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Body Cameras Effectiveness in a Large Police Department in the Southeast

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This is to certify that the doctoral dissertation by

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Walden University
2019

Abstract

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by

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MPA, Columbus State University, 2008

BS, LaGrange College, 2005

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Abstract

Several recent high profile incidents involving law enforcement officers have resulted in the death of a citizen. In some of these cases, the use of deadly force by police was ruled as justified only to learn later that one or more officers were not truthful about what occurred. These incidents have called into question law enforcement's legitimacy and created a demand for greater transparency by equipping officers with body-worn cameras. Body cameras can act as independent, reliable witnesses with no bias or agenda. Federal, state, and local governments have pledged millions of taxpayer dollars to implement body-worn camera programs in police departments across the world, but research has revealed mixed results on the effectiveness of body-worn cameras. Effectiveness can be defined as a reduction in use of force incidents, citizen complaints, and offender and officer injuries during apprehension situations. Data were obtained from a large police department in the Southeastern United States that began using body-worn cameras in January 2015. A purposeful sample of 3 years of data before body cameras were introduced and 3 years of data after body cameras were introduced was analyzed using an interrupted time-series design. There was a statistically significant increase in use of force incidents and offender injuries during apprehension situations. There was no statistically significant change in citizen complaints or officer injuries. This research can assist police executives and program evaluators with providing expectations and setting goals for body camera programs.

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Dedication

In dedication to all of my brothers and sisters who have worn the badge. Keep on fighting the good fight by doing the right things in the right way.

"All gave some, some gave all." – Howard William Osterkamp

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Chapter 1: Introduction to the Study

Introduction

On August 9, 2014, Ferguson, Missouri, police officer Darren Wilson had an encounter with unarmed 18-year-old Michael Brown. Within 2 minutes of the initial contact between the two, Brown was dead as a result of multiple gunshots fired by Wilson (Department of Justice, 2015). An initial witness statement reported that Brown was first shot by Wilson in the back while running away. Brown was then fatally shot with his hands in the air, or while on his knees surrendering, or while Officer Wilson stood over him and executed him, based on various witness accounts. However, Officer Wilson's statement was completely different; he said he shot Brown because he feared for his own life. Other witnesses corroborated Wilson's account. After lengthy investigations by both the St. Louis County Police and the U.S. Department of Justice, the shooting was ruled justifiable and not criminal (Department of Justice, 2015). Arising from this highly controversial shooting and other high profile deadly force encounters between police and citizens came a call for police officers to be outfitted with body-worn cameras. This call came from police departments, police reform activists, and then-U.S. President Barack Obama (Friedman, 2014; Gomez, 2014; Hudson, 2014).

A body-worn camera is a video and audio recording device attached to a police officer. The camera can be worn multiple places on the officer's body, including attached to a pair of glasses, the officer's shoulder, or on the chest area. Placement is determined by the type of body-worn camera, department policy, and/or officer preference. There are several different body-worn camera manufacturers. The purpose of the device is to

capture encounters between citizens and police (Bureau of Justice Assistance, 2015). The videos can be used as evidence against citizens in criminal proceedings, to identify and address police officer misconduct, and to provide transparency to the community (Bureau of Justice Administration, 2015).

Background

Since 2014, there has been a tremendous push from activists and lawmakers for police reform, especially regarding the use of deadly force. Body-worn cameras have been touted as the answer to "How do we police the police?" Brucato (2015) detailed several activists, legal scholars, journalists, and academic researchers who advocate that body-worn cameras will increase the visibility of police actions to reduce use of force incidents and increase accountability. President Obama pledged $263 million in federal funding to equip state and local law enforcement officers with 50,000 body-worn cameras and training for the cameras (Dann & Rafferty, 2014). The federal funding requires law enforcement agencies to match the funds. This means more than half a billion dollars in taxpayer money invested in body camera programs. Various branches of policing in Australia have committed millions of dollars to body-worn camera programs (Palmer, 2016). Law enforcement agencies around the world are implementing body camera systems, but what is lacking is empirical research analyzing the effectiveness of these systems. Ariel, who conducted the first controlled study on body cameras (Ariel, Farrar, & Sutherland, 2015), stated in an interview that body camera technology is promising, but there is not enough scholarly evidence to assert a clear public benefit

(Friedman, 2014). While anecdotal evidence would support the premise that cameras are effective, the scholarly research has found mixed results.

For example, Stratton, Clissold, and Tuson (2015) found no significant reduction in citizen complaints against the police nor a reduction in use of force incidents by the police while wearing body cameras. Ariel et al. (2015) found both a significant decrease in citizen complaints and in the number of use of force incidents by the police while wearing body cameras. One recurring theme throughout a review of the literature is the overwhelming need for scholarly research on the effectiveness of police body-worn cameras in reducing violence during police-citizen encounters and reducing the number of citizen complaints.

Problem Statement

There has been a recent national, and global, push to outfit police officers with body cameras (Ariel et al., 2015; Ariel et al., 2016; Cubitt, Lesic, Myers, & Corry, 2016; Stratton et al., 2015). Body-worn cameras have been seen as a method to increase police legitimacy, reduce citizen complaints against the police, reduce incidents of use of force by police, and obtain evidence for use in criminal prosecutions (Ariel et al., 2015; Katz, Choate, Ready, & Nuño, 2014; Miller & Toliver, 2014; Palmer, 2016; Stratton et al., 2015; White, 2014). By decreasing officer use of force, both injuries to offenders and officers during arrest situations may also be reduced. This study evaluated police body-worn cameras to determine if they are an effective tool in monitoring police behavior and reducing injuries during police-citizen encounters. Effectiveness was determined by comparing the total number of use of force incidents, the number of citizen complaints,

the number of offender injuries, and the number of officer injuries after body cameras were implemented in a police department to similar time periods before body cameras were issued.

The literature on the effectiveness of body-worn cameras is limited and what has been published has revealed mixed results. The first randomized controlled trial in the United States was published in 2015 (Ariel et al., 2015). Studies have shown a reduction in officer use of force after implementing body-worn cameras (Ariel et al., 2015; Braga et al., 2018b; Gonzales, 2017; Henstock, 2015; Jennings et al., 2015; Toronto Police Service, 2016). One study revealed an increase in officer use of force after implementing body-worn cameras (Katz et al., 2014). Other studies revealed no change in officer use of force after implementing body-worn cameras (Ariel et al., 2016; Braga et al., 2018a; Peterson et al., 2018; Stratton et al., 2015; White et al., 2017; Yokum et al., 2017). Additional studies have shown a reduction in complaints against officers after implementing body-worn cameras (Ariel et al., 2015; Ariel et al., 2017; Braga et al., 2018a; Braga et al., 2018b; Jennings et al., 2015; Katz et al., 2014; Moselle, 2017; Peterson et al., 2018). One study (Toronto Police Service, 2016) revealed an increase in citizen complaints, while others showed no change in citizen complaints against officers while wearing body cameras (Stratton et al., 2015; White et al., 2017; Yokum et al., 2017). Studies revealed a reduction in offender injuries during arrest situations after implementing body-worn cameras (Henstock, 2015; Moselle, 2017). The Toronto Police Service (2016) found an increase in offender injuries during arrest situations after implementing body-worn cameras. Other studies showed an increase in officer injuries

during arrest situations after implementing body-worn cameras (Ariel et al., 2016; Henstock, 2015). Studies revealed either a reduction in officer injuries during arrest situations (Moselle, 2017; ODS Consulting, 2011) or no change at all (White et al., 2017). In all the existing literature, researchers call for an immediate need for more studies.

The justification for this study is two-fold. First, the U.S. government has pledged $263 million in funding to equip and train officers with body cameras (Dann & Rafferty, 2014). State and local governments are investing in body-worn cameras as well. If hundreds of millions of taxpayer dollars are going to be spent on this equipment, it is imperative to know if the body-worn camera systems can aid in reducing the overall number of use of force incidents—particularly excessive force—by the police, the number of citizen complaints against police, the number of offender injuries during arrest situations, and the number of officer injuries during arrest situations. Second, law enforcement leaders should be informed if officers are being injured at a higher rate while wearing body cameras compared to not wearing body cameras to ensure appropriate training in the implementation of a body camera program.

Purpose of the Study

The purpose of this study was to evaluate the effectiveness of body-worn cameras for police officers. Effectiveness is defined as a reduction in citizen complaints, a reduction in police use of force incidents, a reduction in offender injuries during arrest situations, and a reduction in officer injuries during arrest situations (dependent variables) after a body camera system (independent variable) is implemented compared to the data

from similar time periods before cameras were introduced. In this study, I used a quantitative methodology to evaluate the effectiveness of body-worn cameras. The setting for this study was a police department located in the Southeastern United States. I will refer to the police department as the Southeastern Region Police Department (SRPD) throughout this paper. I used interrupted time-series design to compare and contrast the findings with data of citizen complaints and use of force incidents, officer injuries, and offender injuries from the police department from the years prior to implementing body cameras to similar time periods after issuing body cameras. I analyzed a purposeful sample of 3 years of data before body cameras were introduced and 3 years of data after body cameras were introduced.

Research Questions and Hypotheses

This study was guided by the following research questions:

RQ1: Is there a statistically significant difference in the number of use of force incidents by police after body cameras were deployed in the field compared to data from similar time periods before body cameras were implemented?

$H_0$1: There was no statistically significant difference in the number of use of force incidents by police after body cameras were deployed in the field compared to data from a similar time period before body cameras were implemented.

H_a1: There was a statistically significant difference in the number of use of force incidents by police after body cameras were deployed in the field when compared to data from a similar time period before body cameras were implemented.

RQ2: Is there a statistically significant difference in citizen complaints against police after body cameras were deployed in the field compared to data from similar time periods before body cameras were implemented?

$H_0$2: There was no statistically significant difference in citizen complaints against police after body cameras were deployed in the field compared to data from similar time periods before body cameras were implemented.

H_a2: There was a statistically significant difference in citizen complaints against police after body cameras were deployed in the field compared to data from similar time periods before body cameras were implemented.

RQ3: Is there a statistically significant difference in offender injuries during apprehension situations after body cameras were deployed in the field compared to data from similar time periods before body cameras were implemented?

$H_0$3: There was no statistically significant difference in offender injuries during apprehension situations after body cameras were deployed in the field compared to data from similar time periods before body cameras were implemented.

*H*a3: There was a statistically significant difference in offender injuries during apprehension situations after body cameras were deployed in the field compared to data from similar time periods before body cameras were implemented.

RQ4: Is there a statistically significant difference in officer injuries during apprehension situations after body cameras were deployed in the field compared to data from similar time periods before body cameras were implemented?

$H_0$4: There was no statistically significant difference in officer injuries during apprehension situations after body cameras were deployed in the field compared to data from similar time periods before body cameras were implemented.

H_a4: There was a statistically significant difference in officer injuries during apprehension situations after body cameras were deployed in the field compared to data from similar time periods before body cameras were implemented.

Theoretical Framework

The theoretical framework underpinning this study is the social surveillance theory and deterrence theory. Social surveillance theory is the idea that individuals will modify their behavior to accepted norms if they believe they are being watched (Munger & Harris, 1989; Wicklund, 1975). If individuals are aware they are being watched, or in the case of body cameras recorded, then they will follow rules and regulations (Munger & Harris, 1989; Wicklund, 1975). Individuals who want to maintain or enhance their reputations will act in an honest and ethical manner if they are being observed (Milinski, Semmann, & Krambeck, 2002; Wedekind & Braithwaite, 2002). Barclay (2004) found that even if people not receive a direct benefit for acting ethically, they will still do so for the indirect benefit of having an honest and trustworthy reputation. Most citizens today have a mobile phone, and most of those phones can record video. Smartphones can record high-quality video and can share that video instantly with millions of viewers. Social media sites, such as YouTube and Facebook, have thousands of videos of police-citizen encounters. This makes social surveillance more prevalent today than ever before.

