On-Officer Video Cameras:

Examining the Effects of Police Department Policy and Assignment on Camera Use and Activation

by

Allyson Roy

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Graduate Supervisory Committee:

Justin Ready, Chair
Cody Telep
Kate Fox

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ABSTRACT

On-officer video camera (OVC) technology in the field of policing is developing at a rapid pace. Large agencies are beginning to adopt the technology on a limited basis, and a number of cities across the United States have required their police departments to adopt the technology for all first responders. Researchers have just begun to examine its effects on citizen complaints, officers' attitudes, and street-level behavior. To date, however, there is no research examining how departmental policy and assignment of officers to a camera program affect officer behavior and opinions of the cameras. Policy and assignment have the potential to impact how officers react to the technology and can affect their interactions with citizens on a daily basis. This study measures camera activations by line officers in the Mesa Police Department during police-citizen encounters over a ten-month period. Data from 1,675 police-citizen contacts involving camera officers were subject to analysis. Net of controls (i.e., the nature of the crime incident, how it was initiated, officer shift, assignment, presence of bystanders and backup, and other situational factors), the bivariate and multivariate logistic regression analyses were used to examine how departmental policy (mandatory versus discretionary activation policy) and officer assignment (voluntary versus mandatory assignment) affected willingness to activate the cameras, as well as officer and citizen behavior during field contacts.

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CHAPTER 1

INTRODUCTION

The nature of police work is such that scrutiny and controversy are quick to follow any contentious action taken by an officer. This makes police work unique when compared to most other public service careers. Police officers interact with citizens at their most emotional and vulnerable state. In situations where individuals experience a traumatic event involving interpersonal conflict (e.g., when someone has been hurt or when judgment is impaired by drugs and alcohol), actions and words may provide grounds for tensions that lead a dispute to escalate. As the gravity of the situation is heightened, rare instances occur where officers must use force to control the situation or overcome suspect resistance. This unique aspect of an officer's job promotes an atmosphere subject to public scrutiny and in some cases, civil action. It is increasingly common for private citizens to take legal action against law enforcement agencies. Civil suits alone have increased dramatically since 1960 (Archbold and Maguire, 2002). To provide a more accurate account of what has transpired, and to ensure that citizens and officers are not being targeted with false accusations, video evidence is becoming increasingly useful.

Today the majority of Americans have cell phones with video capability and by the end of 2014 more than 80% of citizens are expected to have this feature (Sterling, 2013). Police departments are under pressure to advance their use of technology for crime control at the same time as these tools are rapidly diffusing through the general public. When citizens record video of an interaction between a police officer and a suspect, the tendency to capture only a piece of the incident is a common reality. Once

uploaded to the Internet, the potentially biased representation of the officer or citizen's actions has the ability to erode community trust, diminish police legitimacy, and complicate legal proceedings.

Recently, there has been an intense focus on the possible improper use of stop, question, and frisk searches in New York City over-targeting minority citizens. This tactic has harmed police-community relations and perceptions of the police, especially among minorities (White, 2014) and has been known to occur disproportionately in minority communities (Fagan, Geller, Davies, and West, 2010). Judge Scheindlin included in the NYPD's decree a statement indicating that they are to begin using video camera technology. She wrote that cameras:

> *"Will provide a contemporaneous, objective record of stop-and-frisks allowing for the review of officer conduct… [that] may either confirm or refute the belief of some minorities that they have been stopped simply as a result of their race… Thus, the recording should also alleviate some of the mistrust that has developed between the police and the black and Hispanic communities, based on the belief that stops and frisks are overwhelmingly and unjustifiably directed at members of these communities,"* (Floyd et al. v. City of New York, Case 1:08-cv-01034-SAS-HBP, p. 26-27).

With the onset of a new generation of officers equipped with OVC's, the presence of a camera may promote increased police legitimacy in the eyes of the public simply due to the perception of greater accountability. The camera may impart a sense of

responsibility and authority because the line officer's actions can be monitored during an interaction. The use of cameras has raised several questions about how citizens and police work together and whether the camera influences this relationship. Research has shown that humans become more self-aware when they are being watched, and as a result, they are more likely to alter their conduct (Farrar and Ariel, 2013). This is appealing to police leadership in terms of the potential to improve police services and reduce civil liability, but it also alters the citizens′ behavior, and makes them accountable as well.

While reducing citizen complaints and enhancing evidence for prosecutions are critical outcomes in determining OVC effectiveness, there are more pressing questions that need to be answered in order to assess the utility of on-officer video cameras in policing. Specifically, the development and implementation of new police interventions, whether strategic or technology-based, is impacted by the way officers perceive and adjust to these new tactics. The question of how policy and officer assignment affect the use of technology in the field is unexplored with regard to on-officer video cameras. Developing policies and assigning officers in a way that increases the use and legitimacy of the technology will ensure the sustainability of the program. This paper focuses on the underlying issues concerning how policy and officer assignment affect the use and activation of OVC′s, and how officers interact with citizens during field contacts.

CHAPTER 2

LITERATURE REVIEW

The use of video surveillance in policing dates back to 1956 when cameras were used to regulate behavior at traffic lights. In 1960 the first use of pan-tilt cameras was set in place by police to monitor crowds during visits to Parliament in Trafalgar Square (Norris, McCahill, and Wood, 2004). Shortly thereafter, the use of video technology began to blossom in London with advances in commercially available Closed Circuit Television (CCTV) cameras. Through its sustained use, the United Kingdom has been at the frontrunner in adopting CCTV technology (Goold, 2004). Law enforcement agencies in the United States, however, have been slower to adopt CCTV's in public spaces. In 2001, about 25 cities in the US were using CCTV for security or surveillance in public areas (Nieto et al., 2002). Although the onset of public surveillance was slower in the US, (since the terrorist attacks on September 11, 2001), the video surveillance industry has rapidly evolved into a multibillion-dollar industry (Norris et al., 2004; Savage, 2007). While video surveillance has become a widely accepted tool for major institutions such as banks, malls and universities, it is still seen by some citizens as a questionable practice on public streets and in residential neighborhoods (Nunn, 2001).

Most research on video technology has focused on the use of closed circuit CCTV for crime prevention. Rooted in rational choice theory, the purpose of installing CCTV's for crime control is to make potential offenders aware that their activities are being scrutinized. With this recognition, the offender may come to associate criminality in that setting with a heightened risk of apprehension and prosecution. Although rationality is limited by the availability of information and the mental state of the offender, the

elevated risk of detection tends to outweigh the anticipated benefits of the crime (Cornish and Clarke, 1986). The presence of CCTV cameras may also give offenders the impression that the community values guardianship (Welsh and Farrington, 2009), and that potential targets are harder to breach than they appear (Wilson and Kelling, 1982). It is worth noting, however, that a number of studies have found the installation of CCTV to have displacement effects; that is, offenders divert their illicit activities to alternative settings (Ratcliffe, Taniguchi, and Taylor, 2009) and crime is not technically reduced.

The looming question, however, is whether the resources being spent on CCTV technology is related to any sort of crime decline. A meta-analysis conducted by Welsh and Farrington (2009) found that CCTV's do cause "a modest but significant decrease in crime," (p.716) but its impact may depend on the research site. The use of CCTV in parking decks and lots showed a more significant reduction in crime than in public housing and downtown areas (Welsh and Farrington, 2009). The authors note that some of the evaluation work in this area has methodological limitations, such as low statistical power and biased site selection. Interestingly, Welsh and Farrington suggest that early evaluations of mounted CCTV cameras brought about an emphasis on officer safety as an outcome measure, which led to the development of dashboard cameras.

Dashboard cameras first appeared in the 1960s; the camera was set up on a tripod that took up the entire passenger seat of a patrol car (IACP, 2004). They became more common in the 1980's when self-contained visual recording systems were introduced. In order to assist law enforcement agencies in purchasing the technology, the Office of Community Oriented Policing Services (COPS) provided millions of dollars in block grants to departments that were interested in developing video surveillance systems.

From a police management point of view, a camera mounted in a patrol vehicle was expected to deter assaults on officers, increase citizen compliance, and make for a safer working environment. Additionally, the video evidence could be used to discourage and investigate reports of racial profiling of motorists.

