a variety of ways. Below is a summary of the quantitative methods employed, as well as purpose and types of data collected.

First, we assessed the effect of cameras on crime and disorder through analysis of Weston Police Department Record Management System (RMS) and Computer-Aided Dispatch (CAD) data. The WPD's RMS contains information on crimes reported to the police and recorded by officers on incident report forms. The CAD system contains

records of calls to police dispatchers (which may be from citizens or police) concerning a range of problems from violent crimes to dogs barking. We assessed the impacts that the surveillance project has had by analyzing monthly counts of incidents of crime from January 2000 through December 2007, and monthly counts of disorder from June 2002 through December 2007, each as an interrupted time series.¹

The RMS data contain principally information that is gathered when a crime is reported to police and so, estimates of the extent to which cameras are associated with reductions in crime speak mainly to those crimes that are reported to the police. So too with disorder: if no one notifies the police, or the police do not intervene on their own, no CAD record can be counted. Even though the true incidence of crime and disorder is understated by counts of reported crime, year-to-year trends may be reliably portrayed.

For their purposes, police characterize crimes in terms of the penal law code that has been violated, but the enumeration of crimes normally follows a classification scheme established by the FBI for the UCR program, which focuses on index crimes, which include murder and non-negligent manslaughter, robbery, forcible rape, aggravated assault, burglary, larceny/theft, motor vehicle theft, and arson. Index crimes or Part I crime are further distinguished in terms of serious violent offenses and property offenses. Violent Part I encompasses: murder and non-negligent manslaughter, forcible rape, robbery, and aggravated assault.² Part I property offenses include: burglary, larceny/theft, motor vehicle theft, and arson. Additional offenses are known as Part II offenses and a subset of these were analyzed in this evaluation: namely, criminal mischief, simple (less serious) assault, and drug offenses. We also analyzed the sum of all of these Part I and Part II offenses, calling it "Total Crime." Finally, we analyzed selected categories of calls to police dispatchers, as indicators of conditions that may or may not be criminal but that in any event detract from the quality of life, such as

¹ The WPD crime analyst was unable to extract complete and reliable data from the CAD system for months prior to June, 2002.

² Federal Bureau of Investigation, *Uniform Crime Reporting Handbook* (Washington: Author, 2004).

“annoying” persons or groups, fights, drug sales, and parking complaints.³ See Table 1, which lists these outcome variables.

Table 1: Outcome Measures

Variable	Date Range	Source
Total Crime	2000-2007	Incident Data
Total Part I Crime	2000-2007	Incident Data
Total Violent Part I	2000-2007	Incident Data
Robbery	2000-2007	
Aggravated Assault	2000-2007	
Total Property Part I	2000-2007	Incident Data
Burglary	2000-2007	
Larceny	2000-2007	
MV Theft	2000-2007	
Selected Part II	2000-2007	Incident Data
Simple Assault	2000-2007	
Criminal Mischief	2000-2007	
Drug Offenses	2000-2007	Incident Data
Total Selected Quality of Life calls for service	2002 (June)-2007	CAD
Selling Drug Calls	2002 (June)-2007	CAD
Persons/Groups Annoying: • Drunk Annoying, Group Annoying, Person Annoying	2002 (June)-2007	CAD
Fight	2002 (June)-2007	CAD
Parking Complaints: Car Blocking, Vehicle Annoying	2002 (June)-2007	CAD
Shots Fired	2000-2007	CAD

Analytical Approach

Our estimates of the effects of camera surveillance on crime and disorder are based on a form of interrupted time series analysis, which is known as AutoRegressive Integrated Moving Average (ARIMA) models. The monthly crime counts form a time series of crime, from 2000 through 2007, in which the introduction of a camera is an “interruption” that hypothetically changes the series (downward, in this instance), net of the other forces that affect the series, such as long-term trends and seasonal fluctuations. Similarly, monthly counts of disorder calls may be treated as an interrupted time series.

³ We also tried to examine a call category labeled criminal mischief, but we discovered that this category was instituted by WPD communications personnel partway through the time period of our analysis, prior to which such calls were included among many other types of calls in a very generic ‘take a report’ category, making it impossible to analyze criminal mischief calls as a 2002-2007 time series.

Additionally, we estimated citywide trends to serve as a point of comparison, providing a contextual backdrop against which to inform our interpretation of trends in the camera coverage areas.

If the cameras have effects on crime and disorder, we might expect these effects to be most pronounced under three conditions: geographically (i.e., within a narrowly circumscribed area most proximate to the camera), in public locations (rather than inside homes or businesses), and during daylight hours. Thus we formed one set of counts of crime and disorder, for each VSP camera, including only events within 150 feet of the camera's location – that is, about half of the length of a typical city block.⁴ Incidents within a 180-360 degree arc were included for pole-mount cameras, depending on the nature of the intersection, and in only a 180 degree arc for building-mount cameras, in recognition of the limitations on their coverage areas. Thus for each of eleven cameras, which were installed at times between October of 2003 and January of 2007, we have estimated the effects on outcomes within 150 feet. (The post-intervention period for cameras installed after January of 2007 is too short to generate reliable estimates of the effects.) We also estimated camera effects on counts of only incidents in public locations within 150 feet of the camera. (We tried to estimate the effects on counts of only daytime incidents, but the monthly counts within 150 feet of each camera were too small to generate reliable estimates.)

We caution readers that the low base rate of offenses occurring within 150 feet of a camera makes it difficult to statistically detect impacts that are small in magnitude. With a lower limit on crime of zero, statistical analysis may be unable to discriminate genuine but modest impacts from month-to-month fluctuations in crime, depending on the breadth of the fluctuations. This problem is particularly acute in testing the proposition that camera effects will be most strongly felt in outdoor locations, or in daylight hours, subsets of offenses and so smaller numbers still.

⁴ See <http://www.land4ever.com/block.htm>.

A related issue arises with respect to those cameras that were installed near the end of our evaluation, in December 2006 and January 2007, and for which the post-intervention period is short and our estimate of a post-intervention crime level correspondingly less reliable.

With these limitations in mind, and consistent with the premise that the evaluation should maximize the likelihood of detecting impacts that the cameras may have had, we formed counts of crime and disorder within a 350-foot radius of six clusters of cameras, combining as necessary cameras whose 350-foot coverage areas overlapped with one another, and which were installed at the same or nearly the same time. Within these cluster areas the numbers of crime and calls for service are larger, and somewhat more stable, and so we might expect to detect effects in this wider area that we cannot detect in the narrower, 150-foot area. We note here, however, that our interpretation of any such effects would be complicated by the larger set of forces that might shape these outcomes: in the areas immediately surrounding the 150-foot coverage areas, we might expect to find evidence of not only direct crime-prevention effects but also (or instead) one or the other of two different effects: a spatial displacement effect, or a diffusion of benefits effect.⁵ Figure 1 below is a visual representation of the 150 and 350 foot coverage areas for each camera.

Another caveat of the current evaluation is the difficulty of isolating the independent effects of the cameras from those of other ongoing interventions, which have presumably become more intense with the introduction of state funds in 2004, and which coincide both temporally and spatially with the growth of the project. It is possible that some of any effect attributed to camera surveillance is attributable instead to other state-funded initiatives, or that the effects of camera surveillance are contingent on or amplified by those other law enforcement activities.

⁵ We did not test for either displacement or diffusion of benefit effects, which would have been very complex given the temporal and spatial configuration of the introduction of cameras in Weston. We heard anecdotal evidence that Weston's experience is similar to that of other cities, in that drug market is susceptible to some displacement, though it tends to be more tactical than geographic (Rengert, 1990; Eck 1993).

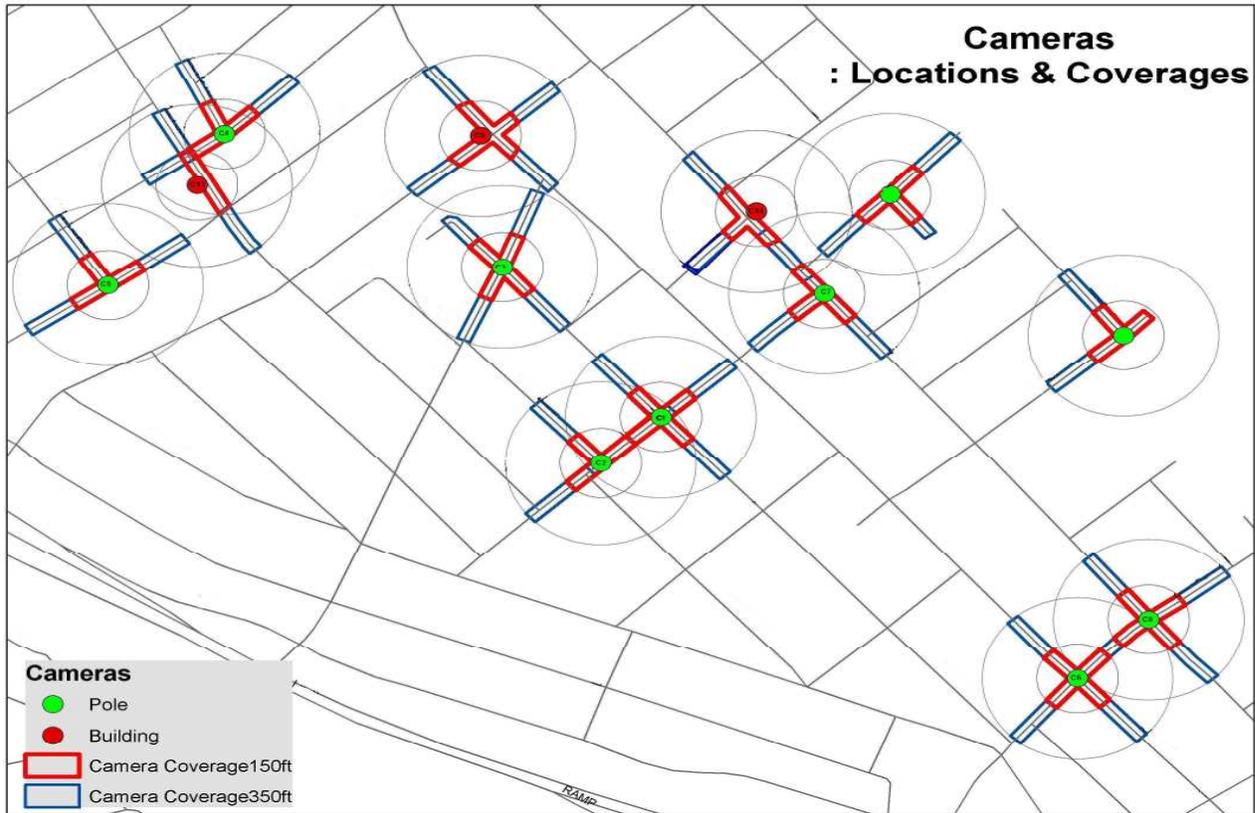


Figure 1

Findings

Crime and Disorder within 150 feet of cameras

Estimates of pre and post-intervention levels of crime citywide and within 150 feet of each camera are displayed in Table 2. Monthly crime citywide was estimated treating each of the four discrete time periods at which cameras were introduced as interventions – October 2003, April 2004, December 2006 and January 2007. Overall, the introduction of cameras appears to meet with mixed success.

Findings from the outcome evaluation are summarized in two sections. In the first section we assess the effects of cameras on crime and disorder within 150 feet of cameras and in the second we assess the effects of cameras on crime and disorder within an expanded coverage area of 350 feet. Section one begins with the presentation of aggregate patterns for each crime and disorder crime type followed by the presentation of analytical results which is organized by camera. Pre and post-intervention levels of *crime* within 150 feet of each camera are explained followed by presentation of estimated changes in pre and post-intervention levels of *disorder* within 150 of camera.

The second section highlights estimated impacts that cameras have on crime and disorder in an expanded coverage area of 350 feet. Aggregate patterns in crime and disorder are presented initially. Next, estimated changes in levels of *crime* are presented for each camera or cluster of cameras. Finally, we describe estimated changes in 350 foot pre and post-intervention levels of *disorder* for each camera or cluster of cameras.

We begin our assessment of effects on crime with an examination of the crime in closest proximity to the cameras, that is, within 150 feet. Our assessment is based on analyses of monthly counts of crime that reportedly occurred in this 150-foot coverage area, and on monthly counts of crime city-wide, which serves as a backdrop against which to interpret changes in coverage areas, lest we mistake broader changes in crime for changes isolated to a coverage area. We would of course interpret as a camera impact any reliably estimated decrease in crime in the coverage area that exceeds in magnitude a decrease city-wide, but we would also consider as a camera impact a small – or no – change in crime in the coverage area that is much smaller than a city-wide increase. Thus Table 2 includes three items of information about crime city-wide, and three corresponding items of information about crime on the 150' camera coverage area: the mean pre-intervention level of crime; the estimated change in crime associated with the date of the intervention, and the percentage change in crime that the increase or decrease represents. For example, for the Attison and Hollow camera,

we estimate that the pre-intervention monthly number of crime was 865, that the number of crimes increased by 12.4 after the intervention date (October, 2003), for an 1.5 percent increase in crime. In addition, we estimate that the average number of crimes in the camera coverage area was 4.04 each month prior to the intervention date, and increased by 0.74 afterwards, which is a 18 percent increase. Finally, in the far-right column of Table 2, we display the difference in the city-wide and camera-coverage-area percent changes, which is positive when the percent change in the camera coverage area is more favorable (or less unfavorable) than that city-wide.