Classical criminologist Beccaria promoted the idea of deterrence (Polinsky & Shavell, 1998). For deterrence to be effective, it must be swift, certain, and severe. Deterrence theory states that when the chances of being caught are high, individuals are less likely to engage in illegal or unethical behavior because of rational decision-making. Deterrence theory is typically discussed in the context of penology theory and as a method to reduce criminal activity by potential criminals. This theory can be reframed in the context of police body cameras. Klepper and Nagin (1989) found that detection and criminal prosecution are powerful deterrents. This deterrent effect applies more to the certainty of punishment than to the severity of punishment (Nagin, 2013). If a police officer is wearing a body camera while committing an illegal or improper act, then the chance of that behavior being detected is high. The punishments for police officers who violate policy or law range from written warnings to suspensions, terminations, and criminal prosecution. A more detailed analysis of the theoretical framework can be found in the next chapter.

Nature of the Study

For this study, the purpose of the research is to determine if body-worn cameras can reduce the number of use of force incidents, citizen complaints, offender injuries, and officer injuries when compared to data from similar time periods before body cameras were implemented. To determine if the cameras are effective, I analyzed the data before cameras were introduced and after cameras were deployed over multiple preselected time periods. The methodology most appropriate to answer the research questions in this study is quantitative. Quantitative methodology employs the use of closed-ended questions,

tests or verifies explanations, measures information numerically, and has an unbiased approach (Creswell, 2009, p. 17). The design for this study was a single-group interrupted time-series design. The independent variable is the body-worn cameras. The dependent variables are citizen complaints, use of force incidents, offender injuries, and officer injuries. This design measures the dependent variables both before and after the introduction of the independent variable on the same group of participants (Creswell, 2009, p. 161). A single-group interrupted time-series design is used when there is no control group available (Frankfort-Nachmias & Nachmias, 2008).

Using a time-series design, a researcher records multiple measurements before the introduction of the independent variable and then records measurements after the introduction of the independent variable (Campbell & Stanley, 1963). A researcher then infers that a significant change after the introduction of the independent variable is a result of the treatment. The time periods I selected were the 3 years before body-worn cameras were introduced to the police department and the 3 years immediately after body-worn cameras were deployed to the field. I selected the same time periods from previous years rather than just 3, 6, and 9 months before the implementation of body cameras because crime is cyclical. The more crime that occurs increases the opportunities for officers to make arrests. Lauritsen and White (2014) found that crime fluctuates depending on time of year. Generally, overall crime peaks during the summer months and for other seasons, the warmer the weather, the more crime occurs (Ranson, 2014). Therefore, it is important to compare similar time periods.

A threat to internal validity with the time-series design is history. History is some other event that can explain the change in measurements, rather than the independent variable (Campbell & Stanley, 1963). Therefore, in this research, I explored possible additional explanations for any changes and controlled for those variables. A possible history event that could explain a change in the dependent variables rather than the body-worn cameras was training courses that officers attended teaching them how to de-escalate situations before force is needed or that results in a citizen complaint. If there was a reduction in citizen complaints and use of force after body cameras were employed, it would be imperative to know if the decline resulted from the cameras or the training officers received or some combination thereof. Mortality is another internal threat to validity in this type of design. Police departments are not immune to employee resignations, terminations, and retirements. Thus, I evaluated the demographics of the department for each time period to determine if there were any significant differences.

Definitions

Body-worn cameras or body cameras: Digital video and audio recording devices placed on a police officer's body to document interactions with citizens and other officers. The exact placement on the body is determined by multiple factors, including the brand and model, departmental policy, and preference of the officer. Body cameras can be designed to be worn on the head, as a pair of glasses, on the shoulder, and on the chest of an officer. Police departments usually go through field testing of different brands and placements before selecting the most appropriate device based on the department's evaluations. Body-worn cameras upload recordings to a cloud server in real time or can

be downloaded to a server at the end of an officer's shift. Again, the brand and model and departmental preference will determine which method is used.

Citizen complaints: Officially documented allegations of misconduct submitted by a citizen. Misconduct can include allegations of unprofessional attitude, failure to follow departmental policy and procedures, violation of civil and Constitutional rights, and excessive force. Citizens can make official complaints via telephone, email, written statements, oral statements, or a combination of these methods. SRPD documents each official complaint using software maintained by the Internal Affairs Unit. The software tracks the total number of complaints and records the date, time, and details of the allegations. Each complaint is investigated, and the outcome of the investigation is documented in the system. Annual reports of citizen complaints are maintained by the Internal Affairs Unit of SRPD.

Offender injuries: Any injury incurred by a citizen while being apprehended for an alleged violation or violations of the law. Offender injuries are documented and tracked using official reporting methods approved by SRPD.

Officer injuries: Any injury incurred by a police officer during the attempted or actual apprehension of a citizen for a violation of criminal law. Officer injuries are also documented and tracked using official reporting methods approved by the SRPD.

Use of force policy: In police departments across the United States, and in countries across the world, defining precisely what constitutes an incident as a "use of force incident" can vary. Different police agencies had varying definitions of use of force (Ariel et al., 2016). These variations could make comparing outcomes between different

jurisdictions problematic. To ensure consistency study, *use of force* here will be defined using SRPD's definition as detailed in their General Orders (SRPD, 2016b). According to the SRPD policy, a "Police Response to Aggression/Resistance/Force report will be completed whenever an Officer uses force which is greater than that required for un-resisted Department approved searching, handcuffing or escorting" (p. 11). The policy further defines specific incidents that will trigger the completion of a use of force report:

> 1. Discharge a firearm for other than training or recreational purposes or the destruction of an animal.
> 2. Take an action that results in, or is alleged to have resulted in, injury or death of another person.
> 3. Apply force through the use of deadly or less lethal weapons.
> 4. When pointing a less lethal weapon at another person (ex. taser).
> 5. Apply weaponless physical force at a level of force commensurate with the amount of non-compliance offered by a subject. (SRPD, 2016b, p. 12)

The SRPD policy requires that officers complete a fully detailed report of the incident. The report must include any injuries, complaint of injuries, or medical treatment received for anyone involved in the incident (SRPD, 2016b). These reports are entered into the SRPD's computer system, from which the data in this study were collected. The SRPD policy further requires officers to notify their immediate supervisor when a use of force incident has occurred. Supervisors are required to respond to the scene, where they conduct an initial investigation into the incident. This investigation will include obtaining information as to what led up to force being used and what force was used. Supervisors

are required to interview the suspect(s), when possible, and obtain information on the circumstances of the incident and inquire of any injuries (SRPD, 2016b). SRPD supervisors are required to photograph all evidence of the police use of force, to include, all injuries to both the officer(s) involved and the suspect(s) (SRPD, 2016b). Supervisors then detail their findings in a report.

Assumptions, Limitations, and Delimitations

Assumptions

For this study, there are seven assumptions to identify. The first assumption is that police officers will wear their body cameras as directed. SRPD policy (2016) for the activation of body-worn cameras (BWC) is as follows:

> The BWC will be activated for all incidents involving citizen contacts. This would include, but is not limited to calls for service, traffic stops, activation of emergency equipment, suspicious person(s), vehicle contacts, use of force situations, warrant service, pursuits, arrest, if a pending citizen complaint is likely or any other significant event that would require supervisory notification. (p. 2)

Additionally, officers may activate their BWC if they feel it would be beneficial to their police duties (SRPD, 2016). Failure to follow this activation policy can result in administrative punishment, up to and including termination of employment.

The second assumption is that the cameras will function properly at all relevant times. Body camera manufacturers do their best to ensure the equipment remains operational, even in extreme situations. However, no technology works 100% of the time and failures do occur. SRPD officers are required to notify their supervisor immediately

if they discover that the camera is nonfunctional or broken (SRPD, 2016). The supervisor is then required to complete the appropriate paperwork and submit the equipment to be repaired or replaced (SRPD, 2016).

The third assumption is that all use of force incidents are accurately reported and documented, as per the department policy. The fourth assumption is that all citizen complaints are properly recorded and documented. The fifth assumption is that all offender injuries occurring during arrest situations are correctly reported and documented. The sixth assumption is that all officer injuries during arrest situations are correctly reported and documented. The seventh assumption is that all the data provided by the police department accurately reflect what occurred during the specified time periods and that no data have been lost or misplaced.

Limitations

All studies have limitations and this study is no different. Body-worn camera technology is a relatively recent technological development. The amount of historical secondary data available is limited. SRPD first deployed body cameras in the field in 2015.

Police officers are authorized by both statutory laws and through countless court decisions to reasonably use force. The International Association of Chiefs of Police (IACP; 2001) defines use of force as, “that amount of effort required by police to compel compliance from an unwilling subject” (p. 1). The amount of force needed should be directly proportional to the amount of resistance offered by the offender. The IACP (2001) defines excessive force as “the application of an amount and/or frequency of force

greater than that required to compel compliance from a willing or unwilling subject" (p. 1). The application of force by police is subjective and determined by the individuals involved in a particular situation. The U.S. Supreme Court ruled in *Graham v. Connor* (1989) that the reasonableness of force must be judged by the facts and circumstances known at the time of the incident and not what was learned minutes, hours, weeks, or months later. Ideally, body cameras will reduce the number of excessive force incidents. Because deciding what is actually excessive force can be difficult and sometimes not determined until years later by the court system, this does not lend itself to be readily quantifiable. For this study, all use of force incidents within the selected police department will be used. What is considered use of force is clearly laid out in the departmental policy and, therefore, quantifiable.

Another limitation that must be addressed is the potential for some other factor(s) to be the reason(s) for any changes noted in the number of use of force incidents or citizen complaints. Due to the increased scrutiny of police activities and the need for increased transparency, many police departments have implemented de-escalation training programs for their officers to limit the overall number of use of force incidents. SRPD is no different and has provided additional de-escalation training for its officers.

Bias that could influence the study outcomes is negligible. The data obtained are secondary historical data kept in the ordinary course of business by SRPD. I had no influence on the collection of data. The data can be requested by any individual through an open records request and the same analysis run to verify the findings of this study. For full disclosure, I was a police officer for 13 years. This fact will have no influence on the

outcomes or conclusions made. All conclusions will be based on the data and the results of the data analysis.

Delimitations

This study examined secondary data provided by SRPD. SRPD is a diverse organization that serves a diverse community. The city SRPD serves had a population of between 250,000 and 275,000 people (U.S. Census Bureau, 2018). Slightly more than 50% of the city's population identified as White, approximately 40% identified as Black, 3% identified as Asian, and a little more than 6% identified as Hispanic. Additionally, the city is a tourist destination for people from in the United States and abroad. According to the city's Chamber of Commerce (2017), the city has more than 13 million visitors each year. The conclusions drawn from this study are not necessarily generalizable to police departments that are much smaller or much larger or that serve a uniquely different population.

In this study, I examined data before and after body cameras were implemented at SRPD. I will not explore the decisions or reasons behind SRPD's election to implement a body camera program. Further, I did not examine the attitudes of SRPD officers or the citizens of the city toward body cameras.

I selected SRPD as the location for the study for three reasons. First, many police departments still have not implemented a body camera program, which meant the number of police departments that did have these systems was limited. Second, because body-worn camera technology is a recent phenomenon in policing, the research required a police department with sufficient historical data on body camera use. Third, the police

department needed to have a police chief and administration interested in learning what, if any, impact the body-worn camera program made. SRPD met all three criteria, making the department a worthy setting for the study.

Significance of the Study

The existing research on body-worn cameras has found mixed results, especially about use of force. This study will add to the existing literature to help provide clarification on the effectiveness of cameras to reduce force incidents by police. Previous studies found that officers are injured at a higher rate while wearing body cameras (Ariel et al., 2016; Henstock, 2015). One study was conducted in Great Britain (Henstock, 2015) and another (Ariel et al., 2016) was a multisite global study, but the exact locations were not revealed. This study will inform police executives about additional training needed when implementing body-worn cameras. The setting for this study was in the Southeastern United States. Currently, no studies on body-worn cameras have been conducted in this area of the country. Other studies where locations were identified were conducted in Arizona and California, Washington D.C., and Canada.