Most departments view dashboard cameras favorably and use the technology in their own jurisdictions at least in some capacity (Harris, 2010). The International Association of Chiefs of Police (IACP) conducted an evaluation of department use of dashboard cameras. In addition to increasing officer safety, agencies also reported that dashboard cameras improved accountability, simplified the incident review process, and enhanced their training curriculum (IACP, 2003; 2004). Patrol officers reported that the technology prompted them to pay more attention to following protocol and how they were treating suspects and citizens (Harris, 2010).

Citizen advocacy groups have also voiced support for dashboard cameras as a tool that can have a civilizing effect on police-citizen interactions by holding disrespectful or inappropriate behavior in check. In 2000, a group of citizens used video files from New Jersey State Police dashboard cameras to refute over a dozen complaints about police misconduct filed by motorists who had been stopped for traffic violations (National Public Radio, 2000). Conversely, in another widely publicized case in Indiana, citizens referred to a dashboard camera recording of an officer assaulting a suspect after a traffic stop to highlight the abuse of authority and bring punitive actions against the officer (Associated Press, 2000).

With concerns for accountability and civil liability ever present, police departments must be flexible in their willingness to integrate new technology into their

law enforcement practices. As a result of recent advancements in video technology, it is natural that the limitations of the dashboard camera were absolved with the emergence of an on-officer video camera that had the ability to follow the officer when they left the vehicle, out of a dashboard cameras view. On-officer video cameras, much like CCTV, first emerged in the United Kingdom in the form of body worn head cameras. In 2005, field testing began for a full-scale study on police use of body-worn video cameras. The Home Office report Guidance for the Police Use of Body-Worn Video Devices (2007) indicated improvements in evidence being recorded in real time because of greater accuracy and fewer discrepancies about the timeline of events. Use of the camera also reduced the occurrence of "he-said/she-said" conflicts during event recollection. Crime reports were made more efficiently and easily accessible for future reference, which resulted in faster resolutions of guilty pleas. In turn, officers spent less time in court and preparing paperwork. The Home Office also noted that public order offenses seemed to decline when citizens realized that officers were wearing body-worn video cameras.

Police departments in the United States have just begun to experiment with on-officer video technology. Commander Mike Kurtenbach of the Phoenix Police Department (PPD) described their transition from in-car to body worn cameras, "Because the way we do business in municipal law enforcement, we don't do a lot of work inside the car. So the chief at the time thought it prudent to pilot body worn cameras" (White, 2014). Law enforcement agencies are beginning to pilot varying forms of this technology that range in cost, size, and device placement. The most widely adopted devices in the US are currently TASER International's Axon Flex and Axon body cameras. Other manufacturers that have video devices on the market include Vievu, Panasonic, Watch

Guard, and Wolf Enterprises. The Axon body and Vievu devices are similar in that they are typically attached to the officer's shirt using a steel clip, while the Axon Flex is worn on a wrap-around headpiece Oakley sunglasses, collar mount, ball cap mount, helmet mount, in dash car mount, and more. There is a cord that connects the camera device to the battery pack that can be placed anywhere on the officers belt, or vest. The technologies differ in complexity of use, recording options, storage, and data retrieval capabilities. The Mesa Police Department in Arizona adopted the Axon Flex for a pilot program in 2013, while at about the same time the Phoenix Police Department adopted the Vievu technology. In Mesa, the officers have been provided with a tablet device that allows for the video to be uploaded immediately in the field.

The long-term cost of integrating on-officer video technology is related to data storage. The amount of video files uploaded and storage space used in one month can be enormous, depending on the number of devices used and the department's activation policy. Preliminary field tests suggest that the average amount of video recorded by officers wearing on-officer video cameras in Oakland, Mesa and Phoenix is somewhere between 30 and 40 minutes, but this figure varies by assignment, number of field contacts, and whether the department has a mandatory or discretionary activation policy. Policy also determines the length of time that video files must be stored in evidence based on the type of event recorded (NIJ, 2012). There are several options departments may choose when storing data. TASER International provides a digital evidence management program Evidence.com to assist departments in uploading, labeling, and linking video files to incident reports. Agencies may also manage data storage in house, depending on the size of the department and its IT capabilities. Maintaining and storing

video evidence is critical for monitoring the chain of custody and preparing video footage for review by patrol supervisors and the prosecutor's office. The department's ability to easily access and redact video files is vital for the technology to be sustainable.

Whether being used to prosecute criminal cases or investigate police misconduct, the ability to review the sequence of events during a police-citizen contact from start to finish allows for a more accurate picture of what transpired. The body worn cameras have the potential to assist in separating legitimate complaints from meritless ones. Police agencies that are evaluating the technology have reported that on-officer video recordings have played a role in discrediting false complaints. "To those wishing to make complaints about police action at the scene… In a number of cases the complainants have reconsidered their complaint after this review" (Harris, 2010, p.10).

The use of on-officer video provides a source of accountability for line officers that spend much of their time in the field working in small unsupervised groups. Police departments that are transparent in their procedures have more favorable police-community relations and greater police legitimacy (Frank, Smith, and Novak, 2005). The process of building legitimacy through fair and reliable procedures is a cornerstone of police work because it ensures support from the public and increases compliance. In fact, increasing the quality of citizen contacts will lead to a reduction of crime by itself (Sherman, 1997). Transparency in a department's on-officer video camera policy allows for greater public scrutiny and participation in the administration of justice, and offers citizens a glimpse into the complexities of police work and how video evidence is reviewed.

The ability to analyze events frame by frame gives police an opportunity to move away from focusing on the final frame of an incident. Police investigations of officer-involved shootings have traditionally focused on the events immediately preceding the officer's decision to use force (Fyfe, 1986). This can lead to an overly narrow view of the incident without an understanding of the broader context in which actions were carried out. The split-second syndrome refers to this preoccupation with the officer's decision-making process in the final moments of a critical incident. If the officer makes a controversial decision under pressure, the conduct review depends on this broader contextual understanding that is sometimes omitted without video evidence. With this technology, the video evidence has the advantage of providing more information about what may have initiated the encounter and led to the lethal exchange (Home Office, 2007). Departments would therefore be more prepared in making sound decisions about the appropriateness of an officer or citizen's actions in specific situations.

The physical presence of video cameras has been shown to alter the behavior of individuals who are aware that they are under scrutiny. People tend to act within accepted social boundaries and adapt their behavior to be more acceptable when someone else is watching (Munger and Shelby, 1989). Awareness is a fundamental component in video camera effectiveness. According to Commander Mike Kurtenbach of the PPD, "What we are seeing, again early on, is that the technology has a civilizing effect among those that we serve" (White, 2013). This appears to be a recurring theme, as the Police Standards Unit in Plymouth, England also reported that officers wearing video cameras noticed a reduction in aggressive behavior from citizens when they arrived at a crime scene (Home Office, 2007).

It may also be the case that officers are more self-aware and cautious in their actions when they activate a body worn camera during a citizen contact. The Rialto Police Department reported that the presence of the body worn camera did impact officer behavior (Farrar and Ariel, 2013). Using official data, the researchers found a 50% reduction in use of force incidents among camera officers. It is unclear, however, whether the decline was associated with changes in officer or citizen behavior due to the camera presence. Police Chief Farrar remarked, "When you put a camera on a police officer, they tend to behave a little better, follow the rules a little better. And if a citizen knows the officer is wearing a camera, chances are the citizen will behave a little better" (Lovett, 2013).

The Mesa Police Department's evaluation of on-officer video cameras, which provided data for this thesis, also revealed a 48% reduction in citizen complaints against camera officers for misconduct during the study period, and a 75% decline in use of force complaints. When complaints were brought to Mesa PD, they were resolved quickly due to the accessibility of video evidence. In Rialto, Chief Farrar noted that, "In some cases, citizens have come to the police station to file a complaint and decided not to after they were shown the video of the incident (Lovett, 2013). The U.K. Home Office reported similar occurrences (Police and Crime Standards Directorate, 2007).