Table 2: Crime within 150 feet of camera and citywide

Attison/Hollow C9 (10/03)	Citywide Pre intervention mean	Citywide Coefficient	% change	150' Pre intervention mean	150 Coefficient	% change	Difference in city change to camera change
Total Crime	865	12.43	1.5	4.04	0.74	18.3	-16.8
Part I Crime	282	11.26	4.0	.93	0.83**	89.2	-85.2
Property Crime	241	9.38	3.9	0.6	0.48	80.0	-76.1
Violent Crime	41	3.2	7.8	.33	0.38	115.1	-107.3
Edgar/Stanton C1 (4/04)							
Total Crime	855	-73.08	-8.5	4.26	-0.64	-15.0	7
Part I Crime	280	-5.43	-1.9	0.84	-0.07	-8.3	6.4
Property Crime	238	1.15	.48	0.39	0.03	7.7	-7.2
Violent Crime	41	3.91	9.5	0.45	-0.1	-22.2	31.7
Staple/Stanton C2 (4/04)							
Total Crime	855	-73.08	-8.5	1.92	-0.51	-26.6	18.1
Part I Crime	280	-5.43	-1.9	0.33	0.02	6.1	-8.0
Property Crime	238	1.15	.48	0.18	0.05	27.8	-27.3
Violent Crime	41	3.91	9.5	0.16	-0.02	-12.5	22.0
Edgar/Craw C3 (12/06)							
Total Crime	872	47.57	5.5	4.41	-2.07*	-46.9	52.4
Part I Crime	295	10.62	3.6	1.13	-0.21	-18.6	22.2
Property Crime	249	4.25	1.7	.53	0.01	1.9	-0.2
Violent Crime	46	-6.93	-15.1	.6	-0.29	-48.3	33.2
Price/Willow C4 (12/06)							
Total Crime	872	47.57	5.5	0.41	-0.1	-24.4	29.9
Part I Crime	295	10.62	3.6	0.05	0.11	220.0	-216.7
Property Crime	249	4.25	1.7	0.08	-0.01	-12.5	14.2
Violent Crime	46	-6.93	-15.1	0.02	0.05	250.0	-265.1
Weston/Vonder C5 (12/06)							
Total Crime	872	47.57	5.5	1.16	-0.54	-46.6	52.1
Part I Crime	295	10.62	3.6	0.29	0.02	6.9	-3.3
Property Crime	249	4.25	1.7	0.14	0.16	114.3	-112.60
Violent Crime	46	-6.93	-15.1	0.14	-0.14	-100.0	84.9
Hanger Street C13 (12/06)							
Total Crime	872	47.57	5.5	0.84	0.27	32.1	-26.3
Part I Crime	295	10.62	3.6	0.19	0.04	21.1	-17.5
Property Crime	249	4.25	1.7	0.17	-0.01	-5.9	7.6
Violent Crime	46	-6.93	-15.1	0.02	0.05	250.0	-263.2

Weston's Video Surveillance Project

Attison/Bay C6 (1/07)	Citywide Pre intervention mean	Citywide Coefficient	% change	150' Pre intervention mean	150 Coefficient	% change	Difference in city change to camera change
Total Crime	872	-102.42	-11.7	3.7	-1.31**	-35.4	23.7
Part I Crime	295	-41.75	-14.1	1.71	-0.55	-32.2	18.1
Property Crime	249	-33.91*	-13.6	1.31	-0.89	-67.9	54.3
Violent Crime	46	-5.18	-11.3	.4	0.35**	87.5	-98.8
South/Stanton C7 (1/07)							
Total Crime	872	-102.42**	-11.7	4.11	-0.94	-22.9	11.2
Part I Crime	295	-41.75	-14.1	1.32	0.1	7.6	-21.7
Property Crime	249	-33.91*	-13.6	0.9	0.01	1.1	-14.7
Violent Crime	46	-5.18	-11.3	0.42	0.08	19.0	-30.0
South/Bay C8 (1/07)							
Total Crime	872	-102.42**	-11.7	4.35	-0.17	-3.9	-7.8
Part I Crime	295	-41.75	-14.1	2.56	-0.19	-7.4	-6.7
Property Crime	249	-33.91*	-13.6	2.26	0.03	1.3	-14.9
Violent Crime	46	-5.18	-11.3	0.3	-0.21	-70.0	58.7
South Street C14 (1/07)							
Total Crime	872	-102.42**	-11.7	1.97	0.43	21.8	-33.0
Part I Crime	295	-41.75	-14.1	0.54	0.21	38.9	-52.0
Property Crime	249	-33.91*	-13.6	0.23	0.11	47.8	-60.8
Violent Crime	46	-5.18	-11.3	0.29	0.3	103.4	-113.40

*p<.05 **p<.10

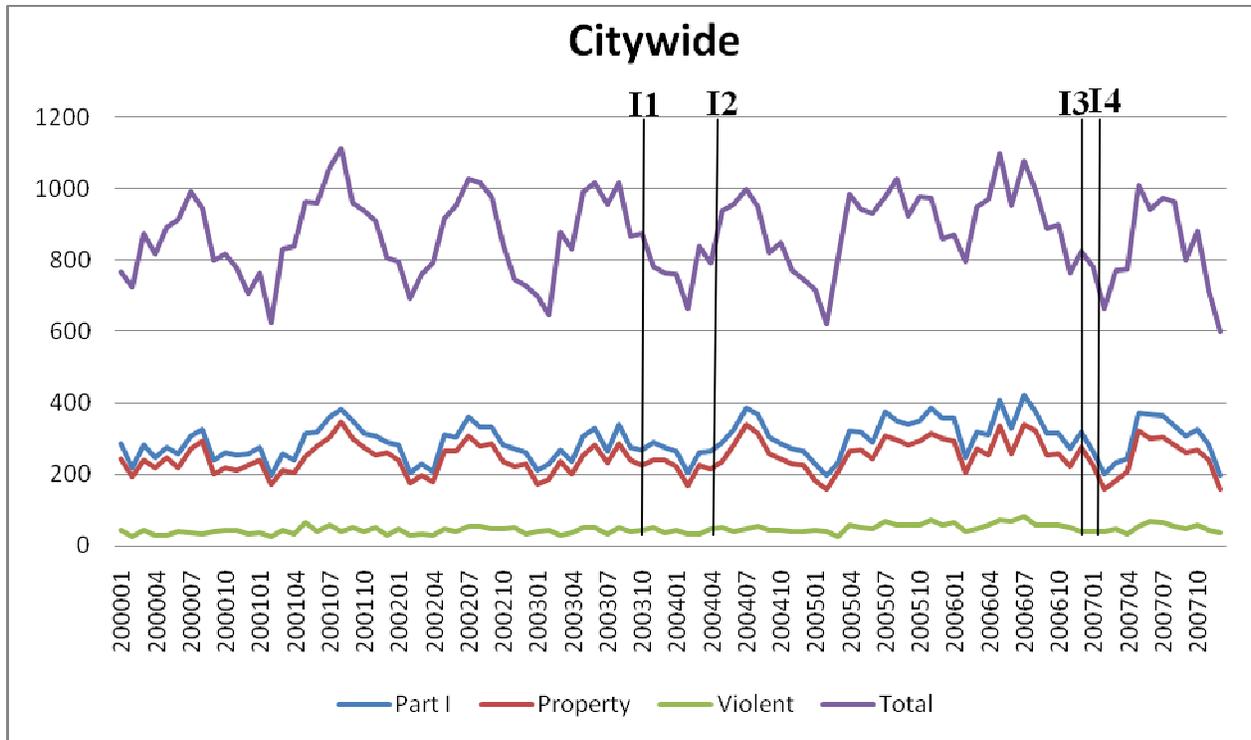


Figure 2

After the introduction of cameras, total monthly crime decreased within 150 feet of 8 of the 11 cameras whose effects were estimated. Moreover, where total crime decreased in a camera area, the decrease was more pronounced in the camera coverage area than decreases found at that same time citywide, with the exception of only 1 of the 8 cameras in whose coverage area total crime declined. The introduction of a camera was associated with decreases in Part I crime for only 4 of the 11 cameras. At the four discrete time points when cameras were introduced in the city, effects on Part I crime were evenly split. Monthly estimates of property crime indicate that the introduction of cameras was associated with a decrease in property crimes within 150 feet of only 3 of 11 cameras; moreover, comparison of differences in the relative change in property crime citywide compared to coverage areas indicates that property crime rose more in camera areas than it did citywide. Lastly, estimates of violent crime show that violent crime decreased in coverage areas with the introduction of 5 of the 11 cameras, and in 4 of these areas the decreases were proportionally greater in the coverage areas than changes at the same time citywide. There are positive results though they are not

consistent across cameras. On the whole, cameras are slightly better at reducing violent crime than property crime in the area immediately surrounding cameras.

We next consider findings for each camera, in the chronological order in which they became operational. For discussion of each camera's impact on crime and disorder, readers will find line charts showing the level of monthly crime and disorder over the period. Estimates for each camera are also presented in tabular form in Table 2.

October 2003

The building mount camera (C9) installed in October of 2003 at 782 Attison Street and later moved across the street to the corner of Attison and Hollow Street yielded no detectable success in terms of the criminal incidents analyzed. The average incidents of total crime, Part I crime, property crime and violent crime all rose in the post intervention period, as one can see in the line chart. At this same time, these incident categories were on the rise citywide, though the post intervention increases were more pronounced in the coverage areas.

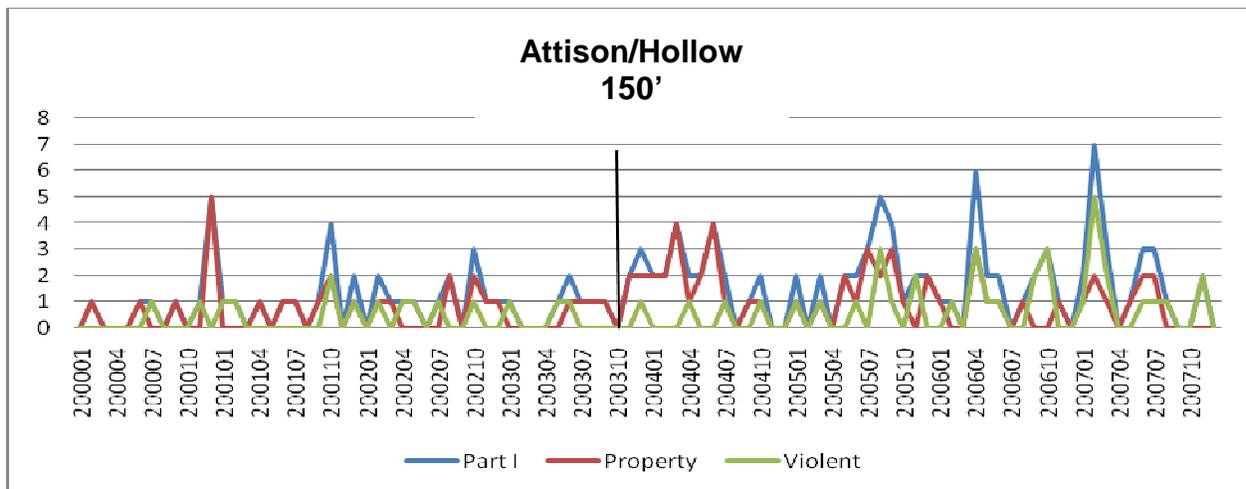


Figure 3

April 2004

In April of 2004, two cameras were added to the network. The first (C1), was a pole mount camera installed at Edgar and Stanton, which met with generally favorable success (refer to Figure 4). The average monthly occurrence of total crime, Part I,

(driven by violent crime reductions) and violent crime was lower in the post intervention period; moreover, the percent change in each of these categories was more favorable in the camera area than that experienced at the same time citywide. For example, violent crime increased citywide 9.5 percent after the introduction of cameras, while violent crime in the coverage area decreased 22.2 percent.

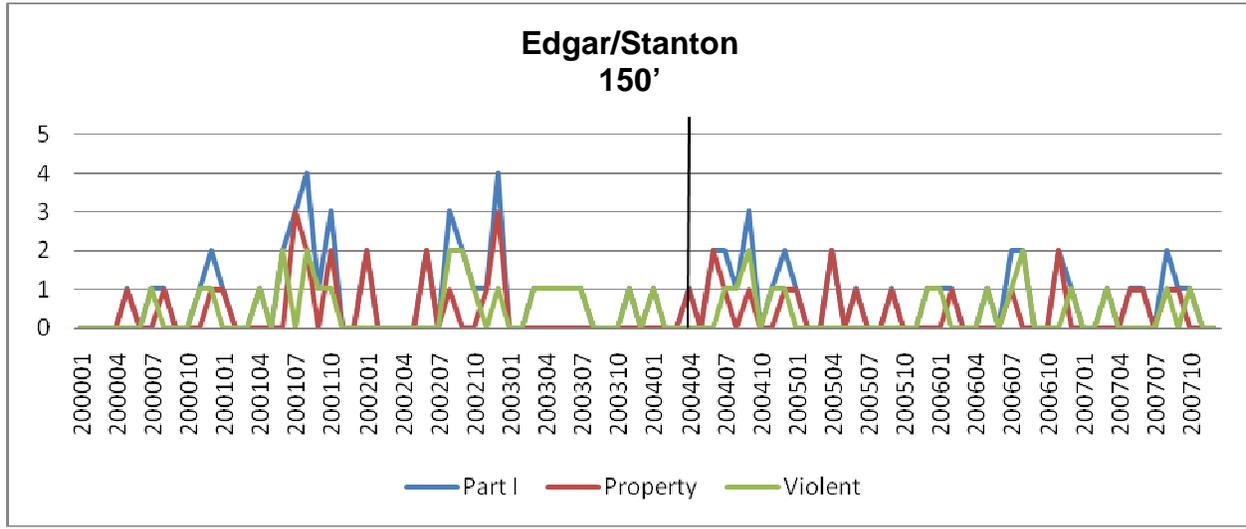


Figure 4

During this same period, a pole mount camera was installed at Staple and Stanton (Figure 5). This camera had similar successes as the Edgar and Stanton camera. The average monthly count of total and violent crime was lower in the post intervention period, and the percent change in each of these categories was more favorable in the camera area than citywide. After the camera was installed, property crime rose 27.8 percent in the coverage area while increasing only .5 percent citywide. However, as one can see in the line chart, the number of property crimes per month is very low in the coverage area.

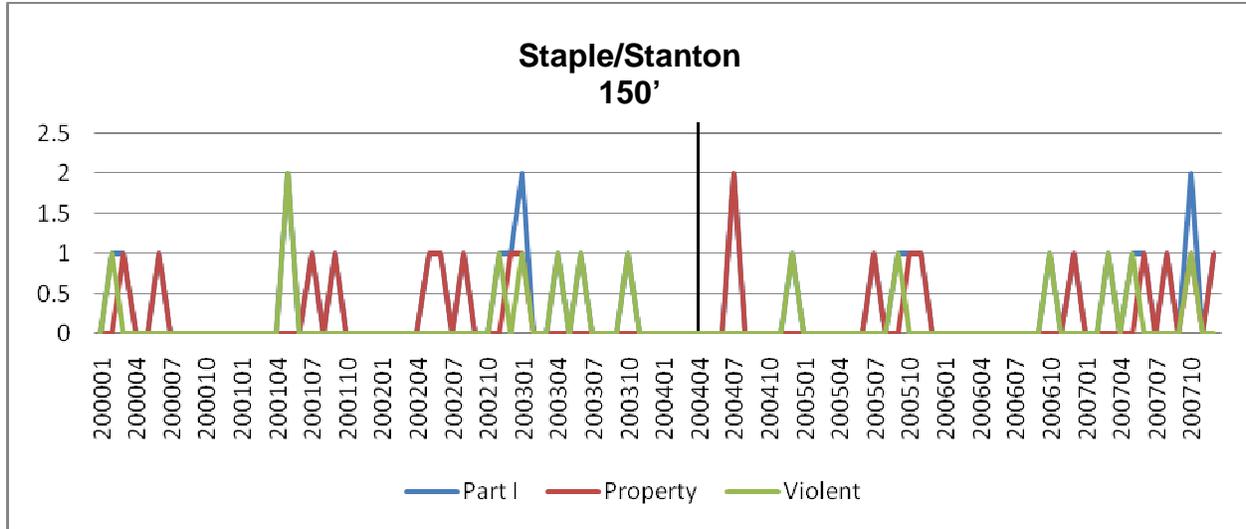


Figure 5

December 2006

Estimates of the effects of the four cameras installed in December of 2006 on criminal incidents were calculated and are presented in Table 2. The post intervention period crime in the area 150 feet around the camera located at the intersection of Edgar and Craw (C3) was, in the main, lower than the level of crime in the pre intervention period (Figure 6). Total crime decreased by nearly half. Prior to the camera installation, the area 150 feet around the camera had an average of 4.41 total crimes a month, and the number of total crimes decreased by 2.07 after the intervention period for a 46.9 percent decrease. Furthermore, total monthly crime and Part I crime decreased in the coverage area at the same time they were on the rise citywide. Finally, violent crime decreased more substantially in the coverage area than the change citywide during this intervention period: the coverage area experienced a -48.3 percent change while citywide the percent change was only -15.1 percent.