The significance of the study for public policy and administration is that federal, state, and local governments are spending hundreds of millions of taxpayer dollars and it is essential to know if the cameras are effective in accomplishing what they have been theorized to do. Additionally, if assaults against officers increase as a result of wearing cameras, law enforcement agency leaders will need to address this through training and education before employing the use of body camera systems. When police officers are injured on duty, the police department and, ultimately, the taxpayers are required to cover

the medical costs. This study may provide guidance for local and state law enforcement agencies who want to implement a body camera program and will inform the associated policies for a program.

The implications for social change are substantial. Police executives and other local government leaders will need to decide if a body camera program is appropriate for their police departments. Decision-makers will want to evaluate the cost-benefit analysis of a body-worn camera program. Police departments and local governments have learned a body-worn camera program is a long-term investment of taxpayer dollars that goes beyond just purchasing the equipment. The largest cost involved in a body camera program is video storage (Kindy, 2019). Police executives must decide if storage will be kept in-house, which requires the purchase of servers with huge amounts of storage capacity maintained by IT personnel and expanded as storage needs increase. Police departments are storing terabytes of information each week. Alternatively, storage can be contracted out to a third party, but that also comes with a substantial cost. Additionally, police executives are incurring the cost of hiring someone to field requests for videos and to edit those videos as needed or required by law. For example, all states have a rape shield law that protects the identity of sexual assault victims. If a police officer is wearing a body camera while interviewing a sexual assault victim and that video is requested through open records, someone will need to obscure the victim's face and name. This takes special skills and software requiring investment. If the scholarly research reveals that body-worn cameras are not having the desired impact, then local governments may be reluctant to invest considerable money into the technology. On the other hand, if the

scholarly research does demonstrate the desired effects, then local government officials can use this information to sell the program to taxpayers and demonstrate the need for it.

Is it possible that one day a body-worn camera will be just as ubiquitous on an officer's uniform as a badge or pair of handcuffs? McClure et al. (2017) posit that we should not be asking if police departments show employ body-worn cameras, but rather how that should be used. According to a survey conducted by the Major Cities Chiefs Association and Major County Sheriffs' Association, only 18% of the departments surveyed had a fully-implemented body-worn camera program, but 95% of the departments surveyed were committed or were in the process of implementing body-worn cameras (Maciag, 2016). If body-worn cameras become standard issue in all police departments, then the scholarly research can assist in determining expectations from the program. Body-worn cameras are not going to solve all the issues with police legitimacy and community relations. Some police departments and local governments may invest large sums of taxpayer money into body-camera technology and see no significant changes in the amount of use of force incidents and citizen complaints while other locations may see a significant change. Police executives may also need to invest in additional de-escalation training along with body camera programs to realize a positive return on investment.

Summary

Several high-profile incidents involving alleged or actual misuse of authority by police have led to a demand for greater transparency. Body-worn cameras have been deemed a solution to this problem, but they have only been in widespread use in U.S. law

enforcement agencies over the last 3 to 5 years. Federal, state, and local governments are pledging to spend hundreds of millions of taxpayer dollars to supply police departments with body-worn cameras and digital storage space to maintain the footage collected. As the technology is still in its infancy, so is the scholarly research on the efficacy of body-worn cameras in moderating the behavior of police officers. Government decision-makers and citizens need feedback based on sound scholarly research to determine if this investment of tax money is worthwhile or not. This study will add to the limited body of knowledge on the effectiveness of body-worn cameras. In Chapter 2, I will highlight what is currently known about body-worn cameras and will identify a gap in the current literature that this study may fulfill.

Chapter 2: Literature Review

Introduction

The use of body-worn cameras in law enforcement is a relatively new technology, which is evident by the scarcity of scholarly research on the topic. The first randomized controlled study was published in 2015 (Ariel et al.). Multiple police departments have conducted studies to determine if body camera programs should be pursued and, if so, which body camera company should be awarded the contract (Miller & Tolliver, 2014; Stratton et al., 2015; White, 2014). Previous studies have noted a lack of peer-reviewed research and the need for additional studies to be conducted. Authors have noted a "considerable paucity of peer-reviewed articles" on body-worn cameras (Cubitt et al., 2017, p. 4). Cubitt et al. (2017) wrote that a majority of the current literature on body-worn cameras was "methodologically weak" (p. 1). Ariel et al. (2017) also noted the lack of empirical evidence about the efficacy of body-worn cameras.

Some police executives are seeking quality information and data to assist in deciding whether to invest hundreds of thousands—and for some departments, millions—of dollars of taxpayer money into a body-worn camera program. Other police executives are moving forward with body camera programs without regard to the scholarly research (McClure et al., 2017). Moving forward with body cameras without research has been in response to the demand for more transparency in policing. The social change implication is that body-camera advocates may need to temper their expectations of the results that cameras may or may not produce. Brucato (2015) discussed the "promise of

accountability" that body-worn cameras offer (p. 457). But do body-worn cameras deliver on this promise? Alternatively, are they just a false sense of security?

Historical background

In the United States, legislators pass laws that criminalize certain behaviors. The judicial system ensures that due process, guaranteed in both the Fifth and 14th Amendments to the U.S. Constitution, is followed to protect individual civil liberties and individuals who violate criminal laws are held accountable for their actions. Law enforcement officers are tasked with enforcing the laws enacted by legislatures, carrying out the orders of the various courts in the judicial system, and asked to bring forth to the court those who are accused of violating the law. The first formal police department in the United States was created in Boston, Massachusetts, in 1838 (Siegel & Worrall, 2018). New York City and Philadelphia soon followed with their own departments. These departments were created to combat the increase in urban gang violence in those cities (Siegel & Worrall, 2018). The traditional model of village citizens enforcing the law and the night watch system had become antiquated and unable to meet the demands of the growing populations in these cities. As gangs terrorized the citizens, an organization that could protect those who could not protect themselves was needed. Law-abiding citizens in the cities knew that some of the criminals would not politely go along with the request for law and order, so police officers were granted the authority to use force when necessary to carry out their functions. This authority has been codified in law and interpreted with guidelines from the judicial branch.

The International Association of Chiefs of Police (IACP, 2001) defines use of force as, "that amount of effort required by police to compel compliance from an unwilling subject" (p. 1). The amount of force needed should be directly proportional to the amount of resistance offered by the offender. This force can include physical strikes, chemical weapons, impact weapons, electronic weapons, and firearms. States have codified the use of force and the application of deadly force. The state law (2010) that governs the city served by the SRPD reads:

> A person is justified in threatening or using force against another when and to the extent that he or she reasonably believes that such threat or force is necessary to defend himself or herself or a third person against such other's imminent use of unlawful force; however…a person is justified in using force which is intended or likely to cause death or great bodily harm only if he or she reasonably believes that such force is necessary to prevent death or great bodily injury to himself or herself or a third person or to prevent the commission of a forcible felony.

The state law (2010) on deadly force states:

> …Peace officers who are appointed or employed in conformity with (state law) may use deadly force to apprehend a suspected felon only when the officer reasonably believes that the suspect possesses a deadly weapon or any object, device, or instrument which, when used offensively against a person, is likely to or actually does result in serious bodily injury; when the officer reasonably believes that the suspect poses an immediate threat of physical violence to the officer or others; or when there is probable cause to believe that the suspect has

> committed a crime involving the infliction or threatened infliction of serious physical harm. Nothing in this Code section shall be construed so as to restrict such sheriffs or peace officers from the use of such reasonable nondeadly force as may be necessary to apprehend and arrest a suspected felon or misdemeanant.

The authority for police officers to use force when reasonable and necessary has been affirmed by state supreme courts and the U.S. Supreme Court. Although, what the federal and state governments have deemed as reasonable and necessary has evolved, as have many laws since the first police departments were created. While the first police departments in the United States were created in the Northeast due to rising mob/gang violence, the first police departments in the Southern United States were mainly used to enforce slavery laws. Law enforcement officers were regularly sent to capture runaway slaves. After the Civil War brought an end to slavery, the role of southern police was changed to enforce segregation and Jim Crow laws. The utilization of police officers by politicians to enforce these racist laws partially contributes to some of the negative views of the role of police today.

Are police officers racially biased when deciding to use force and make arrests? The existing literature has produced mixed results. Alexander (2010) posited that the War on Drugs and the resulting disproportionate mass incarceration of people of color was the "New Jim Crow." Bolger (2015) conducted a meta-analysis of the scholarly research on police use of force. Nineteen studies published between 1995 and 2013 showed that the racial identity of an officer had no impact on the decision to use force. However, suspects who were Black, male, and/or of the lower socioeconomic scale were more likely to have

force used against them (Bolger, 2015). Bolger's (2015) meta-analysis found that situational factors (severity of the crime, resistance offered by the suspect, number of officers present, etc.) had the most significant impact on the decision to use force. Fridell (2017) conducted an analysis of seven studies, all published in 2016, and evaluated the effect of race on police use of force. The results of the studies were mixed; bias was present, bias was present sometimes, and bias was not present (Fridell, 2017). In a meta-analysis of 40 research reports, Kochel, Wilson, and Mastrofski (2011) reported that minority suspects were more likely to be arrested than white suspects. The actual and/or perceived disproportionate overpolicing of minority communities has created the issues that now call for the monitoring of police behavior by body-worn cameras. The previously discussed officer-involved shooting in Ferguson, Missouri, along with several other controversial police shootings, sparked an explosion in activism against actual and perceived injustice by the police.

Governments no longer post pictures of wanted outlaws with the description "Wanted Dead or Alive." Current society expects the police to apprehend wanted suspects alive unless the need for deadly force is required. The current controlling case law on the "reasonableness" of using force in proportion to the amount of resistance received was set forth in *Graham v. Connor* (1989). The court in *Graham* ruled that the application of force by the police must be reasonable based on the totality of the circumstances and viewed through the lens of the information known at the time of incident without the benefit of 20/20 hindsight. Limits on deadly force were outlined by the U.S. Supreme Court in *Tennessee v. Garner* (1985). In *Garner*, the court ruled that

police officers could not use deadly force against nondangerous fleeing felons. Prior to this ruling, several states authorized police officers to use deadly force against felons endeavoring to escape capture.

The use of video technology in law enforcement is not a new phenomenon. In-car camera systems first appeared in the early 1990s and are considered standard equipment in almost every police department in the United States. IACP conducted a comprehensive review of in-car camera systems for 47 state police/highway patrol departments (Baker, 2004). By this time, in-car camera systems had been in widespread use for about a decade. Just as the impetus for police body-worn cameras was driven by the events in Ferguson, Missouri, and other places experiencing officer-involved shootings, the public helped make in-car camera systems just as standard as other police tools. Baker (2004) detailed the history of in-car cameras starting with the first widespread usage in the 1980s to assist with DUI/DWI arrests and convictions. Prosecutors were able to obtain more convictions with driver behavior and performance on field sobriety tests video recorded. The expansion of the War on Drugs in the 1990s fueled further use of camera systems. Baker (2004) discussed how jurors sometimes found it hard to believe that drivers carrying large amounts of drugs and cash would readily consent to a search of their vehicle. The in-car cameras confirmed that drivers' voluntary consent. In the late 1990s and early 2000s charges of racial profiling and bias were becoming more widespread and assaults on officers were also increasing (Baker, 2004). In-car camera systems were used to help document police activities.

The 1991 beating of Rodney King by members of the Los Angeles Police Department, filmed by a nearby resident with a camcorder, gave citizens across the country a glimpse into what many in the Los Angeles community said had been going on for years: the police violating the civil rights of minorities. Indeed, Meyer (1980) evaluated shootings by the Los Angeles Police Department from 1974 to 1978 and found that, of those deemed to be unarmed, a higher proportion was Black than White or Hispanic. It is not implied that each of these shootings was not justified, as each case would need to be evaluated by its own unique facts and circumstances. In the King case, the subsequent acquittal of the officers, who were charged with excessive force and assault, led to the 1992 riots in Los Angeles.