To date, field tests and pilot studies of on-officer video technology have focused on its impact on police misconduct using official data. There is a scarcity of research, however, investigating how body cameras affect everyday police-citizen interactions, how police work is carried out on the street, and whether citizens who have contact with camera officers experience changes their trust, confidence, and satisfaction with police.

Before the widespread diffusion of this technology occurs, it behooves researchers to take a closer look at how the surveillance revolution is going to impact how citizens and police officers relate to each other, and how the coming flood of video evidence might change the way our justice system operates. "If the presence of the camera has an effect on the behavior of police officers, making them more likely to hew to proper legal and constitutional standards, that is reason enough to move toward the use of these devices" (Harris, 2010).

If body worn cameras become a standard tool for patrol officers, departments must be able to implement policies and officer assignment to camera programs in a rational and effective manner. So far, there have been no studies examining how departmental policies (e.g., mandatory versus discretionary activation) and officer assignment (e.g., voluntary versus mandatory assigned) affect the use of body worn cameras, citizen behavior and police actions taken during field contacts. The importance of departmental policy in an agency is directly linked to the focus of the police department's overall mission and how it thinks about civil liability (Alpert and Smith, 1994). A key question is whether a strict-control policy (mandatory activation) or a discretionary policy is a better predictor of use and endorsement. The latter finding would suggest that a strict policy is impractical or based on faulty logic (Alpert and Smith, 1994).

When new police technology is implemented, officers must "develop particular assumptions, expectations and knowledge of the technology, which then serve to shape subsequent actions toward it" (Orlikowski and Gash, 1994: 175). Orlikowski and Gash refer to this framework as developing a 'technological frame'. The technological frame

can be helpful or detrimental to long-term sustainability of the program. The fact that line officers do not often meet new technology with open arms may be detrimental at the outset of the program. Officers may be resistant to changes in their routines, especially when it comes to new administrative tasks that disrupt their normal work activities. There is a universal desire for predictability in policing and other dangerous occupations where symbolic assailants are a continuous threat to officer safety. New technology may disrupt established patterns of behavior, creating a sense of distrust felt by officers. Mid-level managers must be open to line officers' feedback and concerns early in the process in order for the program to be effective and gain legitimacy in the eyes of the rank-and-file. If officers are actively involved from the beginning in shaping new interventions such as a body worn camera programs, studies have shown that the transition will be met with fewer obstacles (White, 2014). Early involvement has the potential to acclimate and shape officers views more favorably because they will come to have greater investment and more reasonable expectations about the program. In turn, this may lead to the diffusion of ideas and attitudes that increase legitimacy of the cameras to other officers who may be more skeptical.

Orlikowski and Gash identified three domains of the technological frame: the nature of the technology (the individuals' understand of what the physical device consists of), the strategy for adopting the technology (why it was introduced), and technology in use (understanding of how the technology is to be used) (Chan, 2001). Police department employees may come to have a different understanding of these different domains depending on their social groups, their role within the organization, and how they interact with others. Street-level officers may feel their autonomy is threatened by the potential

for greater surveillance and oversight that comes with a technological innovation. When this happens, it is possible that they resist or attempt to undermine the operation (Chan, 2001).

Following this logic, it is crucial that with the implementation of a body worn camera system, or technology of any sort, a department must be cognizant that it is not just a technical and physical adaption, but also the social adjustment that must be considered (Chan, 2001). The way the new technology fits into the existing police culture is salient in helping to shape policy surrounding the technology. Policy is a key factor that impacts the success and sustainability of the program.

Police departments will need to decide whether the assignment of officers to the program is going to be mandatory or voluntary, and this may be particularly salient in implementing on-officer video camera systems. Does the department use mandatory assignment where all patrol officers wear cameras, and where officers have little choice in the matter? Or do they allow the device to be worn by only those who choose to volunteer in response to an internal request (i.e., voluntary assignment)? Additionally, when officers are wearing the video cameras in the field, should the department use a mandatory activation policy where they must turn it before every police-citizen contact or should the department adopt a discretionary policy that gives autonomy to the officer in making this decision? It is possible that a more rigid or inflexible form of management control could convey to line officers a message of distrust or stifle their ability to make sound decisions under pressure (Alpert and Smith, 1994). On the other hand, policies that are too unstructured may leave too much discretion to the officer on the street,

leaving the potential benefits of cameras in terms of accountability and prosecutions to be unrealized.

The effects of policy on program implementation can be measured in terms of dosage. To investigate how body worn cameras impact officer and citizen behavior, it is first necessary to have accurate information about the number of devices worn in the field, and more importantly how often they are being activated, how long, and under what circumstances they are being used. With a discretionary policy in place, mandatory assigned officers who are unsupportive of the cameras may be less inclined to activate them before interacting with citizens. On the other hand, officers who openly endorse the use of body worn cameras may have higher activation rates under the discretionary policy. This potential discrepancy in use from officer to officer will create variability in treatment dosage under the same policy, and may impact performance and outcome measures. Under a mandatory activation policy, officer discretion is greatly reduced yet enthusiasm and the perceived legitimacy of the technology will still vary. This in turn may affect job satisfaction and how officers relate to citizen during field contacts.

Officers' opinions and knowledge about the body worn cameras are not static, but will change over time through experience and repeated interactions with other officers in their squad who may or may not view the technology as legitimate. It is useful for departments to understand how officers' attitudes about body worn cameras can spread through social networks and working groups. Just as citizens have vicarious or indirect experiences that affect their perceptions of the police (Rosenbaum, Schuck, Costello, Hawkins and Ring, 2005), the legitimacy of the cameras may depend on how quickly informal communications among line officers can generate "buy-in" and endorsement in

the field. If departments are cognizant of officers who are proponents of the technology, it may be possible to leverage those individuals as change agents who can translate management justifications for the cameras into practical benefits that are more palatable to the rank-and-file.

The long-term effectiveness of the technology will depend on who uses it, and when and how it is used. This study examines how department policy and officer assignment affect the use and endorsement of on-officer video cameras, controlling for the characteristics of police-citizen encounters. The paper also investigates how policy and assignment impact social interactions between citizens and officers wearing cameras on the street. The purpose of the study is to add to our understanding of how organizational procedures affect the legitimacy and spread of new technology, and assist departments in developing their own policies.

CHAPTER 3

METHODOLOGY

Data for the present study were obtained from a larger field experiment conducted by the Mesa Police Department (MPD) in Mesa, Arizona. The data collection and analysis were carried out by a partnership between the MPD and faculty at Arizona State University to evaluate the adoption of the on-officer video camera system. In November 2012, the Mesa Police Department initiated a 10-month evaluation of the Axon Flex on-officer video camera system. The evaluation focused on the cameras ability to increase officer accountability, reduce citizen complaints, and enhance criminal prosecutions.

The team responsible for the larger study involved the Mesa Police Department's Red Mountain Division Commander, a Lieutenant in charge of the evaluation, and a Sergeant who served as head of analysis for the operation. Additionally, the evaluation team consisted of two faculty members and several graduate students from Arizona State University's Department of Criminology and Criminal Justice. The research participants included 100 patrol officers who were spatially distributed throughout the city of Mesa, rather than being concentrated within one patrol district, as is often the case with pilot studies of new police technology.

The larger study involved a quasi-experimental design in which 50 officers were assigned to wear the on-officer video cameras (the treatment group) and 50 officers were assigned not to wear the cameras (the comparison group). Figure 1 provides an assessment of treatment and comparison group officer characteristics. There were no differences between the two groups that were statistically significant at the .05 alpha level. Within the treatment group, half of the officers (n=25) were randomly selected to

wear the cameras during the study period (mandatory assigned), and the other half (n=25) volunteered to wear them in response to an internal memo requesting volunteers (voluntary assigned). This allowed for a comparison of mandatory and voluntary assigned officers across a number of outcome measures.

Figure 1. Officer Characteristics

Characteristics	Treatment Group (n=50)	Comparison Group (n=50)
Years policing experience	9.9	10.9
Age (years)	35.8	37.6
Race (non-white)	24.4%	27.1%
Rank (officer)	98.3%	100.0%
Education (4-year degree)	25.8%	26.0%
Gender (female)	8.3%	10.0%
Complaints (previous year)	44.4%	37.6%

Due to the relatively small sample size within the two types of assignment to the treatment group, treatment officers were matched to the 50 comparison officers on a case-by-case basis according to key characteristics, which included age, race, gender, and prior complaints. This method of identifying comparison officers through matching is what defines the study design as quasi-experimental and was felt to be most appropriate in order to safeguard the equivalence between the two groups. Data pertaining to the treatment and comparison officers were collected at a number of points in time before and after the body worn cameras became operational in the field.