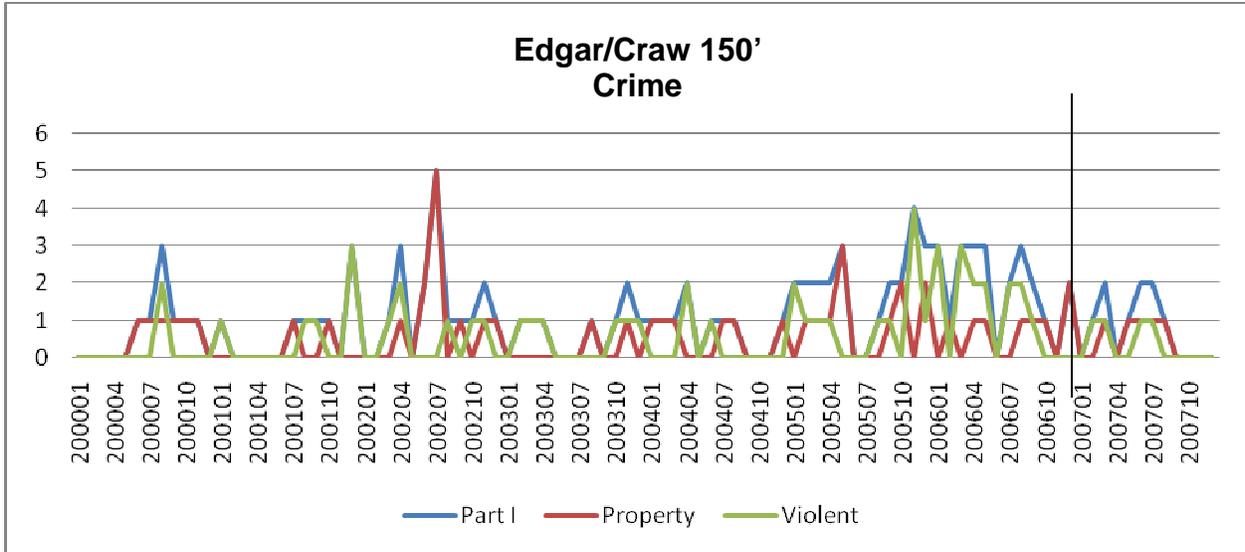


Figure 6

The pole camera installed at the intersection of Price and Willow (C4) is associated with different results compared to the Edgar and Craw camera (Figure 7). This was one of the few areas where property crime went down. In addition, property crime decreased in the coverage area at the same time there was a slight increase citywide. Violent crime more than doubled in the coverage area while it declined citywide in the post intervention period, though the number of offense is very low to begin with.

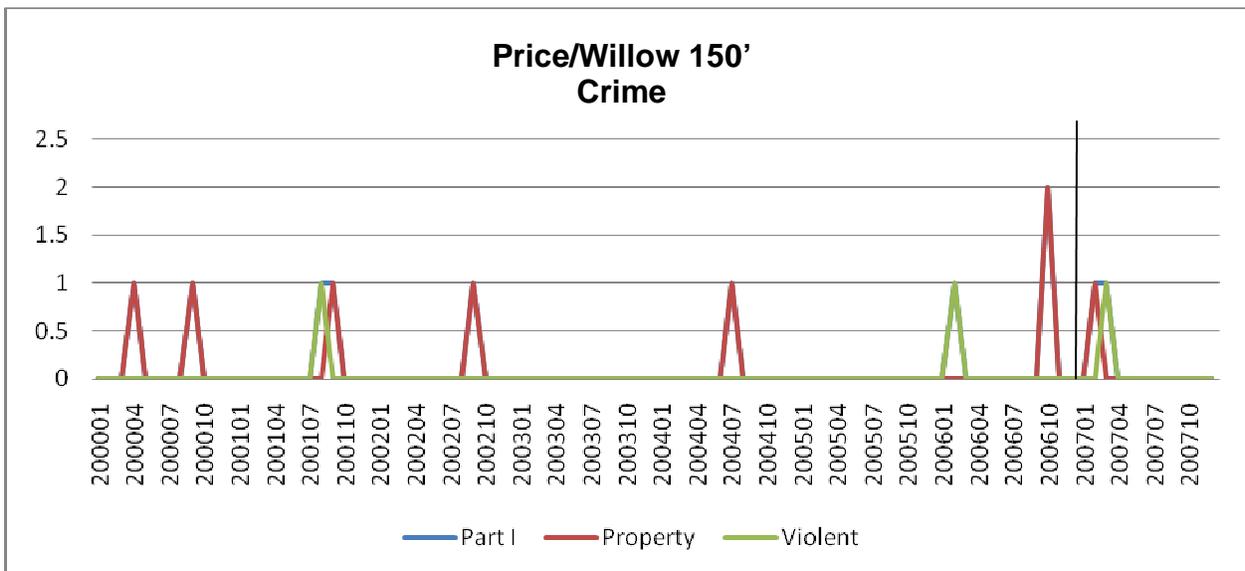


Figure 7

A third pole mount camera was installed in December 2006 at the intersection of Weston and Vonder (C5) (Figure 8). Its impacts on crime were as mixed as those for the Price and Willow camera. Here, average property crime rose and violent crime decreased in the post intervention period – the opposite of the impact found for the Price and Willow camera.

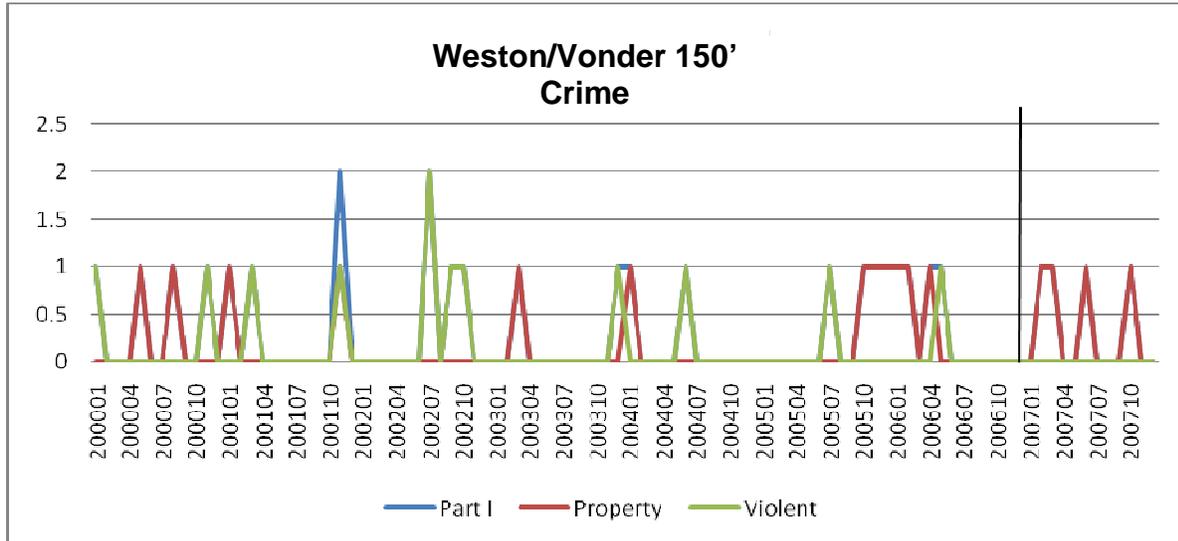


Figure 8

Of the four cameras installed in December of 2006, the pole mount camera installed on Hanger Street (C13) yielded the fewest crime reduction effects (Figure 9). Here only the average monthly count of property crime decreased in the post intervention period, though very modestly.

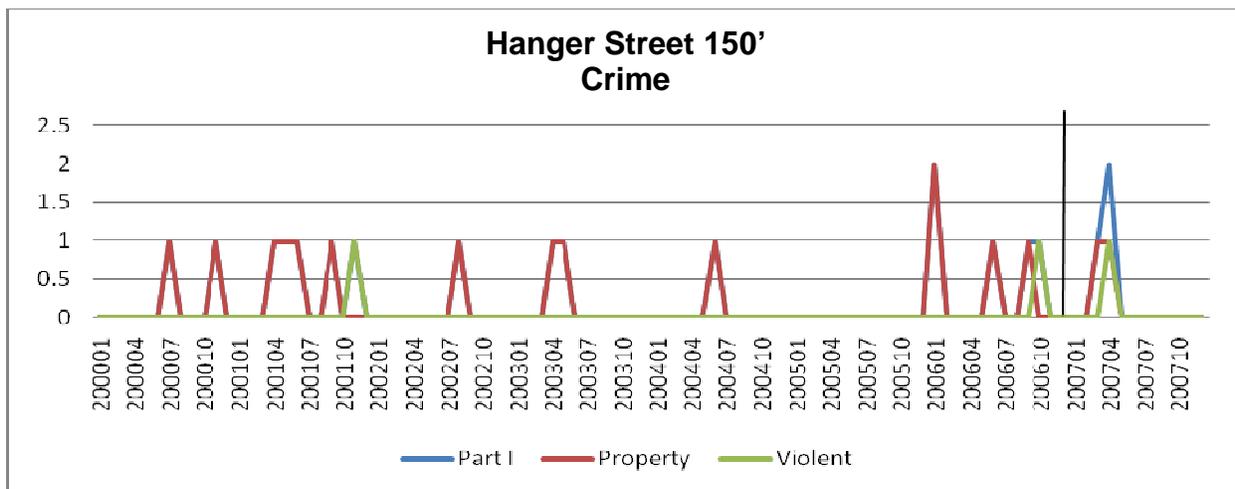


Figure 9

January 2007

In January of 2007 another four cameras were added to the network. The pole camera installed at the intersection of Attison and Bay (C6) met with favorable results with decreases in total crime, Part I crime and property crime – each of which decreased to a greater degree in the coverage area relative to changes citywide (Figure 10). Monthly violent crime actually increased in the camera coverage area at a time it was decreasing citywide. The pre-intervention period number of violent crimes was .4, this number rose to .75 a month in the post intervention period, representing an 87 percent increase, though the base rate is clearly very low.

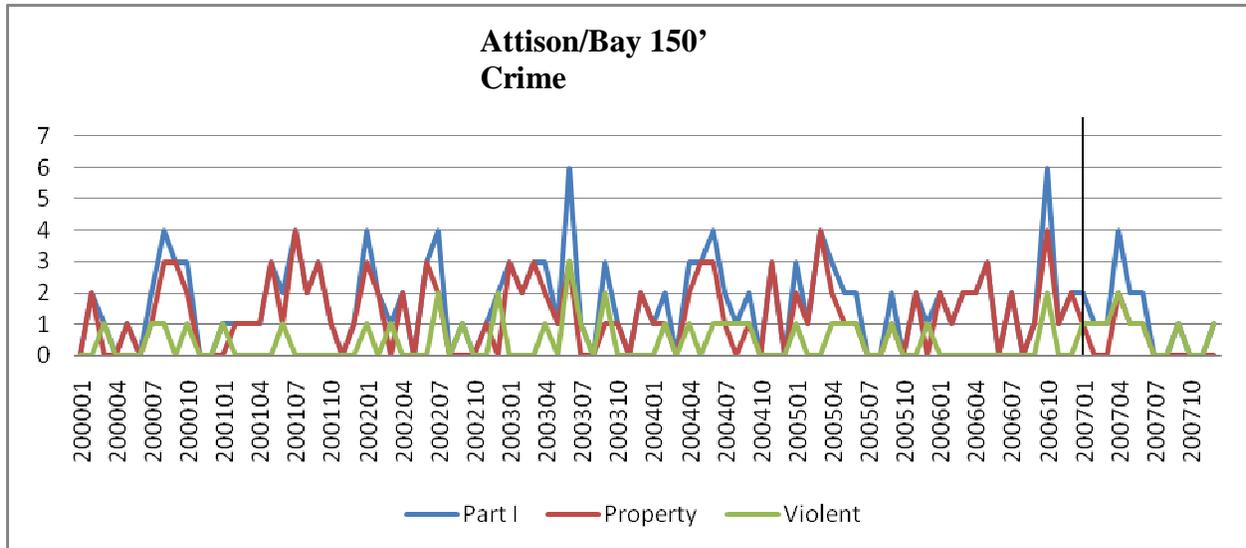


Figure 10

The pole mount camera installed at the intersection of South and Stanton (C7) indicated few detectable positive outcomes; only total crime declined (Figure 11). The other analyzed offense type indicate small increases in the post intervention period.

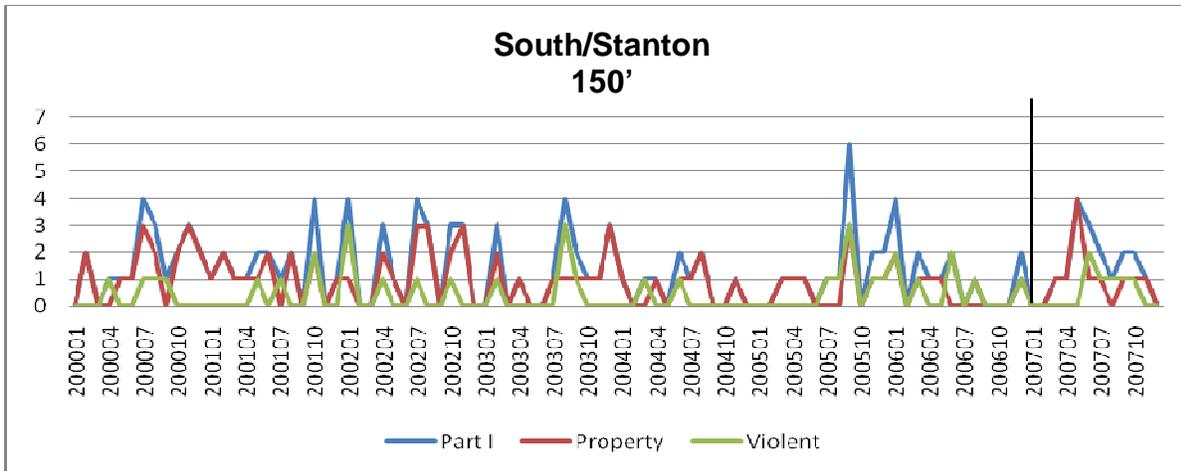


Figure 11

After the installation of the pole mount camera at the intersection of South and Bay (C8), total crime, Part I, and violent crime decreased (Figure 12). Citywide, the post intervention period levels of crime declined, as well, and the decreases were of a larger magnitude citywide than those experienced in the camera coverage area.