In recent years, the explosion of social media and the 24-hour news cycle has further created a distrust of the police by many citizens. Videos of police use of force, both nondeadly and deadly, are shared millions of times on various social media platforms and by news outlets. Social media users and journalists make conclusions about the legitimacy of the use of force before the investigation has been completed and the results released. Reports before the investigation has concluded are many times incomplete and inaccurate. These inaccuracies and conclusions based on partial evidence create distrust between the public and the police. The distrust is justifiable in some cases but not in others. For example, take two recent cases that questioned the integrity of the officers involved and eroded the relationship between police and the communities they swore to protect.

In April 2015, Officer Michael Slager with the North Charleston, South Carolina Police Department conducted a traffic stop on a vehicle driven by Walter Scott. The traffic stop was captured on Slager's in-car camera. Slager was not wearing a body camera. During the traffic stop, Scott exited the vehicle and took off running. It was later concluded that Scott ran due to an active arrest warrant for failure to pay child support. The foot pursuit proceeded outside of the range of the in-car camera. Eventually, Slager caught up to Scott and a struggle ensued. Slager reported that he drew his Taser to apprehend Scott, but before he could deploy it, Scott took the Taser from him. Slager stated that he then shot Scott because he feared for his safety if Scott used the Taser on him. Slager is White and Scott is Black. Investigators initially believed Slager's statements, until a citizen provided a video captured on his cellphone. The citizen observed the foot chase and began recording the incident. The footage showed Scott knocking the Taser out of Slager's hands and onto the ground, not Scott taking the Taser as Slager alleged. Slager then shot Scott multiple times in the back as Scott ran away. Slager's actions were a direct violation of the guidelines the U.S. Supreme Court had passed down in *Tennessee v. Garner* (1985). Furthermore, the video showed Slager picking up the Taser and placing it next to Scott's body in an effort to plant evidence and corroborate Slager's account of the events. Scott was a nondangerous fleeing felon and thus deadly force was not authorized. Slager was arrested and pled guilty to murder. He was sentenced to 20 years in prison (Blinder, 2017). If it were not for the citizen recording this incident, the shooting most likely would have been ruled as justified, and Slager would still be policing today. This incident supports the argument that these types

of incidents have been occurring for years and police officers have been getting away with murder.

Conversely, the case of Sherita Dixon-Cole and Texas State Trooper Daniel Hubbard reveals how video footage can protect an officer from false allegations. Dixon-Cole is Black and Hubbard is White. Trooper Hubbard stopped a vehicle operated by Dixon-Cole for the suspicion of driving under the influence. Based on the trooper's investigation, he arrested Dixon-Cole for driving while intoxicated and took her to jail. Dixon-Cole's attorney, Lee Merritt, released a statement reporting the trooper had repeatedly asked her for sexual favors in exchange for releasing her with no charges. She stated she refused the trooper's advances, which led to the trooper kidnapping and raping her. Dixon-Cole further claimed that the trooper threatened to murder her boyfriend and plant a gun on him to make it look like justifiable shooting if she told her boyfriend what happened (Eltagouri, 2018; Rojas, 2018). The attorney did not attempt to verify his client's allegations and reported this to journalist and social activist, Shaun King. King published the story, without corroboration, and it was shared with his more than 1 million followers. The story was then shared more than 50,000 times on social media (May, 2018). Several news organizations, in an effort to report this story immediately, published King's story with Dixon-Cole's allegations without corroboration (NewsOne, 2018).

The Texas Department of Safety released both the trooper's body camera footage and the video from his in-car camera. The video proved that none of what Dixon-Cole alleged actually happened. Both Dixon-Cole's attorney and King were invited to watch the video. Both individuals released statements confirming the allegations were false and

Merritt apologized for his role in the situation (Eltagouri, 2018; Rojas, 2018). Unfortunately, the damage was already done and the trooper and his family were receiving death threats. To compound the situation, another trooper with the same last name, but no relation and not involved in the incident, was mistakenly identified by "social media investigators" and he and his family also received "thousands" of death threats (Dedaj, 2018). The retractions published by the various entities in this event were not shared with the same furor on social media. While we do not know what the outcome of the investigation would have been without the video surveillance, the investigation would have taken much longer than the 2 days it actually did. Both of these events are examples of how video surveillance can protect both the public and the police.

As of 2008, there were 765,246 sworn police officers in the United States (Bureau of Justice Statistics, 2016). Approximately, 63 million people over the age of 16 had at least one contact with the police in 2011, with 25% of those having more than one contact (Langton & Durose, 2016). Approximately, 31.4 million of those citizens requested police assistance (Durose & Langton, 2013). About 34.5 million people were stopped or approached by a police officer (Durose & Langton, 2013). Another 11. 9 million people had contact with the police due to a traffic accident or participation in an anticrime program (Durose & Langton, 2013). These breakdown totals sum up to be higher than the overall total due to some citizens having more than one type of contact with the police.

Literature Research Strategy

I searched multiple electronic databases to identify relevant scholarly articles: Google Scholar, SAGE Journals, Criminal Justice Database, and ProQuest. I also used Google search to identify current event articles that support various topics throughout this research study and the relevant laws that apply to police use of force in the state in the SRPD resides. The search terms used were *body camera, body cameras, police body cameras, body-worn cameras, dash cameras, in-car cameras, police vehicle cameras, police statistics, police use of force, citizen complaints against police, police-citizen encounters, deterrence theory, deterrence, Panopticon,* and *social surveillance theory*. I found more than 50 articles that I used in this literature review. Police body-worn cameras are relatively recent phenomena. Therefore, a vast majority of the articles are from within the last 5 years. The articles range in years from 1977 to 2018. The older sources were used in the theoretical framework section and to assist in developing a lens through which to view the research questions.

Theoretical Framework

As stated in chapter one, the theoretical framework serving as the foundation for this study was deterrence theory and social surveillance theory. Classical criminologist Cesare Beccaria is attributed to the popularization and development of deterrence theory (Polinsky & Shavell, 1998). The idea of deterrence theory is grounded in penology, but can be applied to body-worn cameras. Deterrence theory is broken down into two categories: specific deterrence and general deterrence. Specific deterrence is aimed at the criminal offender. The idea for specific deterrence is that the punishment for the crime

should be sufficient enough to deter that particular offender from committing the crime again (Paternoster, 2010). General deterrence is to show the other potential offenders that the punishment is substantial enough that it deters them from committing a similar crime (Paternoster, 2010). General deterrence uses one person as an example of what could happen if the law is violated. Foucault (1977) and Beccaria believed that the effectiveness of deterrence theory lies with the certainty of punishment more so than the severity (Paternoster, 2010; Nagin, 2013). If an officer's unethical and/or illegal actions are captured on a body-worn camera than the certainty of punishment increases dramatically. The body-worn camera can assist with bridging the disparities in statements made by all of the individuals involved and is an unbiased, independent witness.

Beccaria understood that the swiftness of punishment was equally as important as the severity of punishment (Paternoster, 2010). If punishment were both certain, swift, and sufficiently severe, then would-be violators would refrain from acting out. Ariel et al. (2015) discussed Beccaria's deterrence theory as a theoretical concept in their body camera study. The authors noted a wide-ranging collection of scholarly research that shows human behavior is modified, the likelihood of unwanted behaviors is lower when punishment is certain, swift, and severe (Ariel et al., 2015). Body-worn cameras can provide evidence to support certain punishment and provide police executives and prosecutors the ability to apply this punishment swiftly. Alternatively, in the case of a false allegation against an officer, the ability to exonerate the officer expeditiously. Both options can provide the public with the confidence that government officials are acting in a professional and ethical manner. Whether the fact that body-worn cameras reduce

citizen complaints or not is up for debate, what has been clearly shown in the literature is that investigations into officer misconduct are being completed much faster with body-worn cameras (Baker, 2004; Katz et al., 2014; Smykla et al., 2016; Toronto Police Service, 2016). The video evidence is unbiased and reliable. Internal Affairs and criminal investigators can determine what actually happened when eyewitness information can be unreliable or biased. In the past, investigators would have to make decisions on "he said/she said" testimony (Jennings et al. 2015). Where now video evidence can corroborate or refute statements quickly.

Jeremy Bentham (1748-1832) developed the idea of panopticon and wanted to use this theory as a basis for the design of prisons, schools, and factories (Jackson, 1998). The concept behind the panoptic prison design was to make the inmates believe that they were under constant surveillance, whether they actually were or not. The design included a central observation tower surrounded by prison cells. A light would shine into the cells allowing the guard(s) to monitor inmate behavior, but the inmates could not determine if anyone was actually in the observation tower or not. With the threat of constant surveillance, inmates would act appropriately for fear of being discovered and punished. While Bentham's prison design never came to fruition during his lifetime, his panopticon, or social surveillance theory, lived on.

French philosopher Michel Foucault (1926-1984) modernized Bentham's panoptic theory (Foucault, 1977). Foucault reframed the idea of panopticon within the structure of knowledge and power. He believed that knowledge, and with it, power came from observing others (Mason, n.d.). Surveillance, combined with the threat of

punishment, was a form of social control. Foucault held, "Suitable behavior is achieved not through total surveillance, but by panoptic discipline and inducing a population to conform by the internalization of this reality." (Mason, n.d.). The "population" in regards to body-worn cameras would be law enforcement officers. Officers know, especially in large police departments, that not every encounter recorded on video will be viewed by a supervising officer or the public. There is a possibility that the video will be viewed by others within the police agency and/or outside the agency and that threat may be enough to alter unwanted unprofessional police conduct.

Use of Force

Police use of force is the area that body-worn cameras are needed the most. Particularly, body-worn cameras can aid in identifying incidents of excessive force and determining if the application of deadly force was justified. Deciding whether an incident is a justified use of force or excessive force is highly subjective. Each incident has its own unique set of facts and circumstances. The U.S. Supreme Court noted this in the landmark case of *Graham v. Connor* (1989), which is considered the controlling case law for deciding if a use of force is reasonable or not. Chief Justice William Rehnquist (*Graham v. Connor,* 1989) wrote that courts have long held that the police, when making a lawful arrest, also have a right to use force or threaten force that is reasonable. Justice Rehnquist (*Graham v. Connor,* 1989) further explained that police must decide to use force in a split second, "…in circumstances that are tense, uncertain, and rapidly evolving." Body-worn cameras give the viewer the officer's point of view during these tense, uncertain, and rapidly evolving situations.

In theory, police officers knowing their every action, and reaction, is being recorded on a body-worn camera, would be less likely to engage in excessive force or to intentionally use unlawful deadly force. Although, in a study for the IACP, 89% of surveyed officers reported that in-car cameras had no effect on their decision to use force (Baker, 2004). For the purposes of scholarly investigation, use of force is much easier to identify than excessive force. Police departments have clearly defined policies that outline what is considered use of force. Police departments track the number of force incidents. Identifying when an incident is deemed to be excessive force is more subjective. It may take years and multiple legal analyses to determine if just one incident is excessive force or not. It can be logically assumed that if the number of use of force incidents is reduced, then the number of excessive force incidents will also decline. Although in a 2015 survey of police command staff in a large Florida county, Smykla, Crow, Crichlow, and Snyder found that the respondents were evenly split on whether body-worn cameras would reduce incidents of excessive force by the police.

In 2008 of the approximately 40 million people who had face-to-face contact with the police, 776,000 or 1.9% of them reported that the police used or threatened force during the encounter (Bureau of Justice Statistics, 2011). Of those 776,000 people, approximately 74.3% of them felt that the force or threatened force was excessive (Bureau of Justice Statistics, 2011). Langton and Durose (2016) reported that in 2011, 1.6% of citizens stopped for a traffic violation experienced physical force by the police. 1 out of every 3 of those people felt that the force used was excessive (Langton & Durose, 2016). Hickman (2006) analyzed citizen complaint data from large state and local law

enforcement agencies. Large agencies were defined as having one hundred or more sworn law enforcement officers. These agencies received more than 26,000 complaints about officer use of force in 2002, with 8% of those being sustained as excessive force (Hickman, 2006).