Data collection for the larger study proceeded in three stages. First, the officers were administered an officer perception survey quarterly throughout the evaluation period, four times in all. The officer perception survey was administered to the 100 study officers in the same week, during a half hour briefing (or roll call) at the beginning of

their shift. The focus of the officer perception survey was to track changes in the officers' opinions and attitudes about the body worn cameras over the course of the evaluation. Subject matters within the survey included measures of helpfulness/utility, administrative burden, citizens' reactions, police officer actions, comfort of use and general perceptions of the body cameras.

The second data collection component involved officers filling out field contact reports after every police-citizen contact on randomly selected days of the evaluation period. One 10-hour shift per month was selected for each of the 100 officers. A total of 160 days were selected for data collection in order to accommodate all of the officers who worked in different precincts and on different days and shifts. The field contact reports captured information about how the contact was initiated, citizen cooperation, disrespect, suspect resistance, police use of force, stop and frisks, citations, arrests, and suspect/victim characteristics. The report also contained a question that asked the officer how helpful body worn cameras are in that type of situation.

The final data collection component involves a telephone survey of 600 citizens who had contact with treatment officers and 600 citizens who had contact with comparison officers. The sampling frame for the citizen survey was generated based on calls for service to the Mesa Police Department over the prior six months. The telephone surveys, which will be conducted in the summer of 2014, include measures of satisfaction, trust, and confidence in the police, as well as indicators of police legitimacy and procedural justice.

For the current study, data from all field contact reports involving treatment officers were selected for analysis in order to answer the research questions relating to

how policy and assignment affect police-citizen interactions and officer's willingness to activate body worn cameras in the field. There were a total of 3,698 field contact reports completed by 100 treatment and control officers over the study period. This analysis draws from 1,676 field contact reports completed only by treatment officers assigned to wear the cameras. Thus, the analysis includes data on 1,676 police-citizen contacts involving 50 treatment officers over a 10-month period.

Halfway through the study, the department policy on how officers were to use the cameras was altered. During the first 5 months of implementation (Nov 1, 2012 to Apr 23, 2013), officers were directed "when practical, officers will make every effort to activate the on-officer body camera when responding to a call or have any contact with the public" (Mesa Police Department, 2013). Specifically, under the mandatory activation policy, officers were instructed to activate the camera as they approached the scene of the call or point of initiation. The camera policy was changed to discretionary activation during the last 5 months of the evaluation period (Apr 24, 2013 to Oct 1, 2013). During this period officers were given the latitude to "exercise discretion and activate the on-officer body camera when they deem it appropriate" (Mesa Police Department, 2013). During the discretionary policy, camera activation may have occurred at any point during the interaction with the citizen, not necessarily before the contact was made. This change in policy allows for a comparison of camera use and activation behavior under the different policy guidelines, which will be a focus of the analysis.

Analytic Strategy

First, bivariate analyses will compare voluntary and mandatory assigned officers on their use of the cameras and police actions taken during field contacts. Second, bivariate analyses will compare field contacts under the discretionary and mandatory policies on use of the cameras and police actions taken during field contacts. Third, Chi square tests (with a continuity correction) will be used to examine whether the officers thought the cameras were helpful under the two different policy and officer assignment conditions. Fourth, logistic regression models will be used to estimate the effects of policy and officer assignment on camera activation, controlling for characteristics of the police-citizen contacts. Only the policy and officer assignment variables and statistically significant control variables ($p < .05$) are included in the final model.

Dependent Variable

The dependent variable used in the multivariate logistic regression model is camera activation (Q20b_Activate_Camera). This is a dichotomous variable indicating whether or not the officer activated the body worn camera during the police-citizen encounter. In the field contact report the officers were asked, *"Did you activate the body camera during the incident?"* The variable is coded 0 for no activation and 1 for activation. Camera activation was chosen as the outcome measure because, in terms of behavior, it is the most visible form of endorsement of the technology by police officers. Whether or not officers consistently use the technology, and how they use it under the two different policy and assignment conditions may offer insights on how department procedures influence the efficacy of on-officer video camera systems.

Independent Variables

Two independent variables were used to investigate officers' use of the cameras, police actions taken during field contacts, and the likelihood of camera activation. The first was department policy (Policy_Change). This variable was coded 1 if the police-citizen contact occurred under the mandatory activation policy and 2 if it occurred under the discretionary activation policy. This reflects the department's mandate or directive on camera use, and it may also influence perceptions of camera legitimacy.

The second independent variable is officer assignment to the program – whether they were voluntary (coded as 2) or mandatory assigned (coded as 1). It is reasonable to expect officers who volunteered to wear the cameras in response to an internal request to feel differently about the technology than those who were assigned to wear the device through a random selection process. This allows for analysis of whether the assignment process impacted the officers' use and endorsement of the cameras over the study period.

Control Variables

In order to properly assess how policy and assignment relate to video camera activation, a set of control variables were introduced into the logistic regression model. These controls include whether the call or incident was violent (Violent_Call(1)), coded as violent=1 and non-violent=0. Additionally, the model takes into account whether any other officers were present (Q9_Other_Officers_Present) (*"Were other police officers present?"),* whether a supervisor was on the scene (Q20f_Supervisor_On_Scene) ("Was a supervisor on the scene during the incident?"), and if any bystanders were present

(Q10_Bystanders_Witnesses_Present) ("*Were any bystanders or witnesses present*?"), all of which were coded as no=1 and yes=2. Finally, the patrol shift (Q2_Shift) was included as a categorical control variable, with the day shift specified as the reference category (coded as day shift=1, swing shift=2, grave shift=3, and other shift=4).

Bivariate Analyses

Figure 2 displays the bivariate correlation matrix for the independent, dependent and control variables. Correlations between the measures were assessed using a Pearson's r value of .70 as an upper limit indicating high collinearity. Correlation coefficients between several variables were statistically significant, but all correlations were below .15. Further, VIF scores did not exceed 4 suggesting that multicollinearity was not a problem. When looking at variables of interest, a significant but weak relationship was found between policy and assignment ($r=-.042$, $p<.05$), assignment and camera activation ($r=-.012$, $p<.05$), and assignment and policy ($r=-.091$, $p<.01$). The strongest Pearson's r value in the matrix is the correlation between the presence of other police officers and bystanders on the scene of the call or incident ($r=.154$, $p<.01$). This is expected give that more bystanders at an incident can signal to dispatchers a need for more police presence.

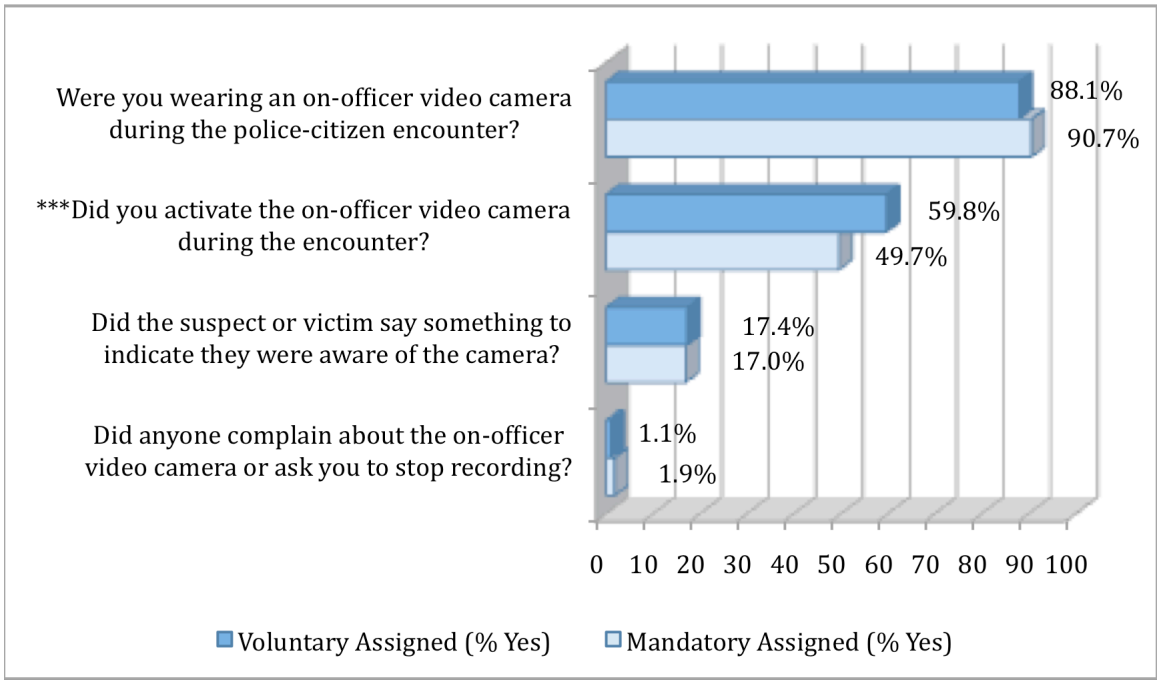
Figure 2. Bivariate Associations between Study Variables