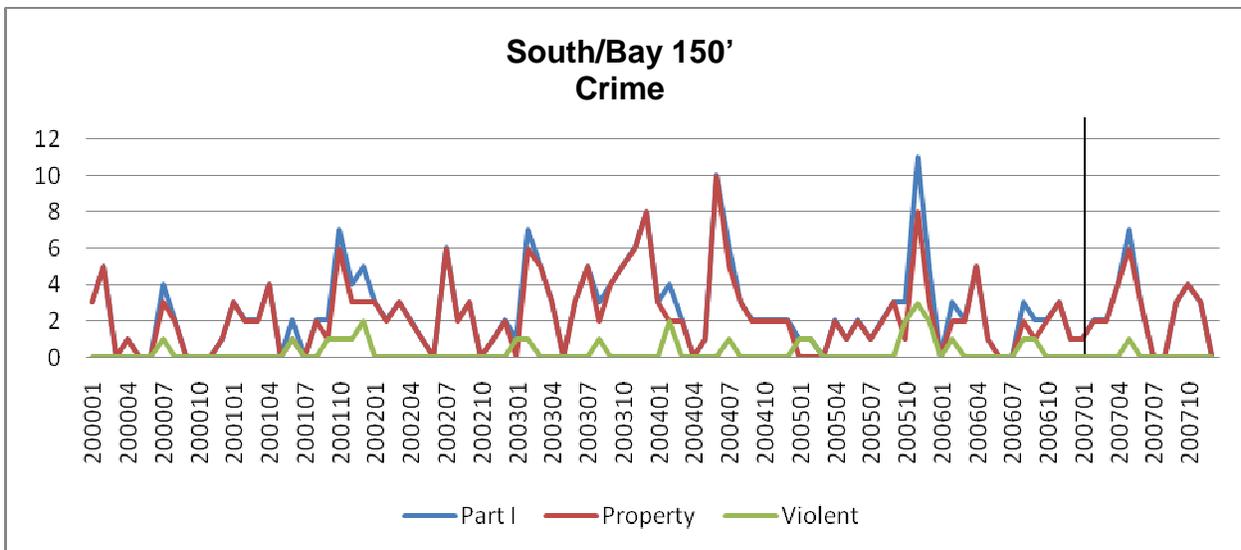


Figure 12

The building mount camera installed at South Street (C14) yielded no demonstrable success at lowering monthly counts of total crime or either category of Part I crime (Figure 13). In fact, total crime, Part I violent and property crime all rose in the coverage area at a time they were decreasing citywide.

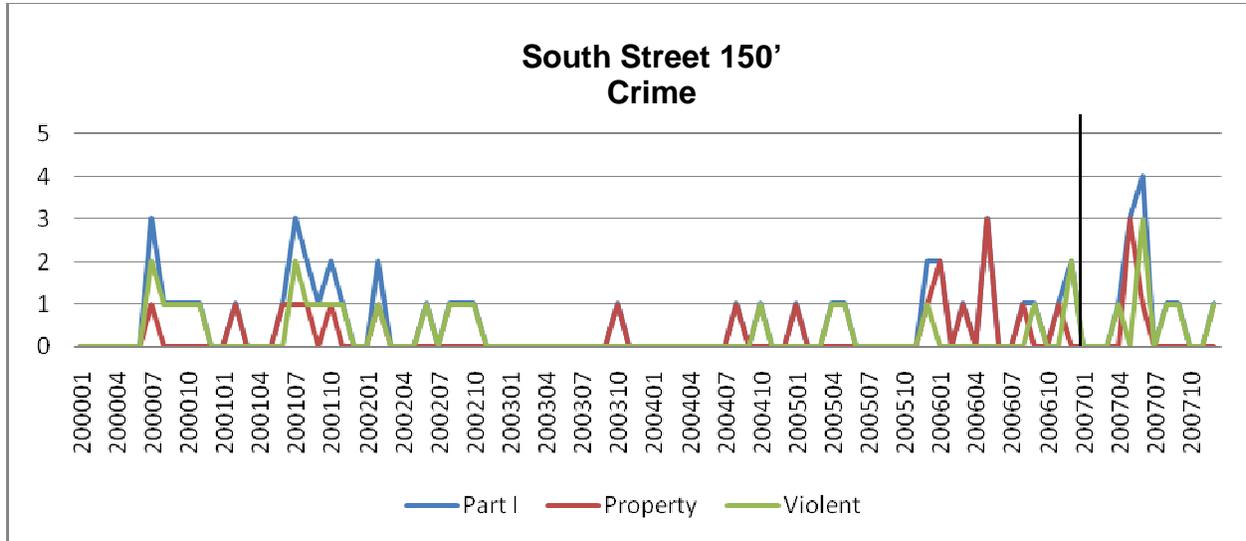


Figure 13

Estimates of pre and post-intervention levels of disorder citywide and within 150 feet of each camera are displayed in Table 3. Monthly disorder citywide was estimated treating each of the four discrete time periods at which cameras were introduced as interventions. Overall, the introduction of cameras appears efficacious at reducing levels of disorder in the coverage area.

Table 3: Disorder within 150 feet of cameras and citywide

Attison/Hollow C9 (10/03)	Citywide Post intervention mean	Citywide Coefficient	% change	150' post intervention mean	150 Coefficient	% change	Difference in city change to camera change
Parking complaints	129	3.47	2.7	.31	.01	3.2	-.5
Drug related	21	6.08	28.9	.19	.11	57.9	-29.0
Person(s) annoying	689	153.68**	22.3	12.2	-5.23*	-42.8	65.1
Fight	95	-1.71	-1.8	.81	.25	30.9	-32.7
Shots fired	20	-6.21*	-31.0	.31	-.08	-25.8	-5.2
Edgar/Stanton C1 (4/04)							
Parking complaints	129	5.45	4.2	.18	-.12	-66.7	70.9
Drug related	25	-5.07	-20.3	.63	-.17	-27.0	6.7
Person(s) annoying	675	-140.1*	-20.8	31.4	-6.34	-20.2	-.6
Fight	89	.81	.91	.82	-.19	-23.2	24.1
Shots fired	17	3.03	17.8	.41	-.32	-78.0	95.8
Staple/Stanton C2 (4/04)							
Parking complaints	129	5.45	4.2	.18	-.14*	-77.8	82.0
Drug related	25	-5.07	-20.3	.41	-.34**	-82.9	62.6
Person(s) annoying	675	-140.10*	-20.8	5.6	-3.17**	-56.6	35.8
Fight	89	.81	.91	.36	-.30*	-83.3	84.2
Shots fired	17	3.03	17.8	.14	-.03	-21.4	39.2
Edgar/Craw C3 (12/06)							
Parking complaints	135	-3.13	-2.3	.39	-.08	-20.5	20.5
Drug related	30	-16.36**	-54.5	.67	-1.33**	-198.5	144.0
Person(s) annoying	754	-73.92	-9.8	14.7	-11.41**	-77.6	67.8
Fight	111	-7.15	-6.4	1.0	-.72**	-72.0	65.6
Shots fired	19	.42	2.2	.33	-.25	-75.7	77.9
Price/Willow C4 (12/06)							
Parking complaints	135	-3.13	-2.3	0	NA	NA	NA
Drug related	30	-16.36**	-54.5	.04	-.04	-100.0	45.5
Person(s) annoying	754	-73.92	-9.8	.24	-.01	-4.1	-5.7
Fight	111	-7.15	-6.4	0	NA	NA	NA
Shots fired	19	.42	2.2	0	NA	NA	NA
Weston/Vonder C5 (12/06)							
Parking complaints	135	-3.13	-2.3	.06	-.06	-100.0	97.7
Drug related	30	-16.36**	-54.5	.19	-.11	-57.8	3.3
Person(s) annoying	754	-73.92	-9.8	3.6	-.33	-9.2	.6
Fight	111	-7.15	-6.4	.22	-.15	-68.2	61.8
Shots fired	19	.42	2.2	.07	.08	114.2	-112.2

Weston's Video Surveillance Project

Hanger Street C13 (12/06)	Citywide Post intervention mean	Citywide Coefficient	% change	150' post intervention mean	150 Coefficient	% change	Difference in city change to camera change
Parking complaints	135	-3.13	-2.3	.11	-.03	-27.3	25.0
Drug related	30	-16.36**	-54.5	.04	-.04	-100.0	45.5
Person(s) annoying	754	-73.92	-9.8	2.7	-1.39	-51.5	41.7
Fight	111	-7.15	-6.4	.48	.21	43.7	-50.1
Shots fired	19	.42	2.2	.22	.01	4.5	-2.3
Attison/Bay C6 (1/07)							
Parking complaints	135	-2.75	-2.0	.45	.05	11.1	-13.1
Drug related	30	-12.02	-40.1	.18	.06	33.3	-73.4
Person(s) annoying	751	-150.06**	-20.0	9.7	-3.43	-35.4	15.4
Fight	111	-10.22	-9.2	1.0	-.67**	67.0	-76.2
Shots fired	19	-.20	-1.0	.05	.11	220.0	-221.0
South/Stanton C7 (1/07)							
Parking complaints	135	-2.75	-2.0	.47	-.14	-29.8	27.8
Drug related	30	-12.02	-40.1	.18	-.18	-100.0	59.9
Person(s) annoying	751	-150.06**	-20.0	5.76	-1.78	-30.9	10.9
Fight	111	-10.22	-9.2	.40	.27	67.5	-76.7
Shots fired	19	-.20	-1.0	.07	-.07	-100.0	99.0
South/Bay C8 (1/07)							
Parking complaints	135	-2.75	-2.0	.72	-.02	-2.8	.8
Drug related	30	-12.02	-40.1	.02	-.02	-100.0	59.9
Person(s) annoying	751	-150.06**	-20.0	2.85	-.52	-18.2	-1.5
Fight	111	-10.22	-9.2	.45	-.44**	-89.8	80.6
Shots fired	19	-.20	-1.0	.02	-.02	-100.0	99.0
South Street C14 (1/07)							
Parking complaints	135	-2.75	-2.0	.47	.03	6.4	-8.4
Drug related	30	-12.02	-40.1	.09	-.09	-100.0	59.9
Person(s) annoying	751	-150.06**	-20.0	3.04	-.35	-10.3	-9.7
Fight	111	-10.22	-9.2	.13	-.13	-100.0	90.8
Shots fired	19	-.20	-1.0	.25	-.09	-36.0	35.0

*P<.05 **p<.10

Citywide and 150 foot intervention estimates describing the effect on disorder are presented in Table 3. The introduction of cameras is associated with decreases in nearly all calls for service categories analyzed – parking complaints, drug related, person(s) annoying, fight and shots fired calls. The average number of reports regarding parking complaints declined in 7 of 10 of the 150 foot camera coverage areas after the installation of cameras for which effects could be estimated (Price and Willow had no parking complaints in the pre-intervention period). Moreover, in all but one of the 7 coverage areas that indicated post intervention declines in parking complaints, the magnitude of the decrease was greater in the coverage area than that experienced citywide. Calls to report drug activity declined in all 150 foot coverage areas after the installation of cameras, with the exception of the Attison and Hollow building mount camera and the Attison and Bay camera. In each of the 150 foot coverage areas that experienced a decline in calls to report drug activity subsequent to the installation of a camera, the change experienced in the coverage area was more favorable than was felt at comparable times citywide. In the 150 foot coverage area of all 11 cameras, the average number of calls for groups or individuals annoying decreased in the post intervention period. Citywide, the average number of calls for groups annoying decreased after 3 of the 4 interventions dates: again, October of 2003 was the outlier. Percent changes in the counts of calls for groups annoying were more favorable in 9 of the 11 coverage areas than that experienced citywide. The impact of cameras on calls to report fights was more mixed. The post intervention level of reported fights was lower than pre intervention levels in 7 of 10 coverage areas, while post intervention levels increased in 3 camera coverage areas. The average number of calls to report shots fired declined in the post intervention period for 7 camera coverage areas and increased in 3 of the 150' coverage areas.

October 2003

The post intervention period for the Attison and Hollow building mount camera (Figure 14) - yielded the most mixed results in terms of calls for service categories analyzed compared to any of the other 10 cameras (see Table 3). Only calls to report persons annoying and shots fired decreased in the post intervention period. In fact, not only did

calls to report parking complaints and fights increase after the installation of cameras but comparison of the difference in percent changes citywide and in the coverage areas indicates that the coverage area fared worse in the post intervention period than citywide.

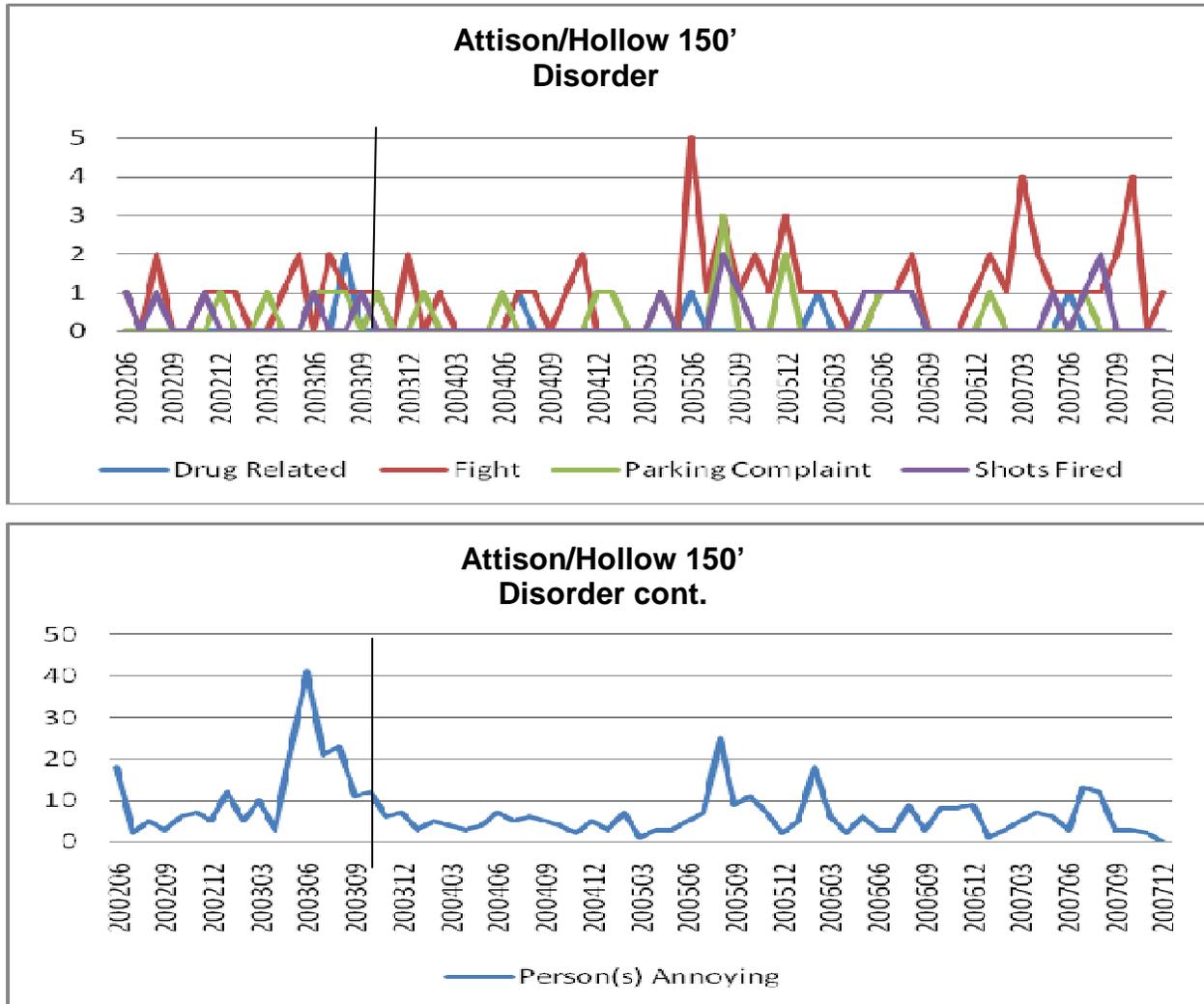


Figure 14

April 2004

Two cameras were installed in April of 2004 on Stanton Avenue at the intersections of Edgar and Staple streets (C1 and C2). For both cameras, the average number of calls was lower in the post intervention period for every call type analyzed in the 150 foot coverage area (see Figure 15 and 16). Moreover, the difference in city-wide percent change and camera-coverage area percent change for every call type indicates that for

both cameras the post intervention coverage area change was more favorable than the percent change citywide.