Ariel et al. (2015) found a reduction in the total use of force incidents when officers were wearing body cameras when compared to when they were not wearing body cameras. Ariel et al. (2015) conducted a randomized controlled study with Rialto, California police officers who wore body cameras on randomly selected days (commonly known as the Rialto study). The researchers compared the number of use of force incidents on camera days to non-camera days. They found that a use of force incident was approximately twice as likely to occur when officers were not wearing body cameras than when they were wearing body cameras (Ariel et al., 2015). Additionally, when compared to previous years when body-worn cameras were not used, they found a reduction of 64.3%, 61.5%, and 58.3% in the total number of use of force incidents from the 3 previous years (Ariel et al., 2015).

Ariel et al. (2016) again replicated the methodology of the original "Rialto study." There were 10 randomized controlled trials conducted using 8 police forces that the authors do not identify. The only reference to location is that the study was a global multisite experiment. The researchers found when averaged across all 10 sites there was no significant difference between the number of use of force incidents when officers were wearing body cameras compared to days that they were not wearing body cameras. When looking at the results for each individual site, there were 3 police departments that saw a

reduction in use of force incidents when the cameras were on. One department had exactly the same amount of force incidents on camera days and non-camera days. Six locations had an increase in use of force incidents when the cameras were worn versus not worn. The authors did caution that the definition of use of force and the reporting requirements did vary by department and may account for some of the differences (Ariel et al., 2016).

Henstock and Ariel (2017) found a reduction in the total use of force incidents when officers were wearing body cameras when compared to when they were not wearing body cameras. Henstock and Ariel (2017) replicated the study of Ariel et al. (2015) by conducting a randomized controlled study with officers wearing body cameras on pre-selected days. The total number of use of force incidents on body-worn camera days was compared to no body-worn camera days. This study was conducted with the Birmingham South Police Unit in Great Britain. Henstock and Ariel (2017) found a 50% reduction in use of force incidents when officers wore a body camera.

The Toronto Police Service (2016) conducted a pilot study of body-worn cameras from May 18th, 2015 to March 30th, 2016 and then compared the data to same 10 month period from the year before (May 18th, 2014 to March 30th, 2015). Use of force reports during the pilot study dropped 15% when compared to the previous year when body cameras were not worn (Toronto Police Service, 2016). The sample size was very small (13 use of force reports during the prepilot period versus 11 use of force reports during the pilot period) making it difficult to confirm a trend.

Ready and Young (2015) conducted a study with the Mesa, Arizona Police Department. The researchers found that officers wearing a body camera made significantly fewer arrests and initiated fewer stop and frisk encounters when compared to officers not wearing a body camera. This study had some limitations in that it included officers who volunteered, but were not randomly assigned, and officers were assigned to participate, in a random selection. Further, halfway through the 10 month study, the police department changed its body camera policy from making camera activation mandatory to camera activation based solely on officer discretion.

The Kauai, Hawaii Police Department reported in 2015 their officers documented 37 use of force incidents (Gonzales, 2017). In 2016, the first year that all their officers were outfitted with body cameras, officers documented just 11 use of force incidents (Gonzales, 2017). Katz et al. (2014) conducted a 15 month study with the Phoenix (AZ) Police Department. Officers in one designated geographic area were outfitted with body-worn cameras (target group) and compared to officers in a similar geographic area who did not wear body cameras (comparison group). Additionally, data was compared to the previous 15 month time period in a pre/post analysis. While the researchers did not evaluate use of force data, they did track offenders who were charged with resisting arrest. Both officers in the target group and the comparison group saw an increase in resisting arrest incidents in the post period when compared to the prebody camera period. There was no statistically significant difference between the target group and the comparison group in the postdeployment period. A limitation of this study was that camera activation was discretionary and the researchers reported a low compliance rate

for turning on the cameras. Less than 50% of the incidents that the target group was involved with were recorded.

A body-worn camera study was conducted with the Orlando Police Department (Jennings, Lynch, & Fridell, 2015). The researchers conducted a randomized controlled trial in which 46 randomly assigned officers were given body-worn cameras and 43 randomly assigned officers were not given body-worn cameras. The groups were demographically similar. The researchers found that officers who wore a body camera had a statistically significant lower prevalence of use of force incidents when compared to the control group (Jennings et al., 2015). The researchers also analyzed the pre/post data on body-worn cameras for the experimental group for the 12 months before body cameras were implemented to the 12 months in which the study was conducted. The researchers found a statistically significant reduction in the number of use of force incidents by the officers in the experimental group (Jennings et al., 2015).

Yokum, Ravishankar, and Coppock (2017) conducted a randomized controlled trial study with 2,224 officers of the Washington D.C. Metropolitan Police Department. Officers in the treatment group were assigned body-worn cameras (n=1,189). Officers in the control group were not provided with a body-worn camera (n=1035). The sample was large enough to detect small effect sizes. The officers were divided up amongst seven patrol districts. The police department staggered the rollout of the camera systems. Therefore, the researchers analyzed the first 7 months of data for each district. There was no statistically significant difference in use of force between the treatment group and the control group. The researchers additionally conducted a time-series analysis of the data

for the 90 days before and after body camera deployment. There was no statistically significant difference in the pre/post data (Yokum, Ravishankar, & Coppock, 2017).

Braga et al. (2018a) conducted a study with the Boston Police Department. Plain clothes police officers from the police departments "gang unit" were randomly assigned into a treatment group (n = 140) and a control group (n = 141). The treatment group had body-worn cameras while the control group did not. The evaluation period was 12 months. The researchers found a reduction, which was not statistically significant, in the total number of use of force incidents.

Braga et al. (2018b) performed a randomized controlled study with the Las Vegas Metropolitan Police Department. Officers (n = 416) volunteered to participate in the study. The volunteer officers were then randomized into a treatment group (n = 218), with body-worn cameras, and a control group (n = 198). The groups were observed over a 12 month period. The researchers also analyzed the data from immediate 12 months from before the study and compared the data to the obtained during the study. The researchers found the treatment group had a 12.5% reduction in use of force incidents when compared to the control group. The treatment group also had an 11.5% decrease in use of force incidents when compared to the 12 month period before the introduction of body-worn cameras.

A randomized-controlled trial with the Milwaukee Police Department was completed by Peterson, Yu, La Vigne, and Lawrence (2018). Officers were assigned to either the treatment group (n = 252), with body-worn cameras, or a control group (n = 252), without a body-worn camera. The study was conducted over a 9 month period in

2016. The researchers also compared the data from the study time-period to the immediate 9 months preceding the start of the randomized-controlled trial. There was a 3.57% increase in use of force incidents with the treatment group with body-worn cameras when compared to the same group in time period before cameras were introduced. There was no statistically significant difference between the treatment group and the control group.

White, Gaub, and Todak (2017) conducted a randomized-controlled trial for 6 months with the Spokane Police Department. The researchers also analyzed the data for the 28 months before the randomized-controlled trial and for 6 months postrandomized controlled trial. The treatment group (n = 82) were issued body-worn cameras May 2015 through October 2015. The control group (n = 67) were then issued body-worn cameras beginning in November 2015. The authors found no statistically significant change in the number of use of force incidents.

Citizen Complaints

The First Amendment of the U.S. Constitution includes several protections for citizens. One of those protections is the right to petition the government for a redress of grievances. Citizens can file complaints when they believe government officials, and the agencies they represent, have overstepped their authority or violated another constitutional right. The Toronto Police Service (2016) believed that body-worn cameras would protect officers from unjustified complaints and allegations of misconduct, while at the same time safeguard citizens from unprofessional police services. Palmer (2016)

discussed the potential for body-worn cameras to enhance police accountability and reduce citizen complaints against the police.

Body-worn cameras have the potential to alter police behavior to reduce citizen complaints and have the potential to prevent citizens from filing false complaints against officers. In the study of in-car cameras by the IACP (Baker, 2004), first-line supervisors reported that nearly half of all complaints were withdrawn after the complainant was notified that the incident had been recorded on an in-car camera. Of the agencies surveyed for the IACP study, in 93% of complaints against officers, the officer was exonerated (Baker, 2004).

In 2011, approximately 31.4 million people over the age of 16 requested police assistance (Durose & Langton, 2013). Approximately, 90% of those persons reported that the police officer(s) acted properly, leaving about 2.2 million people who felt that the officer(s) acted improperly (Durose & Langton, 2013). More than 34 million people over the age of 16 had contact with the police that was initiated by the officer. This includes both traffic stops and street stops. Langton and Durose (2016) found that 25% of those involved in the street stops felt that the officer did not behave properly and 10% of those involved in traffic stops felt that the officer did not behave properly. Only about 5% of those who believed the officer did not act appropriately actually filed a complaint about the officer's behavior (Langton & Durose, 2016). Hickman (2006) found that large state and local police departments received more than 26,000 citizen complaints about officer use of force in 2002.

In a 2014 study (Jennings, Fridell, & Lynch, 2014), 95 Orlando patrol officers were surveyed about their opinion of body-worn cameras. Forty-three percent of those surveyed believed that body-worn cameras would improve the behavior of their fellow officers. In contrast, approximately 20% of officers surveyed thought that body-worn cameras would improve their own behavior.

Jennings, Lynch, and Fridell (2015) then conducted a randomized control study with the Orlando Police Department on the effects of body-worn cameras on citizen complaints. The researchers found a statistically significant lower prevalence of citizen complaints with the experimental group when compared to the control group. Jennings et al. (2015) also found a statistically significant lower number of citizen complaints for the experimental group during the 12 month study when compared to the previous 12 months before the study was initiated.

In the Toronto Police Service study of body-worn cameras (2016), during the pilot study officers wearing body cameras received 5 complaints. When compared to the prepilot period, officers received 3 complaints (Toronto Police Service, 2016). The data shows an increase of complaints while wearing a body camera, but the sample size is small making it difficult to draw a valid conclusion.

The Southeastern Pennsylvania Transportation Authority (SEPTA) Police Department released an audit (Moselle, 2017) from the first 6 months of its body camera program. All 250 police officers in the department were outfitted with a body-worn camera. The department reported a 25% decrease in citizen complaints when compared to the same period from the previous year.

A selection of police command staff (individuals who hold the rank of Captain or above) was surveyed on their views of body-worn cameras (Smykla, Crow, Crichlow, & Snyder, 2015). More than half of the respondents believed that body-worn cameras would reduce undeserved complaints against officers (Smykla et al., 2015).

In the study conducted by Katz et al. (2014) with the Phoenix (AZ) Police Department, officers wearing body cameras (target group) had a 22.5% decrease in citizen complaints when compared to the predeployment period. During that same time period, officers in the comparison group had a 10.6% increase in citizen complaints and the department had an overall increase in citizen complaints of 45.1%. A limitation of this study was that camera activation was discretionary and the researchers reported a low compliance rate for turning on the cameras.

In the now famous "Rialto study," Ariel et al. (2015) conducted two analyses. First, officers wore body cameras on randomly assigned shifts (treatment shifts). The control shifts were days in which officers did not wear body cameras. Data was collected for 12 months. When the complaint data from the study time period was compared to the complaint data from the previous 12 months, the researchers found a 92% reduction in citizen complaints against the police. The second part of the study was to compare the treatment shifts to the control shifts regarding citizen complaints. There was no statistically significant difference between the treatment shifts and the control shifts.

Ariel et al. (2016) conducted a global multisite study of the effect of body-worn cameras on citizen complaints. The researchers performed a replication of the Rialto study. Ariel et al. (2016) found a 93% reduction in citizen complaints against the police

during the 12 months in which body cameras were in use when compared to the previous 12 months. As found in the Rialto study, there was no statistically significant difference between the treatment shifts and the control shifts. In the study, officers were part of both the treatment group and the control group as the police shifts were the unit of analysis rather than the officers. The researchers believe that officer behavior was changed whether they were wearing the cameras or not (Ariel et al., 2016). Another consideration with this study is that officers announced at the beginning of each interaction with a citizen that the encounter was being recorded. This may have had a calming effect on the citizen, the officer, or both.