	Y	X1	X2	X3	X4	X5	X6	X7
Y Camera Activation	-							
X1 Policy	-.042*	-						
X2 Assignment	-.012*	-.091**	-					
X3 Shift	-.010	-.011	-.032	-				
X4 Bystanders Present	.013	-.013	.027	-.021	-			
X5 Other Officers Present	-.050**	.022	.025	.079**	.154**	-		
X6 Suspect Present	.238***	.056*	.015	-.126***	.116***	.064**	-	
X7 Supervisor On Scene	.028	-.033	-.038	.062*	.119***	.185***	.024	-

Notes: Table Reports bivariate associations (Pearson's r) for each variable.
***p≤.001, **p≤.01, *p≤.05, (two-tailed test)

Of the treatment officers studied, the following bar charts represent a breakdown of the field contact information over the duration of the study. Of most importance for this particular analysis are the comparisons between policy periods and the type of assignment to the program the officer received. When looking at these different aspects that may impact field contact information, it is most important to look at how officers use the cameras, as well as different questions to help understand how officer behavior is affected by the cameras presence.

Figure 3. Use of On-officer Video Cameras: Voluntary vs. Mandatory Assigned Officers

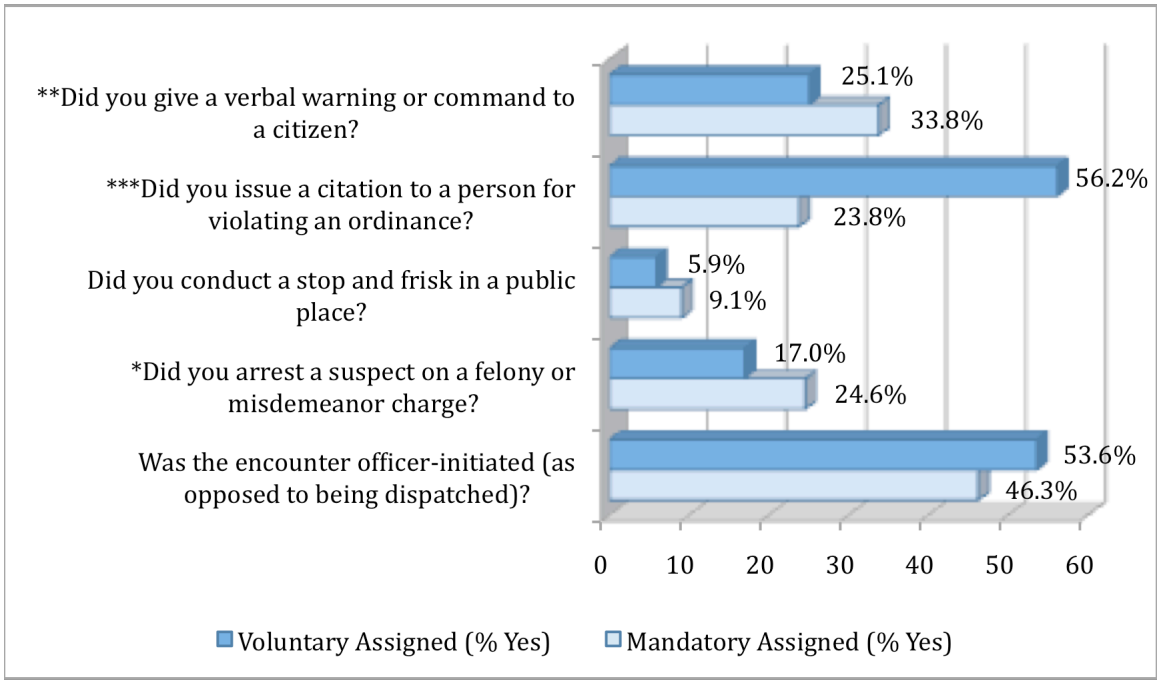


***Chi-square (with continuity correction)=15.907; df=1; p < .001

Figure 3 presents some initial comparisons between officers who volunteered for the program and officers who were mandatorily assigned to the program and how their use of the cameras differed. It is interesting to note that the only significant element was whether the officer activated the camera during the encounter (p<.001). Officers that

volunteered for the program were about 10% more likely to activate their camera during an interaction with a citizen than the officers who were assigned to wear the cameras.

Figure 4. Police Officer Behavior: Voluntary vs. Mandatory Assigned Officers

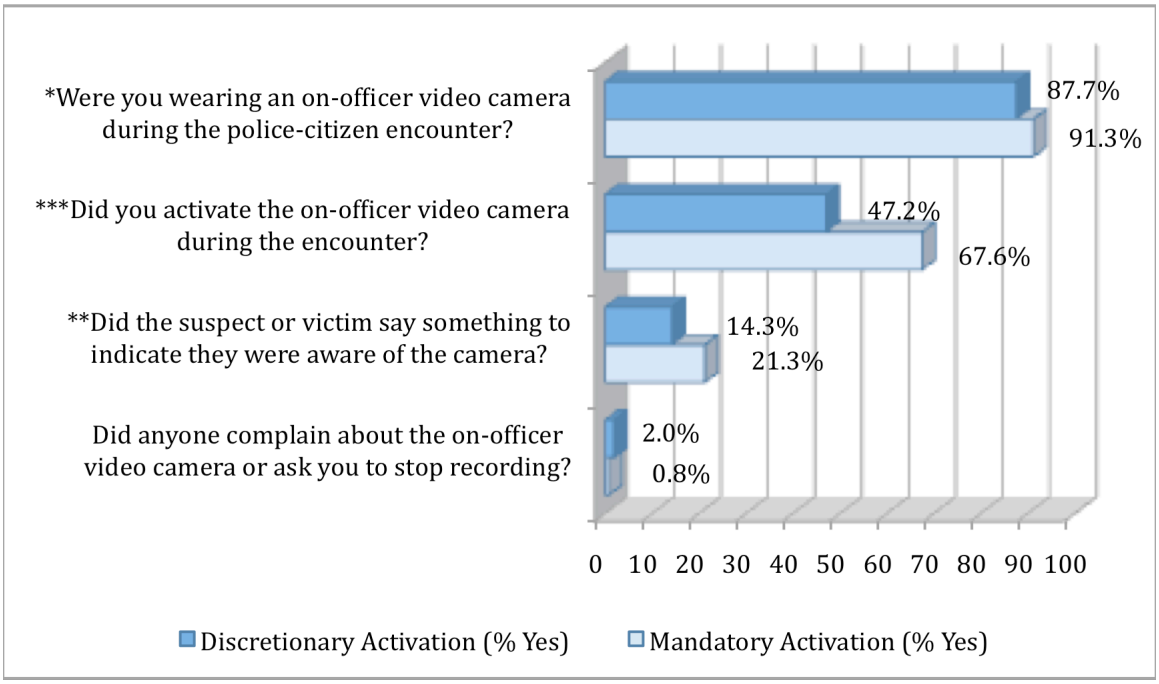


*Chi-square (with continuity correction)=5.217; df=1; $p < .05$
**Chi-square (with continuity correction)=5.625; df=1; $p < .05$
***Chi-square (with continuity correction)=69.252;df=1; $p < .001$

Figure 5 demonstrates the differences in officer behavior between voluntary and mandatory assigned officers in the study. Interestingly, three factors become significant. First, the likeliness to give verbal warnings or commands to citizens are higher for the mandatory assigned group than the voluntary group ($p<.01$), about 9%. Additionally, officers that volunteered for the program were almost twice as likely to issue a citation to a person than the mandatory group officers ($p<.001$). While voluntary officers are more

likely to issue citations, mandatory officers were more likely to arrest suspects on felony or misdemeanor charges (p<05).