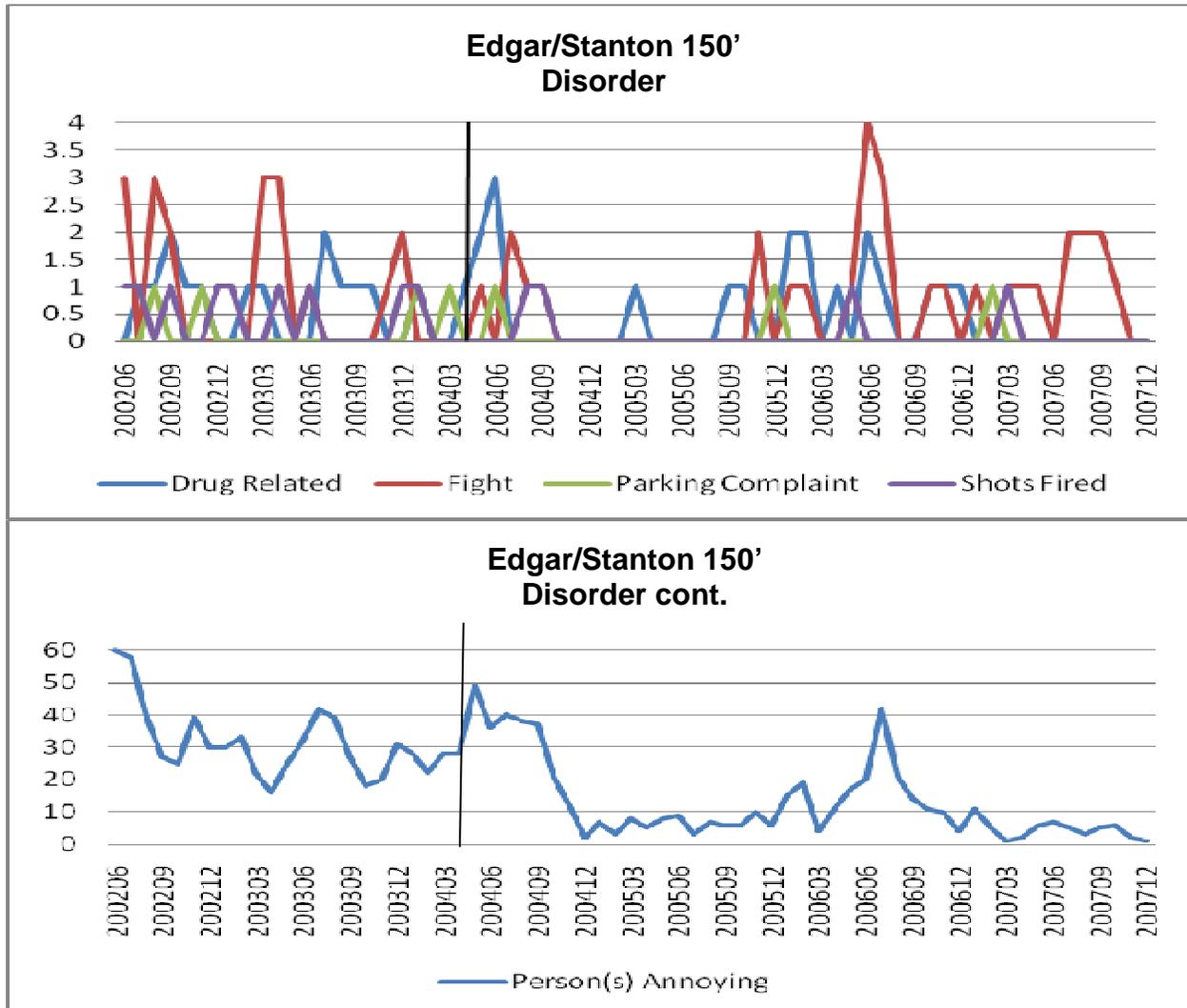


Figure 15

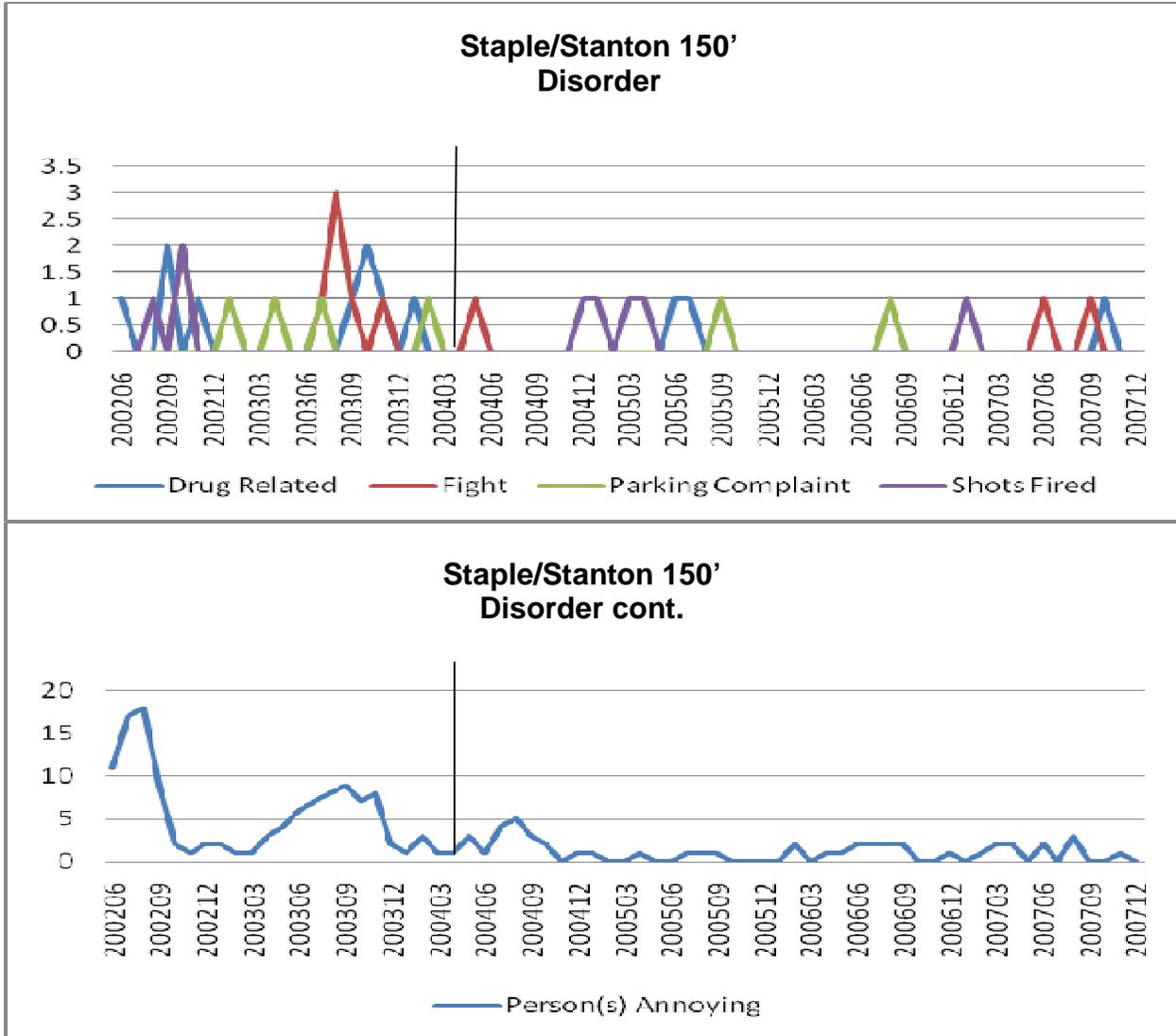


Figure 16

December 2006

Intervention estimates calculated in the 150 foot coverage areas of each of 4 cameras installed in December of 2006 are presented in Table 4. The post intervention level of each call type analyzed at Edgar and Craw (C3) was lower than the pre intervention level (Figures 17). In fact, the percentage changes ranged from decreases of 20.5 percent (parking complaints) to 198 percent (drug complaints). The comparison of percent changes in select call types citywide versus percent changes in call types in the 150' coverage area of the camera indicates that while calls were also down citywide, the coverage area experienced declines of a greater magnitude.

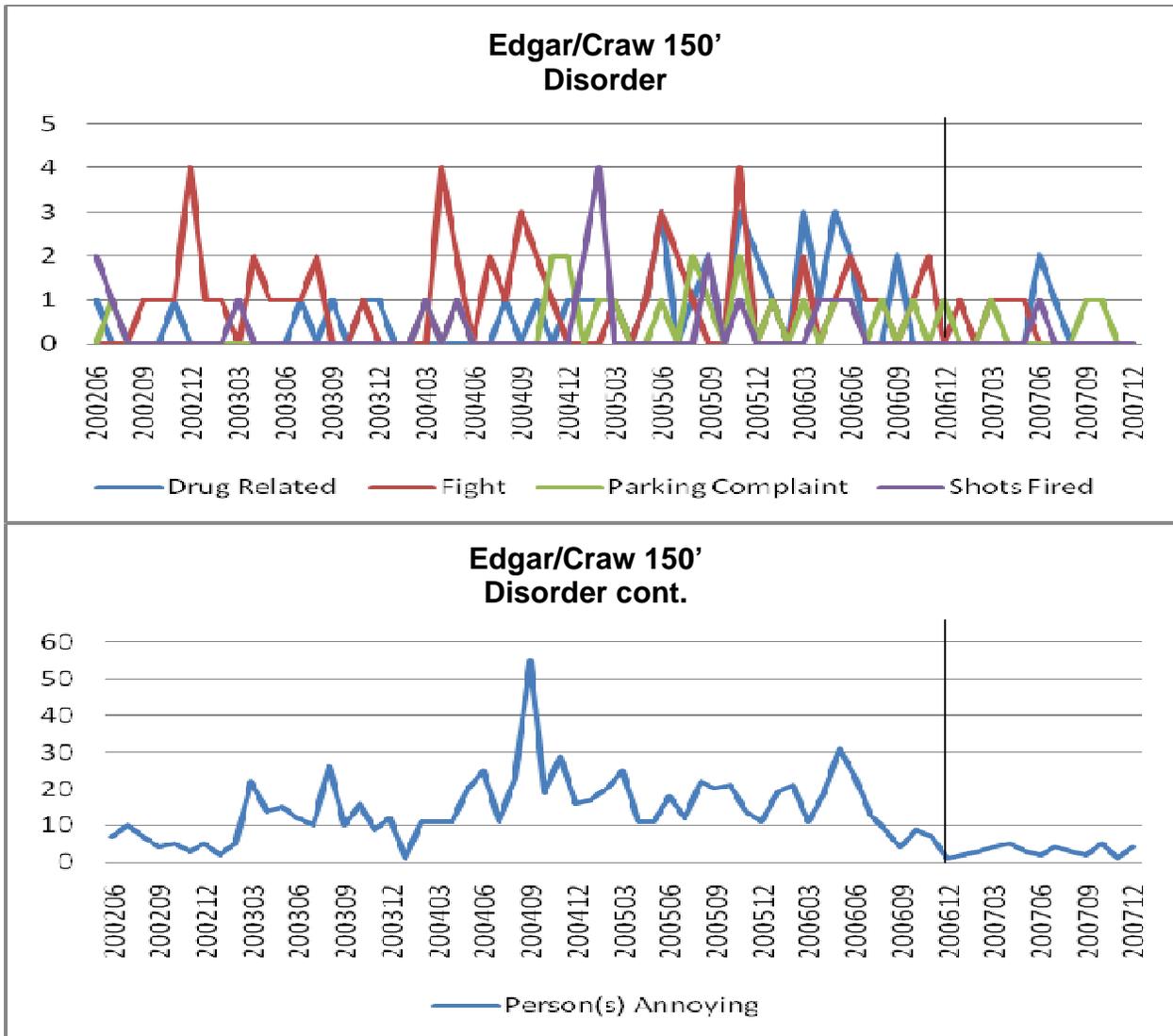


Figure 17

The intervention effects of the Price and Willow camera are difficult to detect given that parking complaints, shots fired and reports of fights were too low to estimate effects. In the pre-intervention period there was less than one drug complaint every year, and in the post intervention period all complaints were eliminated. Prior to the introduction of cameras, the 150 foot area around Price and Willow had only 1 person annoying call every 5 months, on average.