In the randomized controlled trial conducted by Yokum et al. (2017) with the Washington D.C. Metropolitan Police Department, the researchers found no statistically significant difference between the treatment group and the control group in regards to citizen complaints. Further, when the data was analyzed for pre/post deployment of body-worn cameras, there was no statistically significant difference in the number of citizen complaints.

Braga et al. (2018a) conducted a study with the Boston Police Department. Plain clothes police officers from the police departments "gang unit" were randomly assigned into a treatment group (n = 140) and a control group (n = 141). The treatment group had body-worn cameras while the control group did not. The evaluation period was 12 months. The researchers found a reduction, which was statistically significant, in the total number of citizen complaints.

Braga et al. (2018b) performed a randomized controlled study with the Las Vegas Metropolitan Police Department. Officers (n = 416) volunteered to participate in the study. The volunteer officers were then randomized into a treatment group (n = 218), with body-worn cameras, and a control group (n = 198). The groups were observed over a 12 month period. The researchers also analyzed the data from immediate 12 months from before the study and compared the data to the obtained during the study. The researchers found the treatment group had a 14% reduction in use of force incidents when compared to the control group. The treatment group also had a 16.5% decrease in citizen complaints when compared to the 12 month period before the introduction of body-worn cameras.

A randomized-controlled trial with the Milwaukee Police Department was completed by Peterson et al. (2018). Officers were assigned to either the treatment group (n = 252), with body-worn cameras, or a control group (n = 252), without a body-worn camera. The study was conducted over a 9 month period in 2016. The researchers also compared the data from the study period to the immediate 9 months preceding the start of the randomized-controlled trial. The treatment group had a less than 2% reduction in complaints from the preintervention period to the postintervention period. There was no statistically significant difference between the treatment group and the control group.

White, Gaub, and Todak (2017) conducted a randomized-controlled trial for 6 months with the Spokane Police Department. The researchers also analyzed the data for the 28 months before the randomized-controlled trial and for 6 months post-randomized controlled trial. The treatment group (n = 82) were issued body-worn cameras May 2015

through October 2015. The control group (n = 67) were then issued body-worn cameras beginning in November 2015. The authors found no statistically significant change in the number of citizen complaints.

Offender Injuries

It can be logically concluded that if police officers use force less often, then the number of offenders injured during use of force situations would also decline. The SEPTA Police Department reported a 20% reduction in offender injuries from the first 6 months of its body camera program when compared to the same time period from the previous year (Moselle, 2017).

In the Toronto Police Service (2016) pilot study of body-worn cameras, the number of citizens injured during use of force situations increased during the pilot period when compared to the prepilot period. The researchers surveyed the officers who wore the cameras and some officers noted that citizens became more aggravated when being recorded (Toronto Police Service, 2016). It is clear with only 2 reports on the number of offender injuries during apprehension situations there is a need for further scholarly investigation into this variable.

Officer Injuries

If officers use force less often and the citizens who come in contact with the police know they are being recorded, video of which could be used against them in a court of law, it could be inferred that the number of officers injured in the line of duty would decrease. In a survey of 95 patrol officers in the Orlando Police Department, a high percentage of officers believed that citizen behavior would improve if officers were

wearing body cameras (Jennings, Fridell, & Lynch, 2014). This potential reduction of officer injuries was a selling point to encourage officers to support the use of body-worn cameras. This idea was first tested by Ariel et al. (2016) with their global multisite study of body-worn cameras. The researchers conducted 10 randomized controlled trials in which officers in the selected police departments wore body cameras on preselected days. Data from these body camera days were then compared to data from noncamera days. Overall, the researchers found a 15% increase in officer injuries while wearing body cameras (Ariel et al., 2016). These trials were conducted at 10 discrete locations. The authors noted that if 2 of the sites were removed, then the remaining 8 locations resulted in a nonsignificant difference (Ariel et al., 2016). Either way, the cameras did not show a decrease in officer assaults.

In the Toronto Police Service (2016) pilot study of body-worn cameras, the researchers found that more officer injuries were reported during the body camera pilot period than had been reported the previous year when body cameras were not worn. The researchers did caution that the sample size was small (6 injury reports prepilot and 13 injury reports during the pilot) and further research should be conducted to verify or refute this trend.

The SEPTA Police Department reported a 30% reduction in officer injuries from the first 6 months of its body camera program when compared to the same period from the previous year (Moselle, 2017). In Smykla's et al. (2015) survey of police command staff, only 1/3 of respondents felt that body-worn cameras would make officers safer and over half of the respondents believed that body-worn cameras would make officers more

hesitant to use necessary force during arrest situations. Western Australia Police Deputy Commissioner Stephen Brown commented that with body-worn cameras fewer officers would be assaulted (Hickey, 2015).

ODS Consulting (2011) reported during the first 9 months of a body camera program in Aberdeen, United Kingdom, only one officer was assaulted while wearing a body camera. During this same time period, 61 officers not wearing a body camera were assaulted. The one officer who was injured, the incident occurred during a large-scale disturbance with many officers present.

White, Gaub, and Todak (2017) conducted a randomized-controlled trial for 6 months with the Spokane (WA) Police Department. The researchers also analyzed the data for the 28 months before the randomized-controlled trial and for six months post-randomized controlled trial. The treatment group (n = 82) were issued body-worn cameras May 2015 through October 2015. The control group (n = 67) were then issued body-worn cameras beginning in November 2015. The authors found no statistically significant change in the number of officers injured during use of force situations.

Conclusion

Additional scholarly research on the effects, or lack thereof, of police body-worn cameras is needed. As highlighted in this literature review, that of the studies that have been done, conflicting results have been found. The literature has shown a reduction in use of force incidents, no change in the number of use of force incidents, and an increase in use of force incidents when officers have body-worn cameras. The same conflict is found when reviewing the scholarly literature on citizen complaints and body-worn

cameras. Only 2 studies were found that evaluated the effects of body-worn cameras on offender injuries during arrest situations. One found a reduction in offender injuries and the other found an increase in offender injuries. Two studies revealed that more law enforcement officers were injured while wearing a body camera when compared to officers not wearing a camera. Two other scholarly articles reported a reduction in officer injuries while wearing a body camera. Another study found no change in officer injuries during apprehension situations. The available academic research is practically begging for additional empirical research to be done. This study adds to the growing body of scholarly literature on the effectiveness, or lack thereof, of police body-worn cameras. In the next chapter, information on the methodology for how this study was conducted will be discussed.

Chapter 3: Research Method

Introduction

The goal of this study was to determine the effectiveness of police body-worn cameras. Effectiveness, as it relates to the study, was defined as a reduction in overall police use of force incidents, a reduction in citizen complaints against police, a reduction in offender injuries during apprehension situations, and a reduction in officer injuries during apprehension situations. Each of these is a dependent variable. The independent variable is the body-worn camera. Based on these dependent and independent variables the following hypotheses and research questions were developed:

RQ1: Is there a statistically significant difference in the number of use of force incidents by police after body cameras were deployed in the field compared to data from similar time periods before body cameras were implemented?

$H_0$1: There was no statistically significant difference in the number of use of force incidents by police after body cameras were deployed in the field compared to data from a similar time period before body cameras were implemented.

H_a1: There was a statistically significant difference in the number of use of force incidents by police after body cameras were deployed in the field compared to data from a similar time period before body cameras were implemented.

RQ2: Is there a statistically significant difference in citizen complaints against police after body cameras were deployed in the field compared to data from similar time periods before body cameras were implemented?

$H_0$2: There was no statistically significant difference in citizen complaints against police after body cameras were deployed in the field compared to data from similar time periods before body cameras were implemented.

H_a2: There was a statistically significant difference in citizen complaints against police after body cameras were deployed in the field compared to data from similar time periods before body cameras were implemented.

RQ3: Is there a statistically significant difference in offender injuries during apprehension situations after body cameras were deployed in the field compared to data from similar time periods before body cameras were implemented?

$H_0$3: There was no statistically significant difference in offender injuries during apprehension situations after body cameras were deployed in the field compared to data from similar time periods before body cameras were implemented.

H_a3: There was a statistically significant difference in offender injuries during apprehension situations after body cameras were deployed in the field compared to data from similar time periods before body cameras were implemented.

RQ4: Is there a statistically significant difference in officer injuries during apprehension situations after body cameras were deployed in the field compared to data from similar time periods before body cameras were implemented?

$H_0$4: There was no statistically significant difference in officer injuries during apprehension situations after body cameras were deployed in the field compared to data from similar time periods before body cameras were implemented.

H_a4: There was a statistically significant difference in officer injuries during apprehension situations after body cameras were deployed in the field compared to data from similar time periods before body cameras were implemented.

Research Design

To answer these research questions and test the stated hypotheses, I employed a single-group interrupted time-series design. The single-group interrupted time-series design is a quasi-experimental design. While a classic experimental design with a control group and treatment group is ideal, situations exist where the classic design is not feasible or has ethical issues in a real-world setting. Previous body camera studies have used the experimental design by having all officers in a police department wear body cameras on preselected days and not wear cameras on other days (Ariel et al., 2015; Ariel et al., 2016; Henstock & Ariel, 2017). Data taken from the camera days were compared to data from noncamera days. Other research designs had officers randomly assigned to wear a body camera, while other officers were assigned to a noncamera group (Jennings et al., 2015; Katz et al., 2014; Ready & Young, 2015; Yokum et al., 2017). Both of these experimental designs required officers at some point to not wear a body camera. I had an ethical concern that a serious incident involving an officer could occur while not wearing a body camera for the purposes of this study. If there was a demand by local and/or state officials, the media, or the general public to see the body camera footage of the incident, and there was none because it was a noncamera day or that particular officer was assigned to the control group, I feared there could potential civil litigation and/or backlash for the police department. Furthermore, most police departments implementing

a body camera program institute a departmental policy that requires all officers assigned a camera to have them activated when engaging with the public. If an experimental design were used, this would violate the approved departmental policy. While selecting a site for this study, I talked with multiple police chiefs and specifically brought up the potential research design. All expressed apprehension about a classic experimental design and expressly stated they would not support a study that had officers not wearing cameras for the exact reasons I stated. For these reasons, no control group was available for this research.

Research designs work best with secondary data obtained are single group pretest/posttest and single-group interrupted time-series designs. The pretest/posttest design takes data from a single time point before the introduction of the independent variable (body-worn camera) and compares it to a single time point after the introduction of the independent variable (O'Sullivan, Rassel, & Berner, 2008). This nonexperimental design does not control for threats to internal validity (O'Sullivan et al., 2008). A weakness of this design is that it cannot account for whether the change observed, if any, has a lasting effect or was just a temporary change. The goal of police body-worn cameras is to effect long-term, lasting change in the behaviors of both officers and citizens. Any changes may just be a Hawthorne effect and individuals may return to their previous behaviors after the newness of the body cameras has worn off. If any local, state, and federal agencies are going to spend millions of taxpayer dollars on body camera programs, it would be helpful to know if they will bring about lasting change.

For some studies the pretest/posttest design would be appropriate and provide valuable information, but there is a stronger method available to analyze the data. A single-group interrupted time-series design can be used when there is no comparison group available and a researcher has data from multiple points in time both before and after the introduction of an independent variable (O'Sullivan et al., 2008; Frankfort-Nachmias & Nachmias, 2008). Frankfort-Nachmias and Nachmias (2008) recommended having at least three data points before and three data points after the introduction of the independent variable. For this study, I had 3 years of data on the total number of use of force incidents, the number of citizen complaints, the number of offender injuries during arrest situations, and the number of officer injuries during arrest situations before the introduction of body cameras and 3 years of the same categories of data after the introduction of body cameras. I obtained the total number of calls for service and officer-initiated calls (these two categories will be known as *total citizen encounters*) for each year studied. This data point is important as the total number of citizen encounters is not static from year to year. The total number of citizen encounters determines the number of opportunities for an encounter to result in force being applied. With multiple points of data, seasonal trends, one-time events, cycles can be accounted for within the data. O'Sullivan et al. (2008) wrote that with interrupted time-series designs

> [t]he independent variable may have resulted in (1) an abrupt permanent change in the dependent variable, (2) an abrupt temporary change, which lessens and eventually returns to the baseline level, and (3) a gradual permanent change in

> which the initial change gradually increases or decreases to a point where it starts to level off. (p. 81)

The data obtained was analyzed by comparing the time points to each other to determine if any changes were observed.