Figure 5. Use of On-officer Video Cameras:
Discretionary vs. Mandatory Activation Policy



*Chi-square (with continuity correction)=4.756;df=1; p < .05
**Chi-square (with continuity correction)=6.518; df=1; p < .01
***Chi-square (with continuity correction)=63.589; df=1; p < .001

The importance of policy in this analysis is a crucial key. The policy changed from mandatory to discretionary halfway through the evaluation. This allows us to compare officer behavior during each period to determine if there were differences in how they used and felt about the cameras. Some interesting findings resulted.

Figure 6 demonstrates that there were differences in how officers were using the cameras during the two contrasting policy periods throughout the evaluation. Officers were more likely to be wearing the video cameras during the mandatory evaluation period than they were in the discretionary period (p<.05). While this difference is about

4%, it is a statistically significant difference. Additionally, officers were much less likely to activate the video cameras during encounters during the discretionary period than the mandatory period, about 20% less likely ($p<.001$). This is a significant drop indicating that policy has an effect on how officers are using the cameras. Lastly, suspects and victims were more likely to indicate they were aware of the cameras during the mandatory period than the voluntarily period ($p<.01$). This may be due to numerous factors, possibly officers were wearing the cameras differently during the two periods or making more gestures to draw a suspect or victims awareness to the camera.

Figure 6. Police Officer Behavior: Discretionary vs. Mandatory Activation Policy

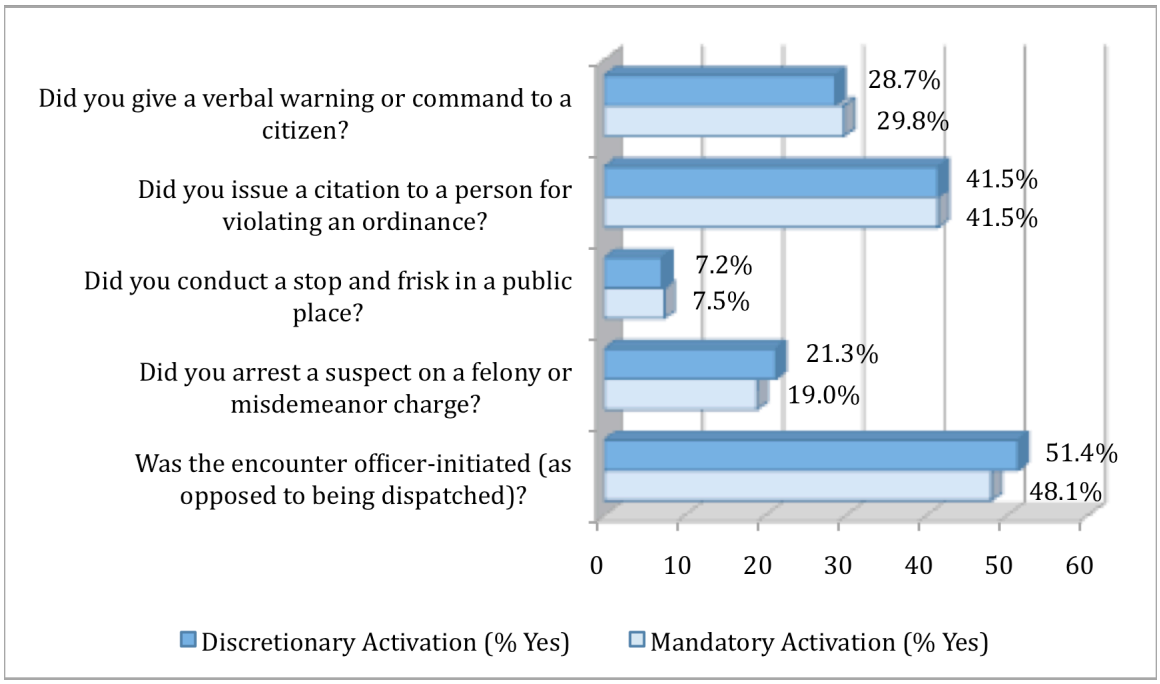
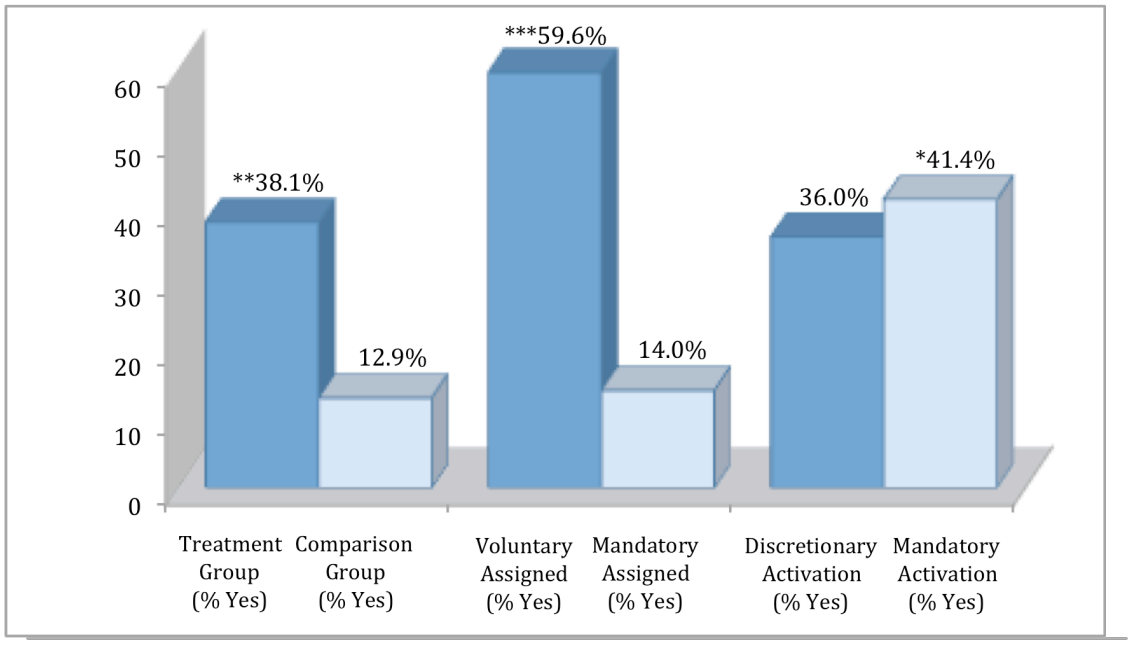


Figure 7 shows that police officer behavior stayed significantly consistent throughout the policy changes during the evaluation. There was very little variation in how officers interacted with citizens, regardless of the policy enacted. The officers were

just as likely to issue citations, and to give verbal warnings to citizens, as well as almost just as likely to conduct stop and frisks, arrest suspects, and initiate encounters.

Figure 7. Do you think the use of on-officer video cameras is helpful in this type of police-citizen contact?



*Chi-square (with continuity correction)=4.416; df=1; p < .05
**Chi-square (with continuity correction)=296.564; df=1; p < .001
***Chi-square (with continuity correction)=353.630;df=1; p < .001

Overall, there were significant differences between all groups when asked if the video camera was helpful in this type of police-citizen contact (Figure 6). The treatment officers found the cameras to be helpful in almost three times more contacts than comparison officers (p<.01). Additionally, voluntary officers (59.6%) were much more optimistic about camera helpfulness than mandatory officers (14.0%) (p<.001). This is a significant difference between the two groups indicating the officers that volunteered held much more favorable views towards the helpfulness of video cameras than those who were assigned to wear them. Lastly, officers were more likely to find the cameras

helpful during the mandatory activation period (41.4%) than during the discretionary period (36.0%) ($p<.05$).