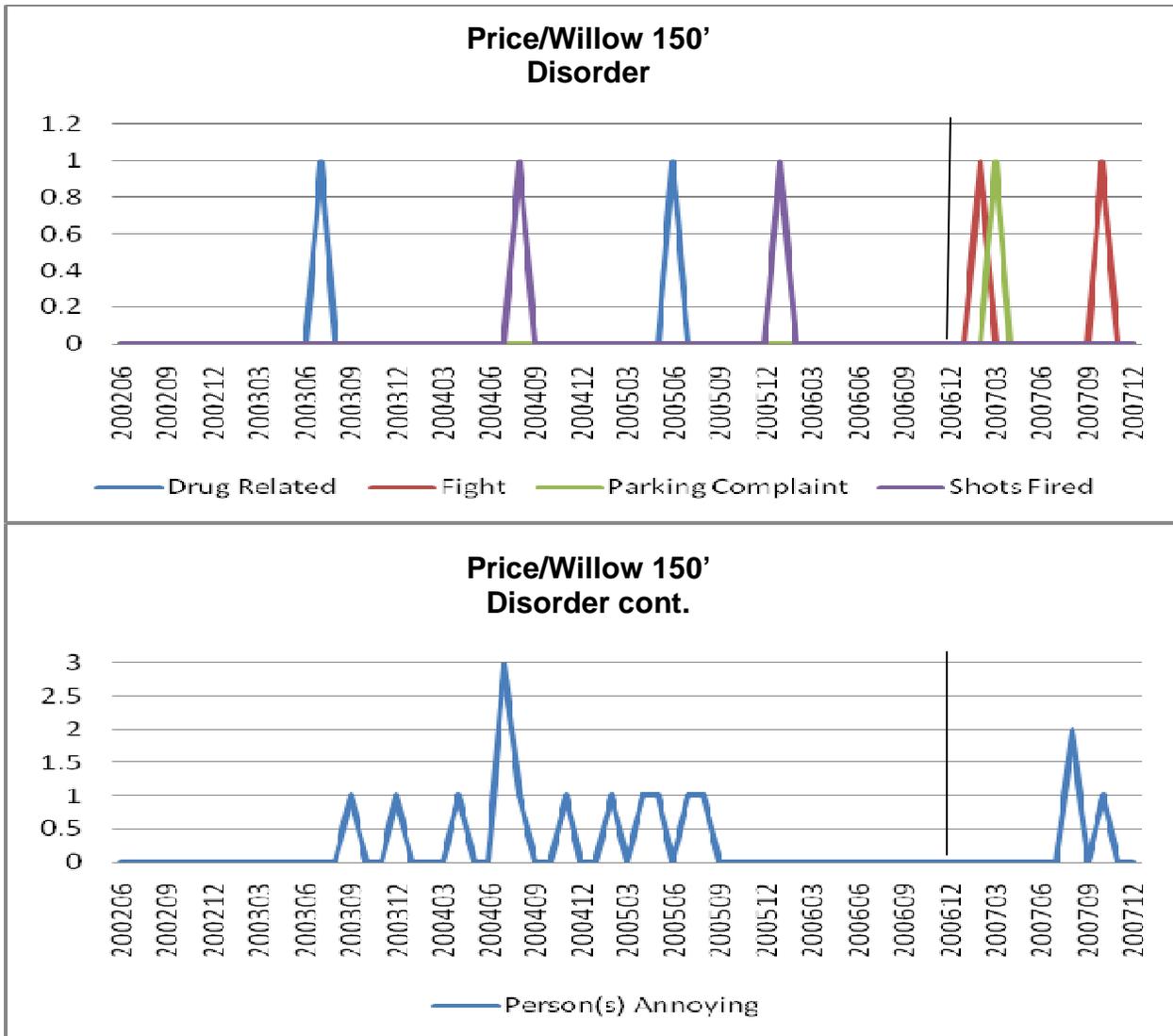


Figure 18

After the installation of the Weston and Vonder camera (C5), all analyzed call types declined, with the exception of shots fired (Figure 19). It should be noted that the number of shots fired calls is extremely small (though too is parking complaints) in the area 150 feet around the camera. On average there was one shots fired call a year in the pre intervention coverage area, and after the camera installation that number doubled to just over 2 per year.

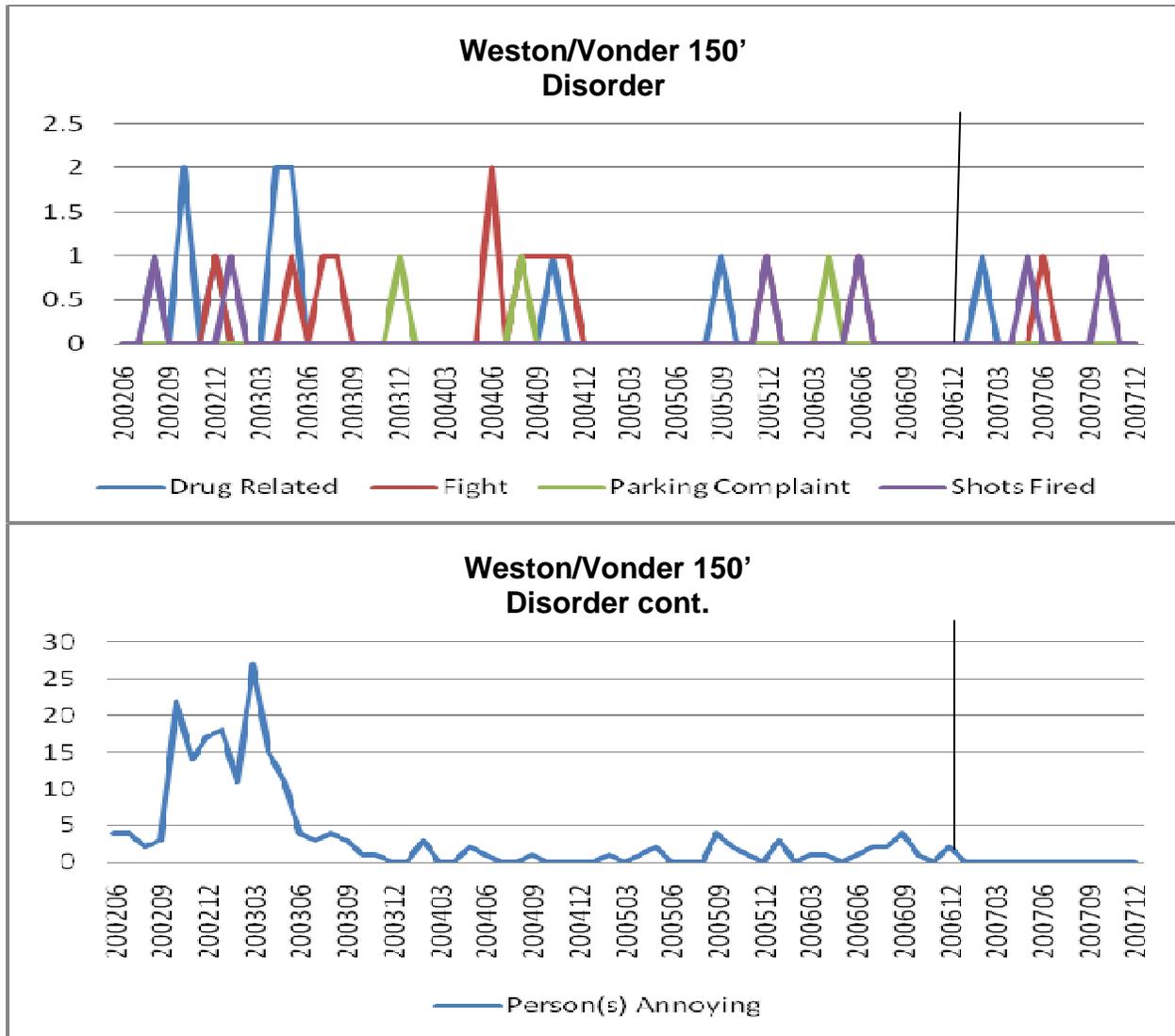


Figure 19

Trends in calls for service were mixed for the Hanger Street camera (C13) (Figure 20). In the post intervention period average calls to report parking complaints, drug activity and person(s) annoying were lower in comparison to pre intervention call volume. On the other hand, calls reporting fights and shots fired were higher after the camera installation.

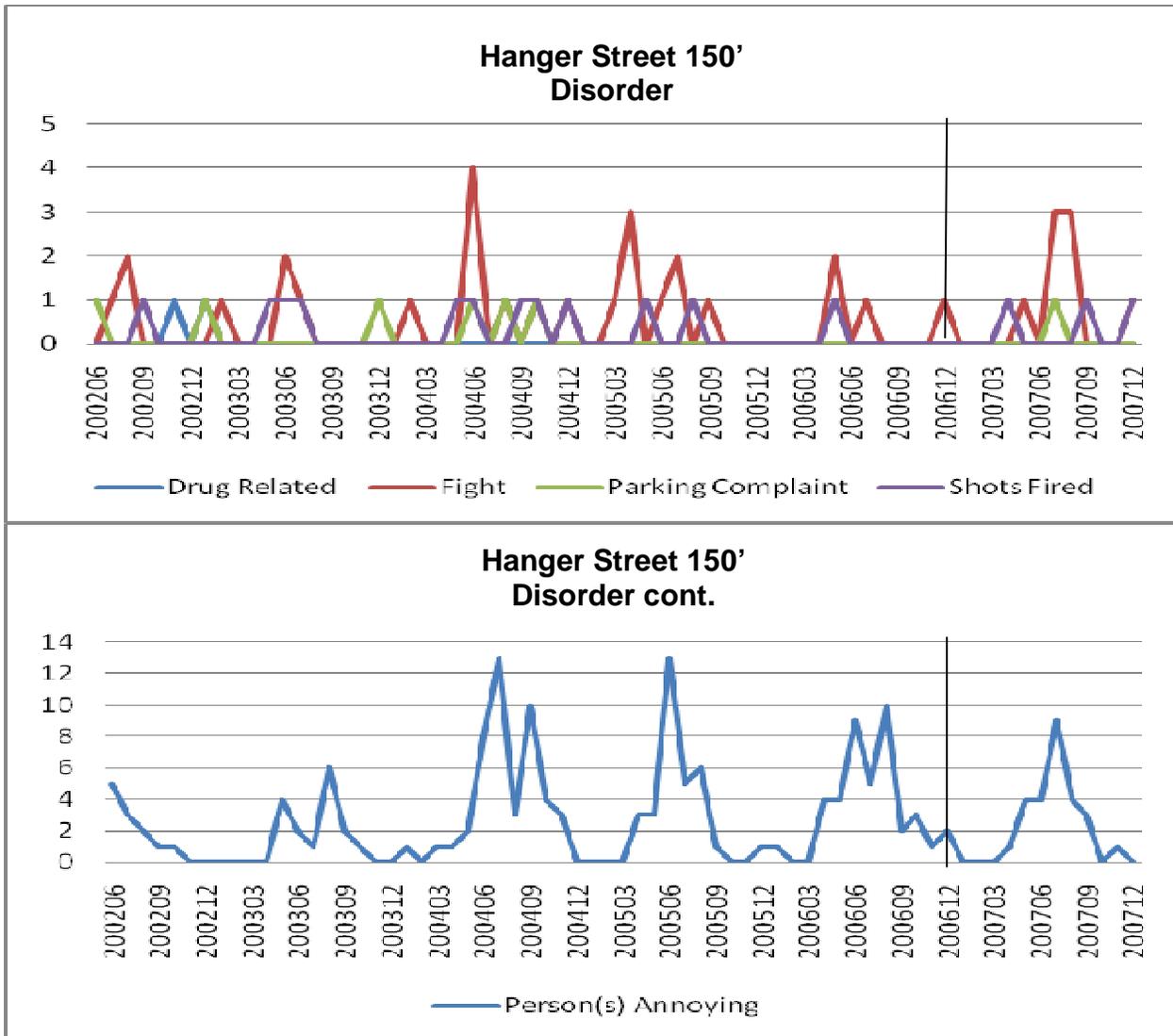


Figure 20

January 2007

Four additional cameras were added to the network in January of 2007. In the post intervention period for the Attison/Bay camera (C6) the average number of calls to report person(s) annoying and fights was lower than in the pre-intervention period (Figure 21). On the other hand, calls to report parking complaints, drug activity, and shots fired rose in the post intervention period (see Table 4). Again the numbers are very small. For example, reports of fights declined from an average of 1 call a month to 1 call every 3 months in the post intervention period. At the time parking complaints, drug related calls and shots fired complaints rose in the coverage area, they experienced citywide declines.

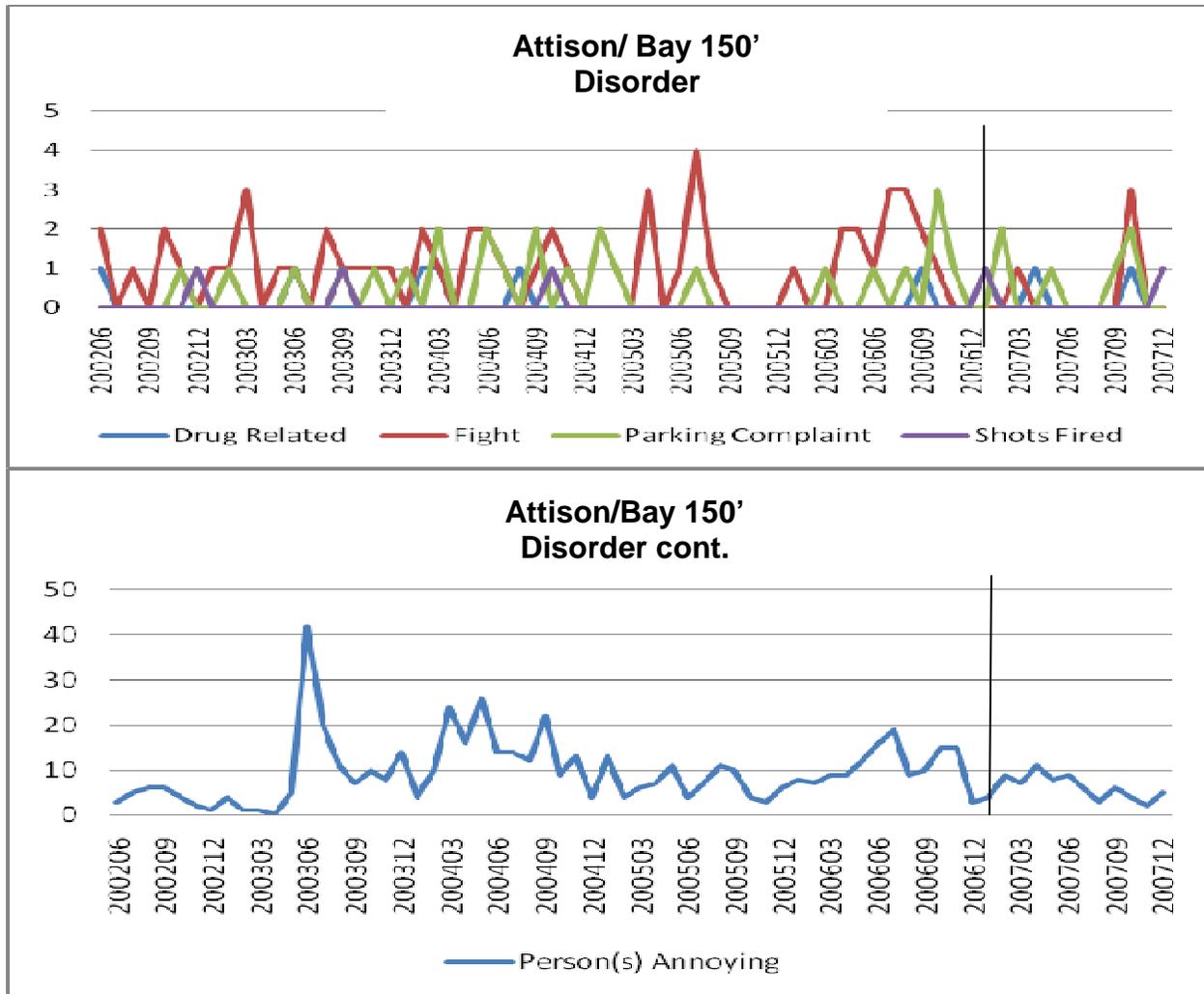


Figure 21

The post intervention period for the South and Stanton (C7) 150 foot coverage area indicates favorable impacts (Figure 22). The average number of calls to report parking problems, drug activity, person(s) annoying and shots fired were lower in the post intervention period. In fact, calls to report drug activity and shots fired were eliminated. Fight calls is the only category where monthly counts of calls rose in the post intervention period and, at a time when fight calls decreased citywide, though the citywide decrease was modest – 9.2 percent.