The single-group interrupted time series design has two threats to internal validity that must be addressed: history and maturation. History as a threat to internal validity in research design means that some event or phenomenon other than the independent variable may be responsible for any observed changes (O'Sullivan et al., 2008; Frankfort-Nachmias & Nachmias, 2008). A potential history event for the study that could affect and cause measurable differences in the dependent variables before and after the introduction of the independent variable would be advanced training for police officers that improves the ability to de-escalate situations without the need for force. Other training or factors must also be identified, investigated, and documented to address this threat to internal validity.

Another threat to internal validity is maturation. Maturation is changes in the group being investigated that naturally occur and are not influenced by a researcher or the research study (O'Sullivan et al., 2008; Frankfort-Nachmias & Nachmias, 2008). As the research design calls for an evaluation of data over a 6 year period, there were undoubtedly changes in the selected police department's personnel. Police departments experience turnover in personnel due to resignations, retirements, terminations, and new hires. I attempted to obtain demographic data for the groups for each year investigated to determine if there were any significant differences.

Setting

For this study, data was obtained from SRPD, a police department located in the Southeastern United States. All the data for the study came from a single agency. SRPD was responsible for performing law enforcement functions in the metro area in which it is located. The SRPD serves had a population of between 250,000 and 275,000 people (U.S. Census Bureau, 2018). The city is a tourist destination for people from in the United States and abroad. According to the city's Chamber of Commerce (2017), the city has more than 13 million visitors each year.

The SRPD had approximately 550 certified police officers and approximately 180 civilian personnel employed (SRPD, 2014). The SRPD was comprised of a Field Operations Bureau and an Administrative and Management Operations Bureau. Within each of these bureaus, there were various divisions and specialized units. The Uniform Patrol and the Investigations divisions were housed within the Field Operations Bureau.

The SRPD first deployed body-worn cameras in the field in January 2015. Initially, all uniform officers below the rank of sergeant were issued the body cameras. These uniform officers are the first responders to all calls for service and initiate citizen encounters. In 2016, the police department received a grant for an additional 93 body-worn cameras and these were issued to all uniform sergeants and detectives. The SRPD required that body-worn cameras are activated for all citizen encounters. This activation requirement includes calls for service, traffic stops, suspicious persons and/or vehicles, use of force situations, warrant service, pursuits, arrests, and any time the officer feels that activation would benefit their police duties (SRPD, 2016a). Failure to follow this

directive will result in administrative punishment, up to and including termination (SRPD, 2016a).

Secondary or Archival Data

For this study, secondary data, also know was archival data, was used. Secondary data are data collected by either researchers or nonresearch entities for purposes other than the research study (O'Sullivan et al., 2008; Rudestam & Newton, 2015). Secondary data have been used for research for more than 100 hundred years (Frankfort-Nachmias & Nachmias, 2008). This type of data can be useful in many different types of research, as long as the investigator can verify the veracity of the information obtained. Secondary data provide historical context and can be used to identify patterns or changes in the data (Frankfort-Nachmias & Nachmias, 2008). With the single-group interrupted time-series research design for this research study, secondary data are the best, and only, option to analyze the historical data for changes before and after the introduction of body-worn cameras.

The data for this research study were supplied by the SRPD. I had met with a police chief for a department in a major metropolitan area about using his department for the setting of this study. That department had just launched its body camera program and did not have any historical data. This police chief had no interest in conducting a control/experimental group study as he wanted all of his officers wearing body cameras. This police chief recommended I contact the SRPD as that department had been using body cameras for more than 1 year. I then met with the executive staff for the SRPD. I described the purpose, nature, and the significance of the study. They agreed the study

was needed and authorized me to obtain all the data needed for the stated purposes of the study. The SRPD maintained records of all use of force incidents, citizen complaints, offender injuries during arrests, officer injuries during arrests, and total citizen encounters for the SRPD during the time periods investigated. This data were kept in their ordinary course of business and for their own data evaluation projects. The data were requested via an open records request. The SRPD provided this data to me in yearly totals. The data obtained were for the years 2012 through 2017. Body-worn cameras were deployed in the field with the SRPD in January 2015. This is the beginning date for the intervention. Data from the 3 years before body-worn cameras were introduced (2012-2014) were analyzed and compared to the data for the 3 years after body cameras were deployed (2015-2017). As the SRPD provided this data in yearly totals no specific incidents, individual officers or citizens were identified. The data are available to anyone through an open records request. This allows anyone to verify the veracity of the data described here or to replicate this study. This is one of the benefits of using secondary data from a government organization.

Sample and Population

For the research study, the entire population of SRPD officers, who were assigned body-worn cameras, during the identified years was used. The SRPD provided the secondary data for this study and random samples of the data were not available. The SRPD managed the data in yearly totals for all officers. Data are not kept for each individual officer. Therefore, random samples of select officers cannot be parsed out of the available data. Additionally, for the study and research design sampling of the data

was not appropriate. This research study evaluated total numbers of the dependent variables before and after in the introduction of body-worn cameras.

The selection of the years included in the data set for this study is a nonprobability purposive sample. The years of data were not selected randomly. Purposive samples are taken based on a researcher's subjective judgment (Frankfort-Nachmias & Nachmias, 2008). Nonprobability samples while not ideal can be used in quantitative studies (Creswell, 2009). Three body-worn camera studies have employed nonprobability sampling comparing data from a time period before body cameras to a time period after body cameras (Ellis et al., 2015; Katz et al., 2014; & Toronto Police Service; 2016). The time periods used were 12 months, 15 months, and 11 months. The SRPD had three years of data (2015, 2016, and 2017) with officers wearing body cameras. I selected the 3 years prior (2012, 2013, and 2014) to body cameras being issued to mirror the 3 years after. Single-group interrupted time-series designs should have at least 3 data points before and after the intervention is introduced (Frankfort-Nachmias & Nachmias, 2008).

Data Analysis Plan

The summary data was input into an Excel spreadsheet for data management. An average of each variable (officers, officers with body cameras, use of force complaints, citizen complaints, offender injuries officer injuries, officer injuries, officer-initiated calls, citizen-initiated calls, and total calls) was calculated for the 3 years prior and 3 years after the implementation of body cameras. The raw summary data (i.e., totals per

year) as well as the averages for pre- and post-body camera implementation are reported in order to describe the sample of data.

A chi-square test of independence and a McNemar's test were considered to answer the research questions. The chi-square test of independence is used to determine differences in expected versus observed counts in nominal variables (Field, 2013). McNemar's test, on the other hand, is used to determine differences in counts of a single binary variable at two time points (Field, 2013). The chi-square test of independence would not be appropriate due to the large sample size that will be included in the summary data, as the chi-square test of independence will be biased towards significance with large sample sizes (Field, 2013). McNemar's test cannot be used for the type of summary data available, as it requires cases to be individually matched (Field, 2013). In other words, McNemar's test requires an exact count of how many positive cases changed to negative cases from pre to post measurements (e.g., individual data on specific officers over time would be needed). Due to the limitations of the data that will be available, a z-test of two-proportions was used for hypothesis testing. This is used to compare the proportions of a trait between two groups (Newcombe & Altman, 2000). As such, the proportions of use of force incidents, citizen complaints, offender injuries, and officer injuries before and after the implementation of body cameras was calculated. The two groups considered were the groups of officers before and after the implementation of body cameras. The z-test of two proportions was calculated using the following formula:

$$\frac{(\overline{p}_1 - \overline{p}_2) - 0}{\sqrt{\overline{p}(1 - \overline{p})\left(\frac{1}{n_1} + \frac{1}{n_2}\right)}}$$

A separate z-test of two proportions was performed for each research question and variable of interest. The z-test statistic was compared against a critical value; if the test statistic is greater than the critical value, the null hypothesis is rejected (Field, 2013). An alpha (significance level) of .05, a priori, was used for all hypothesis testing.

Summary

A quantitative methodology employing the use of a single-group interrupted time series design was used in the study to analyze the secondary data. The single group design was used as there is no control group available. The population was all of the officers with the SRPD during the time periods selected. The same population was evaluated at three different points of time both before and after the introduction of the independent variable (body-worn cameras). A z-test of two proportions was used to analyze the data for each research question. The results of this analysis will be reported in chapter four.

Chapter 4: Results

Introduction

The purpose of this study was to evaluate the effectiveness of body-worn cameras at a large police department located in the Southeastern United States. Body-worn cameras are supposed to have a calming effect on police officers. This effect should lead to fewer citizen complaints against officers and lower the total number of use of force incidents. If there were lower numbers of use of force incidents, this might also result in fewer citizen and officer injuries during apprehension situations.

The research questions and hypotheses for this study were:

RQ1: Is there a statistically significant difference in the number of use of force incidents by police after body cameras were deployed in the field compared to data from similar time periods before body cameras were implemented?

$H_0$1: There was no statistically significant difference in the number of use of force incidents by police after body cameras were deployed in the field compared to data from a similar time period before body cameras were implemented.

H_a1: There was a statistically significant difference in the number of use of force incidents by police after body cameras were deployed in the field compared to data from a similar time period before body cameras were implemented.

RQ2: Is there a statistically significant difference in citizen complaints against police after body cameras were deployed in the field compared to data from similar time periods before body cameras were implemented?

$H_0$2: There was no statistically significant difference in citizen complaints against police after body cameras were deployed in the field compared to data from similar time periods before body cameras were implemented.

H_a2: There was a statistically significant difference in citizen complaints against police after body cameras were deployed in the field compared to data from similar time periods before body cameras were implemented.

RQ3: Is there a statistically significant difference in offender injuries during arrest situations after body cameras were deployed in the field when compared to data from similar time periods before body cameras were implemented?

$H_0$3: There was no statistically significant difference in offender injuries during arrest situations after body cameras were deployed in the field compared to data from similar time periods before body cameras were implemented.

H_a3: There was a statistically significant difference in offender injuries during arrest situations after body cameras were deployed in the field compared to data from similar time periods before body cameras were implemented.

RQ4: Is there a statistically significant difference in officer injuries during arrest situations after body cameras were deployed in the field when compared to data from similar time periods before body cameras were implemented?

$H_0$4: There was no statistically significant difference in officer injuries during arrest situations after body cameras were deployed in the field compared to data from similar time periods before body cameras were implemented.

H_a4: There was a statistically significant difference in officer injuries during arrest situations after body cameras were deployed in the field compared to data from similar time periods before body cameras were implemented.

Next, the data collection method is described including a discussion of some data that were not available for all years in the study time frame. Then, the results for each of the four research questions are reported in detail. A summary of the results concludes the chapter, which is then followed by a discussion of the results.

Data Collection

I selected a single-group interrupted time-series research design for this study. This type of study design allows a researcher to compare data for selected time periods before the introduction of the independent variable (body-worn cameras) to selected time periods after the introduction of the independent variable. Frankfort-Nachmias and Nachmias (2008) suggested that a minimum of three time periods before and after the introduction of the independent variable be used with this research design. SRPD first implemented body-worn cameras into the field in January 2015. Representatives from SRPD confirmed that yearly data from 2015 to 2017 would be available upon request. 2017 was the last full year that data were available at the time the study was conducted. With 3 years of data after the introduction of body-worn cameras, data from the 3 years immediately preceding were also requested (2012–2014).

I sent an open records request through the city's official website as directed by an SRPD representative. The following information was requested and received:

- Total number of certified police officers employed by SRPD (2012–2017);

- Total number of officers wearing body-worn cameras deployed in the field (2012–2017);
- Total number of officer-initiated calls (2012–2017);
- Total number of citizen-initiated calls (2012–2017);
- Total number of calls (both officer-initiated and citizen-initiated; 2012–2017);
- Total number of use of force incidents (2012–2017);
- Total number of citizen complaints (2012–2017);
- Total number of offender injuries during apprehension situations (2012–2017); and
- Total number of officer injuries during apprehension situations (2012–2017).