CHAPTER 4

MULTIVARIATE FINDINGS

Logistic Regression Models

Logistic regression was used to predict the dichotomous outcome variable camera activation (yes/no). Three logistic regression models were used to estimate how the primary independent variables policy and officer assignment change in significance as control variables were introduced.

The first model (Figure 8, Model 1) was conducted to assess the relationship between departmental policy and camera activation. It shows that policy is statistically significant (Exp(B)=.429, $p<.001$). In this case we reject the null hypothesis that there is no relationship between policy and camera activation. The model has weak predictive power (Nagelkerke R Square= .053), but the $\chi 2$ significance indicates that the overall model is statistically significant ($p<.001$). The classification for this models prediction power was 79.5 indicating that we have correctly predicted 79.5% of the cases by the model.

Figure 8. Logistic Regression Models Predicting Camera Activation (N=1676)

	Model 1				Model 2				Model 3			
Variables	B	(S.E.)	Wald	Exp(B)	B	(S.E.)	Wald	Exp(B)	B	(S.E.)	Wald	Exp(B)
Policy Change	-.847	(.107)	62.233	.429***	-.839	(.107)	61.557	.432***	-1.061	(.121)	76.778	.346***
Assignment	-	-	-	-	.388	(.103)	13.148	1.474***	.141	(.118)	1.446	1.152
Officers Present	-	-	-	-	-	-	-	-	-.642	(.135)	22.783	.526***
Bystanders Present	-	-	-	-	-	-	-	-	.333	(.131)	6.511	1.395**
Suspect Present	-	-	-	-	-	-	-	-	.857	(.123)	48.275	2.356***
Supervisor on Scene	-	-	-	-	-	-	-	-	.390	(.168)	5.411	1.478*
Shift	-	-	-	-	-	-	-	-			28.142	
Shift(1)	-	-	-	-	-	-	-	-	.809	(.162)	24.944	2.246***
Shift(2)	-	-	-	-	-	-	-	-	.125	(.135)	.862	1.134
Constant	1.581	(.182)	75.708	4.858***	.971	(.242)	16.105	2.641***	1.037	(.406)	6.513	2.821**
Model $\chi 2$			65.372***				79.883***				301.929***	

Notes: Entries are (b) unstandardized logistic regression coefficients, standard errors and odds ratios
***p≤.001, **p≤.01, *p≤.05, (two-tailed test)

After adding assignment to the model, we can see in Figure 8, model 2 that assignment is also a statistically significant predictor of camera activation (Mandatory_Voluntary; Exp(B)=1.474, p<.001) and policy remains significant as well (Policy_Change; Exp(B)=.432, p<.001). As compared to mandatory assigned officers, being a voluntary assigned officer increases the odds of camera activation by 47%. At the same time, during the mandatory activation period the likelihood of an officer using his or her camera more than doubled (1/.432=2.31) compared to during the mandatory period. The overall model is significant with $\chi 2$ at the p<.001 level. Again, Nagelkerke R Square of .065 indicates the model has weak predictive power.

The third logistic regression model, Figure 8 model 3, includes the remainder of the control variables to give a more accurate prediction of factors that influence officer decisions to activate body worn cameras. . Again, we see policy holding its significance (Exp(B)=.346, p<.001) with the added explanatory variables. This suggests that, compared to the discretionary period, during the mandatory activation period the odds of an officer activating his or her camera more than doubled (1/.346=2.89). The officer assignment variable (Mandatory_Voluntary; Exp(B)=1.152) is no longer significant with the added control variables. This refutes the secondary hypothesis that how officers were assigned to the program would have an influence on how they used the on-officer video cameras. In terms of field contact characteristics, the presence of other officers (Q9_Other_Officers_Present; Exp(B)=.526, p<.001) is also a significant predictor of whether an officer activates his or her camera. When there are no additional officers present the odds of police activating the camera increase by 90% (1/.526) compared to when other officers are present at the incident. Similarly the presence of bystanders or

witnesses was a significant predictor of camera activation (Q10_Bystanders_Witnesses_Present; Exp(B)=1.395, p<.01). When bystanders are present, the odds of an officer activating the camera increase by46% compared to when there were no bystanders present. Whether a suspect was present was also significant (Q11_Suspect_Present; Exp(B)=2.356, p<.001). This indicates that the odds of a body worn camera being activated increases by 135% when a suspect is present at the call or incident in comparison to when no suspect is present. Also, when a supervisor is on scene the odds of camera activation increase significantly (Q20f_Supervisor_On_Scene; Exp(B)=1.478, p<.05). The presence of a supervisor increases the likelihood of an officer activating the video camera by 47%. Finally, the patrol shift was also a significant predictor of camera activation. This variable was a categorical measure with the day shift as the reference category (Q2_Shift (1); Exp(B)=2.752, p<.001), where officers were significantly more likely to activate the body worn cameras during the swing and grave shifts – particularly during swings which experience a heavier volume of crime related incidents.

QUALITATIVE OBSERVATIONS FROM THE FIELD

While the field evaluation was being carried out, the opportunity was provided to take several "ride-alongs" with officers from both the treatment and the control groups in the study. The information provided during observations and candid conversations was valuable in helping to understand officers' perceptions of the cameras in a way that the field contact reports cannot fully explain. Officers from the Mesa Police Department were fairly comfortable speaking about the costs and benefits of the camera technology.

After just a few minutes in the first briefing, it was clear there was a divide in the room concerning favorability of the body worn cameras.

Conversations concerning the cameras began when I was introduced by a sergeant as the reason the officers had to spend hours filling out surveys and extra paperwork. I was not received with genuine smiles. The lieutenant in charge of the briefing that morning discussed that, while he believes even he would have trouble adjusting to the cameras since he is older and less tech savvy, he finds them an important innovation. Because of the prevalence of cell phones and recording devices in the general public, citizens are recording the police fairly consistently. If police activities are being recorded, then the police need to think about recording their interactions with citizens in order to protect themselves. The lieutenant continued to discuss how easy it is to edit video files with advancing technology, and how important it is for line officers to have a video feed of actual (i.e., unedited) events to combat the YouTube hysteria showing incidents of police brutality. This theme seemed to be recurring during the ride alongs. Officers were aware of the potential value in the cameras, yet many of them felt they did not want to be at the mercy of the technology.

When one of the officers was asked if he thinks people notice that he is wearing the camera, he stated, "I would say 90% do, but only about 10% say anything about it". He said, "Very few people get annoyed. I think I have had maybe two people ask me to turn it off. They are mostly too caught up in the moment to notice or care". The camera is placed on the side of the officers' sunglasses or on a wraparound head strap making it fairly obvious that the officer is wearing a camera. Interestingly, most citizens are not outwardly concerned being videotaped, as many departments are worried they will

encounter citizen pushback and opposition relating to privacy concerns. This particular officer said he noticed much the opposite in his interactions with citizens.

One officer was vocal in his opposition to the cameras. He believed that the time it took to complete the extra paperwork and procedures relating to the technology was going to take officers off the streets. He noted that it is an added worry for officers and that it was not helping to fight crime so, "why do we even have them?" An additional concern that this officer expressed, and was reciprocated by other officers, was the "wearability" of the cameras. He explained that he is "skinny" and "hardly has any room on his belt for what is on there now". "They keep adding stuff to our belts. I would have to put on a bunch more weight - I only have so much room!"

Officers also expressed concern over taping things they were not supposed to. They do not want their every move being monitored and sometimes the line of when to record and when not to is unclear. The example of minors engaging in illegal or inappropriate activities made one officer question the sensibility of taping a minor without permission. Sometimes, officers feel incidents and conversations are just not appropriate to video.