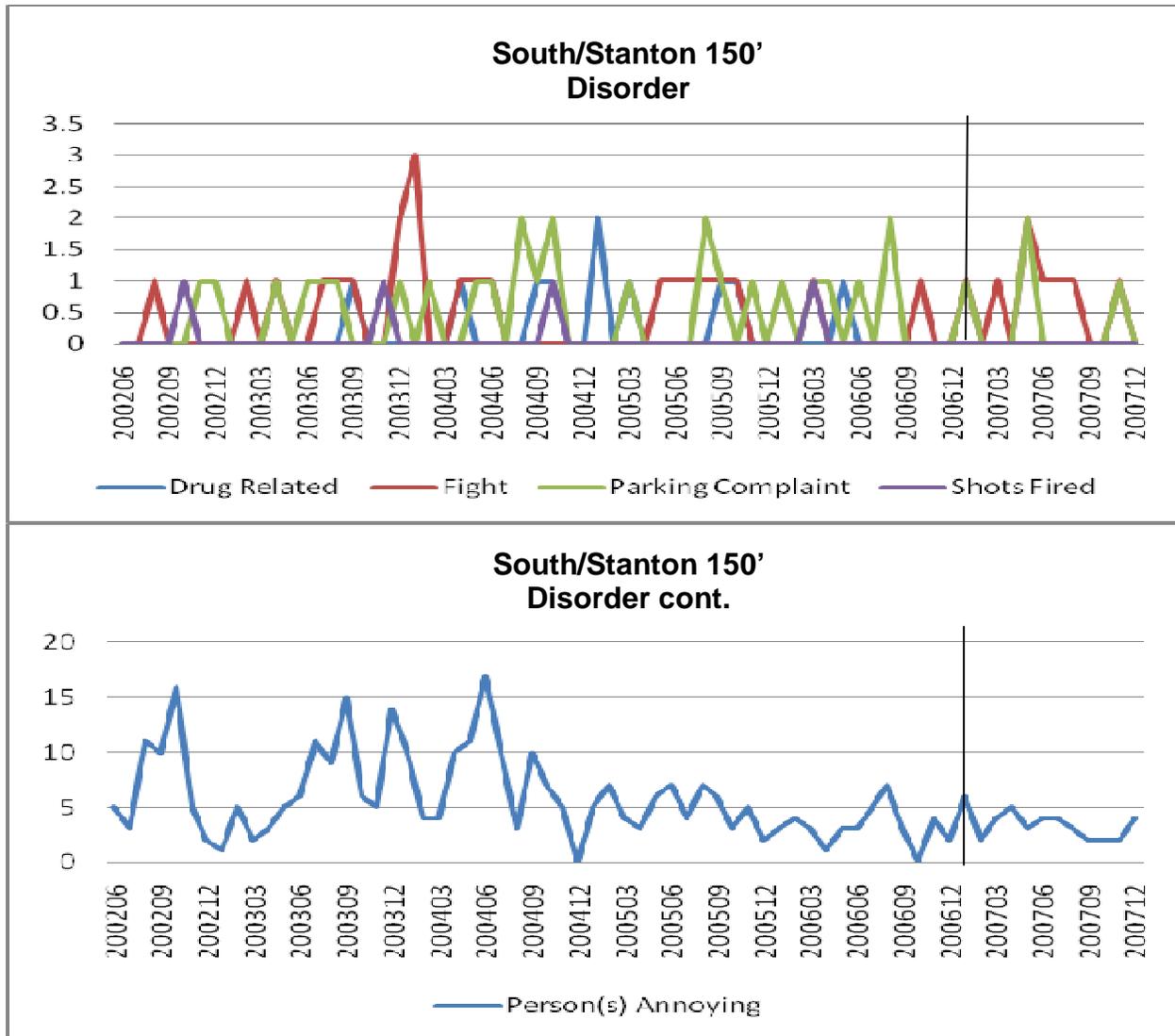


Figure 22

The 150 foot coverage area of the South and Bay camera (C8) experienced lower post intervention levels in select calls for service across the board (Figure 23) and more favorable patterns than citywide trends. These same calls for service categories declined citywide after the intervention period, but not as pronounced as the decline in the coverage area, particularly with respect to drug, fight and shots fired calls for service.

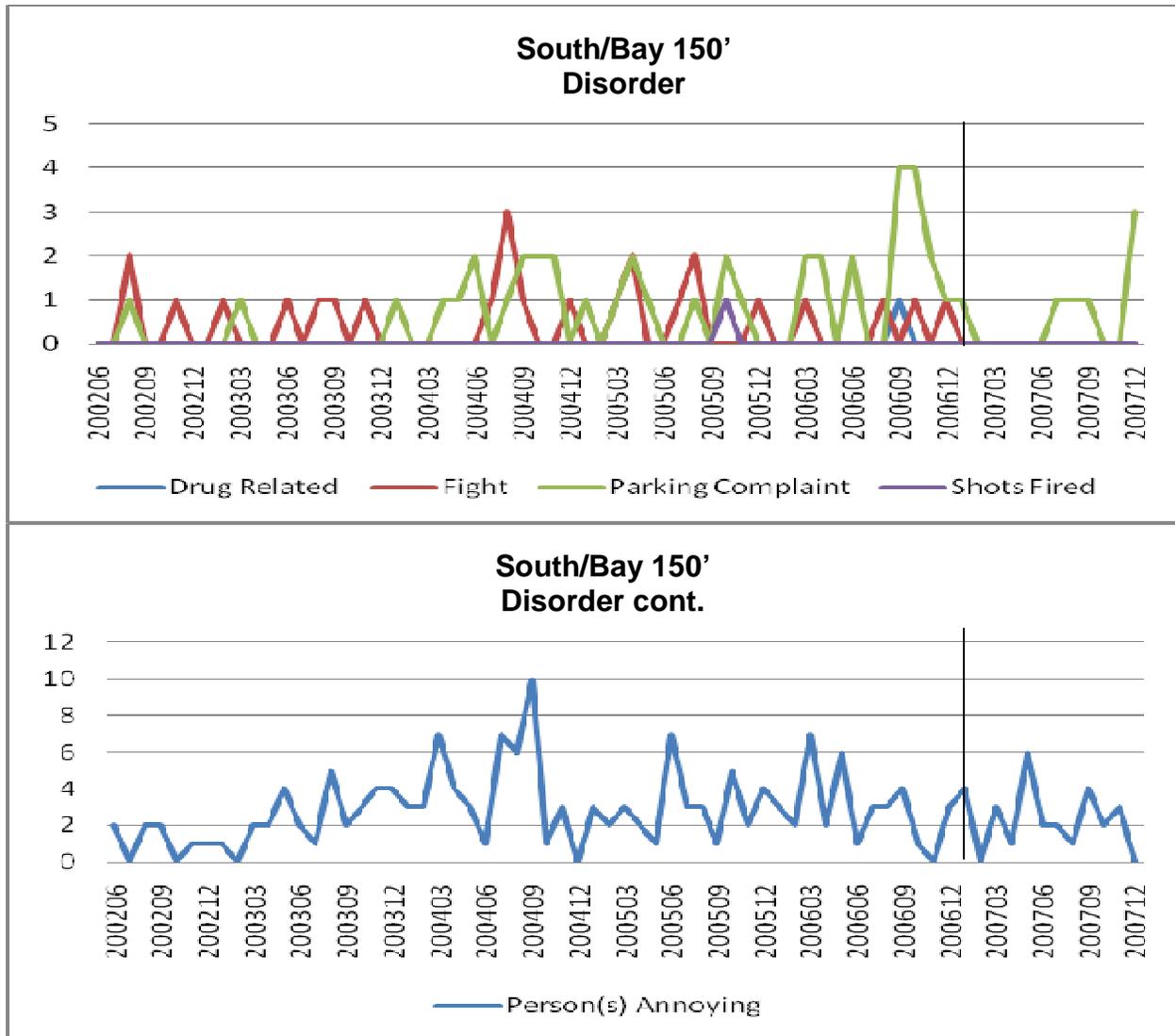


Figure 23

Lastly, the South Street camera (C14) exhibited lower monthly averages in the post intervention period for all calls for service with the exception of parking complaints (Figure 24). Here again, with the exception of reports of persons annoying, the average is less than 1 per month for the analyzed call types.

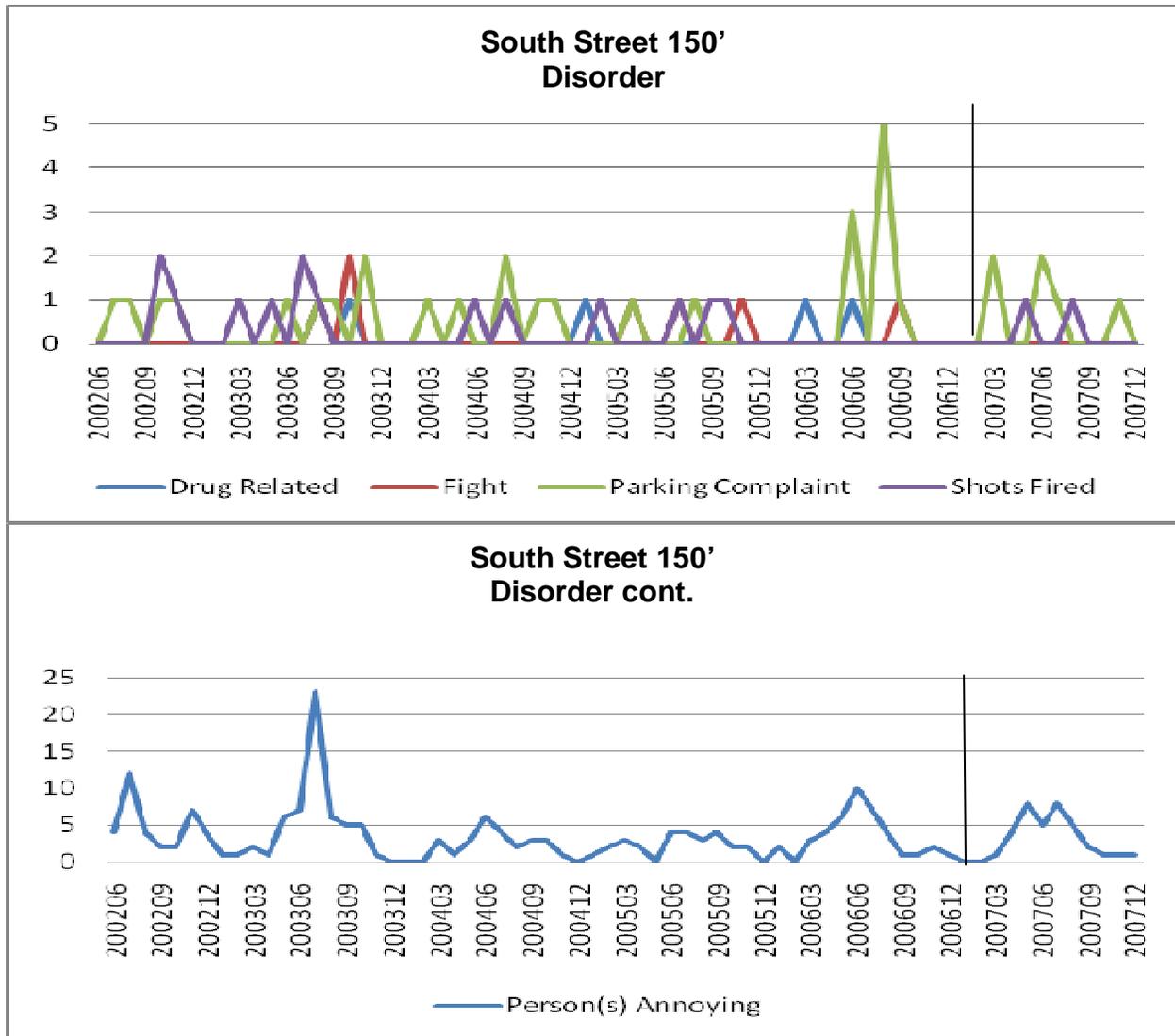


Figure 24

Crime and Disorder within 350 feet of cameras

Estimates of pre and post-intervention levels of crime citywide and within 350 feet of a camera or cluster of cameras is displayed in Table 4. Analysis was performed for each camera or cluster of cameras that were installed at the same time or nearly the same time and whose coverage area overlap (N=6). Using this definition, estimates were calculated for 2 individual cameras at 350 feet – interventions labeled as I1 and I3A in Table 3 above and for 4 interventions that included 2 or 3 cameras each. Again, effects were estimated in three or four directions, depending on the nature of the intersection.

Table 4: Crime within 350 feet of cameras

Attison/Hollow (I1) 10/03	Citywide Pre-intervention mean	Citywide Coefficient	% change	350 Pre intervention mean	350' Coefficient	% change 350	Difference in city change to camera change
Total Crime	865	12.43	1.5	6.8	0.72	10.5	-9.0
Part I Crime	286	11.26	4.0	1.5	0.99**	66.0	-62.0
Property Crime	241	9.38	3.9	1.07	0.05	4.7	-0.8
Violent Crime	41	3.2	7.8	0.44	0.54**	122.7	-114.9
Edgar/Stanton Staple/Stanton Cluster (I2) 4/04							
Total Crime	855	-73.08	-8.5	8.96	-0.71	-7.9	-.6
Part I Crime	280	-5.43	-1.9	1.73	-0.04	-2.3	.4
Property Crime	238	1.15	.48	0.88	0.16	18.2	-17.2
Violent Crime	41	3.91	9.5	0.84	-0.2	-23.8	33.3
Edgar/Craw (I3A) 12/06							
Total Crime	872	47.57	5.5	5.6	-2.57*	-45.9	50.1
Part I Crime	295	10.62	3.6	1.45	-0.26	-17.9	21.4
Property Crime	249	4.25	1.7	0.71	0.06	8.5	-6.8
Violent Crime	46	-6.93	-15.1	0.73	-0.35	-47.9	32.8
Price/Willow Weston/Vonder Hanger Street Cluster (I3B) 12/06							
Total Crime	872	47.57	5.5	5.36	-1.98**	-36.9	42.7
Part I Crime	295	10.62	3.6	1.3	-0.22	-16.9	20.5
Property Crime	249	4.25	1.7	0.84	-0.07	-8.3	10.0
Violent Crime	46	-6.93	-15.1	0.46	-0.14	-31.1	16.0
Attison/Bay South/Bay Cluster (I4A) 1/07							
Total Crime	872	-102.42**	-11.7	10.86	-0.65	-6.0	-5.2
Part I Crime	295	-41.75*	-14.1	5.3	0.99	18.7	-32.8
Property Crime	249	-33.91*	-13.6	4.5	-0.93	-20.7	7.1
Violent Crime	46	-5.18	-11.3	.81	0.54	66.7	-78.0
South/Stanton South Street Cluster (I4B) 1/07							
Total Crime	872	-102.42**	-11.7	10.89	0.27	2.5	-14.2
Part I Crime	295	-41.75*	-14.1	5.3	0.48	9.1	-23.2
Property Crime	249	-33.91*	-13.6	4.5	0.05	1.1	-14.7
Violent Crime	46	-5.18	-11.3	0.81	0.43	53.1	-64.4

*p<.05 **p<.10

Using an expanded coverage area and calculating monthly counts of crime that occurred within 350 feet of an individual camera or in the 350 foot range of a cluster of cameras, results show that total crime decreased in 4 of the six 350 foot coverage areas following the installation of a camera or cluster of cameras. The post intervention period for only 2 of the 6 cameras indicated a decrease in property crime in the 350 foot coverage area. Finally, succeeding the installation of cameras, violent crime declined in half of the 350 foot coverage areas analyzed, and in each of these areas, violent crime decreased despite citywide trends in either the opposite direction or of weaker relative magnitude at the same points in time. In the 3 expanded coverage areas where average monthly counts of violent crime increased after the installation of cameras, it actually did so with a more pronounced trend than the increases experienced citywide at the same time.

October 2003

The building mount camera at Attison and Hollow does not share coverage area with any other camera in the network even when the analytical coverage area is expanded from 150 feet to 350 feet. Though the 350 foot coverage areas of the Edgar and Craw pole mount and the Attison and Hollow building mount are in close proximity, no crimes occurred in the shared area. Moreover, the building mount camera is less visible to the naked eye and has more limited camera viewing capability than the pole mount. These factors informed the decision to treat the 350 foot interventions areas as distinct. The introduction of the Attison/Hollow camera is not associated with declines in the average levels of total crime, Part I crime, property crime or violent crime at 350 feet (nor was it at 150 feet). In the post intervention period, these same offense categories were on the rise citywide, though comparison of percent changes citywide and in the 350 foot coverage area indicate that the relative increase in crime was greater in the coverage area.

April 2004

The 350 foot coverage areas of the cameras at Edgar and Stanton and Staple and Stanton overlap. Thus, any analyzed offenses that occurred within 350 feet of either of

these two cameras was treated as occurring within a single intervention area, I2. Installation of these 2 pole mount cameras yielded crime reduction effects, with average levels of total crime, Part I crime and violent crime lower in the post intervention period in the area 350 feet around the two cameras.

The pole mount camera at Edgar and Craw is treated as its own intervention at 350 feet and, for the most part, met with crime reduction success (I3A). Average crimes in the area 350 feet around the Edgar and Craw camera decreased, with the exception of property crime, following the installation of the camera. Property crime rose in the camera area as it did citywide. The post intervention period brought the average level of violent crime from .73 per month down to only .38.

December 2006

Three cameras installed in December 2006 share 350 foot coverage areas and are treated as a single intervention for analytical purposes: Price and Willow, Weston and Vonder and the building mount located at Hanger Street (I3B). Together, the installation of these three cameras is associated with decreases in the monthly average of: total crime, Part I crime, property crime and violent crime, going against the citywide pattern of increases in total crime, Part I crime and property crime.

January 2007

January of 2007 saw the addition of four cameras to the network. The cameras located at Attison and Bay and South and Bay were treated as a single intervention. These cameras met with mixed success. Following the installation of the cameras, total crime and property crime in the 350 foot coverage areas decreased. However, the decline in total citywide crime was of a greater magnitude. Average counts of violent crime increased in the coverage area at a time it experienced reductions citywide.

The other 2007 cameras, South and Stanton and South street share a 350 foot coverage area (I4B). Together, these cameras yielded no more crime reduction benefits than they did on their own at 150 feet. Following the installation of the two

cameras, average total, Part I, property and violent crime actually increased at a time when the post intervention period indicates declines citywide.

Citywide and 350 foot intervention estimates describing the effect on disorder are presented in Table 5. Table 5 highlights pre and post-intervention estimates of disorder calls. Using an expanded coverage area and calculating monthly counts of calls to report a problem occurring within 350 feet of an individual camera or in the 350 foot range of a cluster of cameras, results indicate overwhelmingly positive results, though tell a story not markedly different from the 150 foot analysis.

Table 5: Disorder within 350 feet of cameras

Attison/Hollow (I1) 10/03	Citywide Pre intervention mean	Citywide Coefficient	% change	350' Pre intervention mean	350 Coefficient	% change 350	Difference in city change to camera change
Parking complaints	127	3.47	2.7	.56	-.01	-1.8	4.5
Drug related	12	6.08	51.0	.50	-.32*	-64.0	115.0
Person(s) annoying	583	153.7**	26.4	15.06	-5.75*	-38.2	64.6
Fight	76	-1.71	-2.25	1.56	-.05	-3.2	.95
Shots fired	20	-6.21*	-31.0	.44	-.12	-27.3	-3.7
Edgar/Stanton Staple/Stanton Cluster (I2) 4/04							
Parking complaints	129	5.45	4.2	.45	-.23*	-51.1	55.3
Drug related	25	-5.07	-20.3	1.2	-.38	-31.7	11.4
Person(s) annoying	675	-140.1*	-20.7	42.2	-9.51	-22.5	1.8
Fight	89	.81	.91	1.4	-.12	-8.6	9.5
Shots fired	17	3.03	17.8	.73	-.44**	-60.3	78.1
Edgar/Craw (I3A) 12/06							
Parking complaints	135	-3.13	-2.3	.46	.08	17.4	-19.7
Drug related	30	-16.36**	-54.5	.93	-.56	-60.2	5.7
Person(s) annoying	754	-73.92	-9.8	17.45	-13.38**	-76.7	66.9
Fight	111	-7.15	-6.4	1.17	-.55	-47.0	40.6
Shots fired	19	.42	2.2	.43	-.20	-46.5	48.7
Price/Willow Weston/Vonder Hanger St Cluster (I3B) 12/06							
Parking complaints	135	-3.13	-2.3	.32	-.01	3.1	-5.4
Drug related	30	-16.36**	-54.5	.39	-.24	-61.5	7.0
Person(s) annoying	754	-73.92	-9.8	8.3	-2.24	-26.9	17.1
Fight	111	-7.15	-6.4	1.17	.22	18.8	-25.2
Shots fired	19	.42	2.2	.54	-.08	-14.8	17.0
Attison/Bay South/Bay Cluster (I4A) 1/07							
Parking complaints	135	-2.75	-2.0	1.55	-.13	-8.3	6.3
Drug related	30	-12.02	-40.1	.27	-.02	-7.4	-32.6
Person(s) annoying	751	-150.06**	-20.0	16.6	-3.71	-22.3	2.3
Fight	111	-10.22	-9.2	1.93	-1.01*	-52.3	43.1
Shots fired	19	-.20	-1.0	.11	.14	127.3	-128.3

South/Stanton South Street Cluster (I4B) 1/07	Citywide Pre intervention mean	Citywide Coefficient	% change	350' Pre intervention mean	350 Coefficient	% change 350	Difference in city change to camera change
Parking complaints	135	-2.75	-2.0	1.02	-.02	-2.0	0
Drug related	30	-12.02	-40.1	.38	-.22	-57.9	17.8
Person(s) annoying	751	-150.06**	-20.0	10.95	-1.03	-9.4	-10.6
Fight	111	-10.22	-9.2	.67	.24	35.8	-45.0
Shots fired	19	-.20	-1.0	.35	-.18	-51.4	50.4

*P<.05 **p<.10

Post intervention levels of calls to report parking complaints were lower in 4 of the six 350 foot coverage areas. The average number of calls to report drug related problems in the 350 foot coverage area was lower in the expanded coverage area of every single camera or cluster of cameras after the intervention period, and the magnitude of the change was more favorable in the coverage area than trends citywide, with the exception of cluster I4A. Similarly, the average number of calls to report person(s) annoying in the 350' coverage area of every camera or cluster of cameras was lower in the post intervention period compared to the time before cameras went up. The percent change in calls to report fights in the pre to the post intervention period in the expanded coverage area yields the same mixed results found at 150 feet. Fight calls declined in 4 of the 6 coverage areas and increased in two, despite downward trends citywide at the same time. Following the installation of cameras, calls to report shots fired were lower in the 350' coverage areas for all but one intervention – the cameras on Bay at the intersections of Attison and South (I4A).

October 2003

Casting a wider net around the camera coverage area had real implications only for the camera on Attison and Hollow. At 150 feet, only calls to report persons annoying declined in the post intervention period. However, all disorder calls declined in the area 350 feet around the camera. Moreover, the coverage area decline was greater than the citywide trends.

April 2004

The cameras at Edgar and Stanton and Staple and Stanton share a 350 foot coverage area. Including calls in a larger area and, so, increasing the base number of offenses, did not change the picture. Considered alone or as a single intervention the introduction of cameras is associated with declines in all disorder categories.

December 2006

The camera at Edgar and Craw shares no coverage with another camera at 350 feet, and, thus, it is treated as its own intervention. At 150 feet all disorder categories declined. At 350 feet the trend is the same with the exception of parking complaints, which rose slightly in the post intervention period.

The cameras on Price and Willow, Weston and Vonder and Hanger Street share coverage area at 350 feet and were treated as a single intervention. Here again, including a larger area within the scope of the analysis did not, on the whole, change the story.

January 2007

The camera at Attison and Bay and South and Bay were treated as a single intervention with shared 350 foot coverage. In the 350 foot post-intervention period, all disorder categories were lower, with the exception of shots fired calls. Declines in drug related calls in the coverage area did not exceed the magnitude of declines experienced citywide while declines in parking complaints, persons annoying and fights were stronger than declines citywide.

The South and Stanton and South Street camera were treated as a single intervention at 350 feet. Conducting analysis on a shared and expanded coverage area did not change the basic story presented by the two cameras when analyzed alone with a smaller coverage area. Together at 350 feet and alone at 150 feet the post camera period has lower mean levels of disorder call than does the pre-camera period.

Summary

Although the crime reduction effects of cameras are not consistent, some conclusions can be drawn. Building mount cameras do not seem to have the crime reduction power of pole mount cameras. All analyzed crime types increased in the post-intervention period of the building mount cameras. Total crime increased in the coverage area of 2 out of 2 building mount cameras and in only 1 of the 9 pole mounts coverage areas.

In the aggregate, the data suggest the surveillance cameras are more effective at reducing violent crime than property crime. Where cameras did have an effect on crime we anticipated that the effect would be even more pronounced in public locations. To test this hypothesis, incidents of total crime and Part I crime outdoors were isolated and we re-estimated the models. However, the coefficients in the 150 foot coverage area of cameras for outdoor total crime and outdoor Part I crime are of no stronger magnitude than the coefficients for total and Part I crime overall. Test of the hypothesis that cameras would have stronger effects on crimes committed out of doors was repeated in the expanded 350 foot coverage area. Here again, there is no evidence indicating that crime location influences effects.

Findings indicate that the introduction of cameras is particularly successful at reducing disorder. The introduction of cameras is associated with decreases in nearly all calls for service categories analyzed. And, where declines were found the coverage area they were typically greater than the decline citywide. Overall, the introduction of cameras was associated with inconsistent crime reduction and more consistent with disorder reduction.

Implications

We have found that the surveillance cameras have had effects on crime, but the effects have not been achieved consistently. In this, the cameras in Weston collectively follow the pattern displayed by cameras whose effects have been evaluated by previous research. We further found that cameras appear to be particularly successful at

reducing disorder. The introduction of cameras coincided with decreases in nearly all calls for service categories analyzed, changes that were, in the main, more favorable than the direction or magnitude of the changes citywide. In this, the cameras in Weston have been more effective than cameras elsewhere whose effectiveness has been analyzed. The project is, then, a demonstrably effective initiative.

The camera initiative in Weston, we believe, has promise to be still more effective in the future, for we might expect that these effects would be amplified in conjunction with other possible steps. The VSP is comprised primarily of overt street cameras, though Weston does not currently use signage to draw attention to surveillance zones. The least effective cameras in Weston are the building mount cameras, which are also the least visible to the casual observer. It may be that improved signage or some other visible indications of the cameras' operation may increase the likelihood of a deterrent effect.

The quality of the images captured by the cameras between sunset and sunrise, when many public safety problems are more acute, turns to some extent on the intensity of the lighting. Currently, street lighting is maintained at a relatively low wattage as a cost-saving measure. Better lighting could be provided, and better video images recorded, even without the acquisition of improved light fixtures.

Another application of the camera which had not yet been realized at the time of this study is real-time monitoring. Cameras are a potentially powerful tool in surveilling daily street activity to identify and attend to street level problems. Live monitoring of cameras, which would enable police to deploy resources rapidly, maximizes the power of cameras. The human element is an important piece of any effort to introduce technological innovations, such as camera surveillance, into organizations, as the habits and skills of personnel must adapt to the technology; to the best of our knowledge, this is an issue that has scarcely been addressed in the extant empirical research on camera surveillance.

References

- Armitage, R., Smyth, G., and Pease, K. (1999). Burnley CCTV evaluation. In K. Painter and N. Tilley (Eds.), *Surveillance of Public Spaces: CCTV, Street Lighting and Crime Prevention (Crime Prevention Studies 10)*, pp: 225-50. Monsey, NY:Criminal Justice Press.
- Brown, B. (1995). *CCTV in town centers: Three case studies (Crime Detection and Prevention Series, paper number 68)*. London: Home Office Police Department, Police Research Group.
- 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.
- Eck, J. (1993). The threat of crime displacement. *Problem Solving Quarterly*, 6(3): 1-2.
- Gill, M. and A. Spriggs (2005). *Assessing the impact of CCTV (study number 292)*. London: Home Office Research, Development and Statistics Directorate.
- Hesseling, R.B.P. (1995) Displacement: A review of the empirical literature, In: Clarke, R.V. (ed.) *Crime Prevention Studies* (Vol. 2), Criminal Justice Press, Monsey, NY. 197-230.
- Honess, T. and E. Charman. (1992). *Closed circuit television in public places: Its acceptability and perceived effectiveness. (Crime Detection and Prevention Series, paper number 35)*. London: Home Office Police Department, Police Research Group.
- Howlett, D. (2004, September 9). In Chicago plans advanced surveillance. USA Today. Retrieved July 8, 2008 from <http://usatoday.com>
- Lirtzman, M. (2007, July 29). In Surveillance cameras win broad support. ABC News. Retrieved July 8, 2008, from <http://abcnews.go.com>.
- 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.
- National Institute of Justice (2003, July). CCTV: Constant cameras track violators. *NIJ Journal*.
- Ratcliffe, J. (2006). *Video surveillance of public places*. Washington, D.C.: U.S. Department of Justice, COPS.

- 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.
- 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.
- Sivarajasingram, V., J.P. Shepherd, and K. Matthews (2003). Effect of urban closed circuit television on assault injuries and violence detection. *Injury Prevention*, 9(4): 312-316.
- Spriggs A., J. Argomaniz, M. Gill, J. Bryan (2005). *Public attitudes towards CCTV: Results from the pre-intervention public attitude Survey carried out in areas implementing CCTV*. London: Home Office.
- Squires, P. (2003). *An independent evaluation of the installation of CCTV cameras for crime prevention in the Whitehawk Estate, Brighton*. Brighton (United Kingdom): Health and Social Policy Research Centre.
- Tilley N. (1997). Whys and wherefores in evaluation the effectiveness of CCTV. *International Journal of Risk, Security and Crime Prevention*, 2(3): 175-185.
- Weisburd, D., Wyckoff, L., Ready, J., Eck, J., Hinkle, J., and Gajewski, F. (2004). *Does crime just move around the corner? A study of displacement and diffusion in Jersey City, NJ*. Washington, D.C.: U.S. Department of Justice.
- Welsh, B.C., and D.P. Farrington (2002). *Crime prevention effects of closed circuit television: A systematic review (study number 252)*. London: Home Office, 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*, 5(3): 49-59.