A strong proponent of the video cameras did have a few logistic concerns that he felt were relevant. He stated that "they are throwing so much technology at us at once, and it's pretty hard to keep up with the constant changing of the technology and the updates and things". There is a learning curve to all new technology, but with the recent influx of new technology in police departments, it has become difficult to keep up with each new device and the ever-changing policies surrounding them. He commented on how much he liked the Axon Flex cameras much more than other body-mounted

cameras. He showed several online videos of the body-mounted camera and pointed out that the viewer cannot see where the officer is looking so it's more difficult to walk through the entire sequence of events with the officer. Then, if or when an officer draws his/her service weapon, it is often in the way of the camera lens making the video essentially useless. This officer likes the camera mounted on the sunglasses because it follows where his eyes go and shows the viewer what he is seeing at each point in time.

A more unexpected topic that was raised during conversation was that attorneys are starting to make arguments in court about using the on-officer video during DUI investigations. A number of attorneys have claimed that an officer's natural body movements could make the suspect appear to be swaying in the video more than they actually are. The officer found this to be irrelevant, claiming that in the video it is clear when someone is intoxicated, but noted that this may be a roadblock in using the cameras during DUI investigations in the future.

Officers more opposed to the technology were not afraid to voice their opinions, and this opposition was heard from all ranks. A sergeant that arrived on-scene for back up at an incident discussed how he informed the lieutenant that he refused to wear the body cameras. He was supportive of the cameras as a whole; he just did not want one. He joked that if he were assigned to wear one he would make sure he turned it on even in the most private situations during his shifts, such as in the restroom. His blatant distaste for the cameras was one that was repeated by several comparison officers, but not by a single treatment officer wearing the camera.

During one ride along, when a camera officer pursued a suspect fleeing on a motorcycle, an act that is typically against department policy, several officers expressed

concern about whether he was going to be reprimanded for his actions due to the camera footage. Officers were concerned that it was going to be seen as a reckless and unnecessary pursuit, which was going to result in sanctions for all of the officers present, such as having to sit through a briefing about safety. This raised an additional issue of drawbacks to the technology. While the pursuing officer may have felt it necessary in the moment to conduct the pursuit, he may have chosen not to because of the presence of the camera. If the body worn camera affects officers' decision making by hindering actions due to fear of reprimand, then there may be a need for policy to protect officers if they misstep. This officer may have stepped over the boundary in that instance, but the rest of the squad worried what the camera evidence would show.

In a final ride along, during a breakfast briefing with the lieutenant supervising the day shift, the squad discussed in detail the impending implementation of cameras department wide. Many of them said they were not looking forward to it, but they knew it was going to happen either way. The glitches and issues the Mesa Police Department has had to work through were referred to, and the idea that there needs to be a more streamlined process before they go department wide was raised. A comparison to when the department was told they needed to start speaking plain English on the radio rather than using dispatch codes were made. Officers said this transition was chaotic, and officers were unsure how to express themselves and the priority of a call without dispatch codes. Claiming it was a "cluster----" they stated that the department needs to make sure everyone is on the same wavelength with the cameras and usage requirements in order for it to be a successful transition.

Following the discussion about streamlining processes, many of the comparison officers asked about the comfort of the technology, and where they would put it on their own belts, which was a step in the right direction. They know it is coming, and as with all introductions of technology in the police force, it will be met with some push back. More interestingly, during the third ride along, two different calls came from dispatch requesting an officer with a camera. The lieutenant pointed out that in the past, requests for K-9 officers or drug tech officers were commonplace. Now, requests for camera officers on scene are starting to be more regular, which is denoting a shift in officer acceptance of the video cameras, that they are a potentially useful technology, and may be needed to protect them during a citizen encounter.

CHAPTER 5

DISCUSSION

On-officer video cameras are an emerging tool for police departments, and the implementation of this device is spreading faster than many departments have the ability to keep up with. While this study is the first to analyze how policy and officer assignment impact use of on-officer video cameras, there are some connections to be made with prior literature in reference to policy and officer acceptance.

While Alpert and Smith (1994) questioned whether strict policy is the best approach or if it is rooted in faulty logic, this study finds much the opposite. The impact of department policy on camera use remained a significant variable throughout each of the multivariate models while adding in controls for field contact characteristics. When officers were interacting with citizens under a mandatory policy, they were more likely to use the camera as opposed to during a discretionary policy. This is valuable knowledge for departments' adoption of any type of new technology program. What is known is that officers are often likely to resist any new technology (Orlikowski and Gash, 1994). By imposing a mandatory policy on camera use, there is little room for personal distaste of the technology to show through without potential red flags.

Interestingly, whether officers were volunteers for the program or mandatory assigned had an impact on camera officers' behavior when interacting with citizens, but became non-significant once the control variables and policy variable were accounted for. That is, the activation policy the department implements is a stronger predictor of camera use than the type of officer assignment to the program. When the presence of bystanders

and other police officers on the scene were introduced, assignment washed out as a predictor.

There may be several explanations for the significance of the bystander related variables. First, with bystanders present, camera use was significantly more likely to increase. A sergeant with the Mesa Police Department during a briefing stated that citizens are videotaping them, and they need to protect their own by videotaping as well. Therefore when there are bystanders present, officers may be more aware of the potential threat of an incomplete or inaccurate video recording to be produced by a citizen.. Pieces of video file are often posted online showing only parts of interactions between officers that may give citizens an inaccurate portrayal of the account. This awareness may have an impact on the likelihood of camera use.

In contrast, when other officers are present, on-officer video camera use decreases. Officers may feel that their coworkers do not hold positive views of the camera technology. Because of this, when in the company of other officers, treatment officers may be more reluctant or hesitant to activate the device as not to distract or disrupt their coworkers. An additional explanation may be that with more officers present, treatment officers may feel the incident can be properly documented because there are several officers to recite or recap what occurred at the scene. This additional witnessing of an event may cause the officer to be more relaxed in not obtaining the video evidence for the interaction.

Additionally, the officer's shift was significant in affecting the likelihood of camera activation. Specifically, day shift officers were less likely than officers working grave shift to use their cameras. This may be due to the amount of activity during

evening shifts. The shifts may potentially have different types of criminal activities overall, leading officers to use the cameras in differing ways.

As with any evaluation, there are limitations that can have an affect on the validity of the findings. First, this research was done over a ten-month initial implementation period. It would be beneficial to look at the cameras outcomes on the street and activations after the initial "wear in" period has passed. Because officers are often resistant to change, it is natural that the first year will be met with some hostility, negative opinions and lack of officer reception. By looking at officer behavior and outcomes over a longer period of time, the camera's costs and benefits may be better analyzed as the newness has worn off.

Additionally, this study does not look at specific suspect characteristics that may dig deeper into underlying mechanisms that affect camera activation and usage. By including suspect and officer characteristics like race, age, and gender, an analysis may add a level of understanding into how citizen and suspect characteristics may influence the use and endorsement of on officer video cameras.

While nearly 4,000 field contact reports were completed, there were 100 officers completing the surveys. This relatively small sample size may cause problems for generalizing to other departments. Additionally, the control group was matched to the treatment group based on age, race, gender, and citizen complaints rather than being randomly assigned. Future studies in this area may want to adopt larger samples so random assignment to the control group may be a viable design component. Future research may also consider using a multilevel approach to examine the field contacts

nested within patrol officers so that situational, suspect and officer characteristics may be taken into consideration in the same model.

This particular sample does not have a large amount of diversity in terms of gender and rank. Most of the officers were male patrol officers. This leaves open for future research a need for examining a more diverse treatment and control group to include more women and mid-level managers to be a more representative sample of more diverse populations.

This study examined the Axon Flex video camera system, which is not representative of other body worn camera products on the market. Other products are worn differently (on the body or elsewhere on the uniform) and may have different operating procedures and functions that impact how the device is used in the field. With this study, the results can only be applied to officers using the Axon Flex devices.

Future research may look at the different aspects of shift work that influence camera activation in order to piece out why grave shift officers have such different activation rates than day shift officers. Additionally, in order to truly understand activation procedures, more analysis must be concentrated on different types of calls rather than just a violent/non-violent dichotomy. By understanding the underlying mechanisms that drive camera activation based on situational factors, policy influencing how the camera technology is used by police officers can be better adapted and effective.

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