This secondary/archival data is kept in the ordinary course of business for SRPD. The data were received in yearly totals with no individual cases, officers, or citizens identified. The selection of 3 years of data prior to the introduction of the independent variable and 3 years of data after was a nonprobability purposive sample. I discussed the reasoning for this selection of years previously in this chapter and in Chapter 3.

As the data are kept in yearly totals and not officer-specific, a representative sample of data from randomly selected officers was not possible. The entire population of officers from SRPD was used in data collection (see Table 1).

Table 1

Number of officers, SRPD

Year	# of sworn officers	Officers with body cameras
2012	552	0
2013	570	0
2014	530	0
2015	525	419*
2016	558	444*
2017	582	542**

Note. *All officers with the rank of patrol officer and corporal. **All officers with the rank of sergeant, corporal, and patrol officer.

There was one discrepancy in the data collected versus what was described in Chapter 3. The SRPD was only able to provide the number of offender injuries for the years 2014, 2015, and 2016. The data for the number of offender injuries for the years 2012, 2013, and 2017 were not available. The SRPD representative who provided the data was unable to explain why the data was not available. The data obtained from SRPD is shown in Table 2.

Table 2

SRPD Research Data

Year	2012	2013	2014	2015	2016	2017
Use of force incidents	214	217	261	237	273	433
Citizen complaints	66	58	119	79	71	79
Offender injuries	N/A	N/A	9	29	21	N/A
Officer injuries	18	24	31	22	27	38
Officer-initiated calls	313,001	312,880	263,752	223,149	298,327	389,026
Citizen-initiated calls	165,437	153,263	164,315	171,989	167,652	157,848
Total calls	478,438	466,143	428,067	396,138	465,979	546,874

Results

Summary statistics were calculated for the number of sworn officers, number of officers with a body camera, number of use of force incidents, number of citizen complaints, number of offender injuries during apprehension situations, number of officer injuries during apprehension situations, number of officer-initiated calls, number of citizen-initiated calls, and total calls. The totals were divided from before body-worn cameras were implemented (Before) and after body-worn cameras were implemented (After).

For Before, the number of sworn officers had an average of 550.67 (*SD* = 20.03, *SEM* = 11.57, Min. = 530, Max. = 570). For After, number of sworn officers had an average of 555.00 (*SD* = 28.62, *SEM* = 16.52, Min. = 525, Max. = 582). For Before, no officers had a body-worn camera. For After, the number of officers with a body camera had an average of 468.33 (*SD* = 65.01, *SEM* = 37.53, Min. = 419, Max. = 542). For Before, the number of use of force incidents had an average of 230.67 (*SD* = 26.31, *SEM* = 15.19, Min. = 214, Max. = 261). For After, the number of use of force incidents had an average of 314.33 (*SD* = 104.33, *SEM* = 60.24, Min. = 237, Max. = 433). For Before, the number of citizen complaints had an average of 81.00 (*SD* = 33.15, *SEM* = 19.14, Min. = 58, Max. = 119). For After, the number of citizen complaints had an average of 76.33 (*SD* = 4.62, *SEM* = 2.67, Min. = 71, Max. = 79). For Before, there were 9 offender injuries in 2014 (data for 2012 and 2013 were not available). For After, the number of offender injuries had an average of 25.00 (*SD* = 5.66, *SEM* = 4.00, Min. = 21, Max. = 29). For Before, the number of officer injuries had an average of 24.33 (*SD* = 6.51, *SEM*

= 3.76, Min. = 18, Max. = 31). For After, the number of officer injuries had an average of 29.00 (*SD* = 8.19, *SEM* = 4.73, Min. = 22, Max. = 38). For Before, the number of officer-initiated calls had an average of 296,544.33 (*SD* = 28399.06, *SEM* = 16396.20, Min. = 263,752, Max. = 313,001). For After, the number of officer-initiated calls had an average of 303,834.00 (*SD* = 82,576.34, *SEM* = 47,675.47, Min. = 224,149, Max. = 389,026). For Before, the number of citizen-initiated calls had an average of 161,005.00 (*SD* = 6728.20, *SEM* = 3884.53, Min. = 153,263, Max. = 165,437). For After, the number of citizen-initiated calls had an average of 165,829.67 (*SD* = 7244.49, *SEM* = 4182.61, Min. = 157,848, Max. = 171,989). For Before, the number of total calls had an average of 457,549.33 (*SD* = 26262.10, *SEM* = 15162.43, Min. = 428,067, Max. = 478,438). For After, the number of total calls had an average of 469,663.67 (*SD* = 75435.52, *SEM* = 43552.72, Min. = 396,138, Max. = 546,874). Skewness and kurtosis were also calculated and are displayed in Table 3. When the skewness is greater than 2 in absolute value, the variable is considered to be asymmetrical about its mean. When the kurtosis is greater than or equal to 3, the variable's distribution is markedly different from a normal distribution in its tendency to produce outliers (Westfall & Henning, 2013).

Table 3

Summary Statistics Table Split by Before and After Body Cameras

Variable	*M*	*SD*	*n*	SE_M	Skewness	Kurtosis
# of sworn officers						
Before	550.67	20.03	3	11.57	–0.12	–1.50
After	555.00	28.62	3	16.52	–0.19	–1.50
Officers with body camera						
Before	0.00	0.00	3	0.00	—	—
After	468.33	65.01	3	37.53	0.59	–1.50
Use of force incidents						
Before	230.67	26.31	3	15.19	0.70	–1.50
After	314.33	104.33	3	60.24	0.61	–1.50
Citizen complaints						
Before	81.00	33.15	3	19.14	0.66	–1.50
After	76.33	4.62	3	2.67	–0.71	–1.50
Offender injuries						
Before	9.00	—	1	—	—	—
After	25.00	5.66	2	4.00	0.00	–2.00
Officer injuries						
Before	24.33	6.51	3	3.76	0.09	–1.50
After	29.00	8.19	3	4.73	0.42	–1.50
Officer-initiated calls						
Before	296544.33	28399.06	3	16396.20	–0.71	–1.50
After	303834.00	82576.34	3	47675.47	0.12	–1.50
Citizen-initiated calls						
Before	161005.00	6728.20	3	3884.53	–0.69	–1.50
After	165829.67	7244.49	3	4182.61	–0.43	–1.50
Total calls						
Before	457549.33	26262.10	3	15162.43	–0.54	–1.50
After	469663.67	75435.52	3	43552.72	0.09	–1.50

Note. — denotes the sample size is too small to calculate the statistic.

Use of Force

To answer RQ1, a two proportions z-test was conducted to examine whether there was a significant difference between the proportions of use of force incidents before and after the introduction of body-worn cameras compared to the total number of officers.

The assumption of normality was assessed using the central limit theorem. The mean of any random variable will be approximately normally distributed as sample size increases according to the central limit theorem. Therefore, with a sufficiently large sample size ($n > 50$), deviations from normality will have little effect on the results (Stevens, 2009). The sample size ($ns1 = 551$, $ns2 = 555$) indicates that the central limit theorem applies and normality can be assumed for the purposes of the z-test. This assumption was met for all the following analyses for each research question.

The result of the two proportions z-test was significant, $z = -4.93$, $p < .001$, 95% CI [-0.20, -0.09], indicating the null hypothesis can be rejected. This suggests the proportion of use of force incidents before body-worn cameras were significantly different than the proportion of use of force incidents after body-worn cameras. The proportion of Before was significantly lower than the proportion of After. The 95% confidence interval for the difference between the proportions of Before and After is -0.20 to -0.09. Table 4 presents the results of the two sample proportions z-test.

Table 4

Two Proportions z-Test for the Difference of Use of Force Incidents Based on Number of Officers

Samples	Responses	*n*	Proportion	*SD*	*SE*
Before	231	551	0.42	0.49	0.02
After	314	555	0.57	0.50	0.02

Note. $z = -4.93$, $p < .001$, 95% CI [–0.20, –0.09]

A two proportions z-test was conducted to examine whether there was a significant difference between the proportions of use of force incidents before and after the introduction of body-worn cameras when compared to the total number of calls (both officer-initiated and citizen-initiated). The assumption of normality was met for this z-test. The result of the two proportions z-test based on the number of calls was significant, z = -3.26, p = .001, 95% CI [-0.00, -0.00], corroborating the results of the test based on the number officers. Table 5 presents the results of the two sample proportions z-test.

Table 5

Two Proportions z-Test for the Difference of Use of Force Incidents Based on Total Calls

Samples	Responses	*n*	Proportion	*SD*	*SE*
Before	231	457549	0	0.02	0.00
After	314	469664	0	0.03	0.00

Note. $z = -3.26$, $p = .001$, 95% CI [–0.00, –0.00]

Citizen Complaints

Research question 2: Is there a statistically significant difference in citizen complaints against the police after body cameras are deployed in the field when compared to data from similar time periods before body cameras were implemented?

A two proportions z-test was conducted to examine whether there was a significant difference between the proportions of citizen complaints before and after the

introduction of body-worn cameras when compared to the total number of officers. The assumption of normality was met for this z-test.

The result of the two proportions z-test was not significant, z = 0.48, p = .631, 95% CI [-0.03, 0.05], indicating the null hypothesis cannot be rejected. This suggests there was no significant difference between the proportions of citizen complaints before body-worn cameras and citizen complaints after body-worn cameras. The 95% confidence interval for the difference between the proportions of Before and After is -0.03 to 0.05. Table 6 presents the results of the two sample proportions z-test.

Table 6

Two Proportions z-Test for the Difference of Citizen Complaints Based on Number of Officers

Samples	Responses	*n*	Proportion	*SD*	*SE*
Before	81	551	0.15	0.35	0.02
After	76	555	0.14	0.34	0.01

Note. $z = 0.48$, $p = .631$, 95% CI [-0.03, 0.05]

A two proportions z-test was conducted to examine whether there was a significant difference between the proportions of citizen complaints before and after the introduction of body-worn cameras when compared to the total calls. The assumption of normality was met for this z-test.

The result of the two proportions z-test based on the number of calls was not significant, z = 0.56, p = .574, 95% CI [-0.00, 0.00], corroborating the results of the test based on the number officers. Table 7 presents the results of the two sample proportions z-test.

Table 7

Two Proportions z-Test for the Difference of Citizen Complaints Based on Total Calls

Samples	Responses	*n*	Proportion	*SD*	*SE*
Before	81	457549	0	0.01	0.00
After	76	469664	0	0.01	0.00

Note. $z = 0.56$, $p = .574$, 95% CI [-0.00, 0.00]

Offender Injuries

Research Question 3: Is there a statistically significant difference in offender injuries during apprehension situations after body cameras are deployed in the field when compared to data from similar time periods before body cameras were implemented?

A two proportions z-test was conducted to examine whether there was a significant difference between the proportions of offender injuries during apprehension situations before and after the introduction of body-worn cameras when compared to the total number of officers. The assumption of normality was met for this z-test.

The result of the two proportions z-test was significant, z = -2.75, p = .006, 95% CI [-0.05, -0.01], indicating the null hypothesis can be rejected. This suggests the proportion of offender injuries before body-worn cameras were significantly different than the proportion of offender injuries after body-worn cameras. The proportion of Before was significantly lower than the proportion of After. The 95% confidence interval for the difference between the proportions of Before and After is -0.05 to -0.01. Table 8 presents the results of the two sample proportions z-test.

Table 8

Two Proportions z-Test for the Difference of Offender Injuries Based on Number of Officers

Samples	Responses	*n*	Proportion	*SD*	*SE*
Before	9	530	0.02	0.13	0.01
After	25	542	0.05	0.21	0.01

Note. z = -2.75, p = .006, 95% CI [-0.05, -0.01]

A two proportions z-test was conducted to examine whether there was a significant difference between the proportions of offender injuries during apprehension situations before and after the introduction of body-worn cameras when compared to the total calls. The assumption of normality was met for this z-test.

The result of the two proportions z-test based on the number of calls was significant, z = -2.73, p = .006, 95% CI [-0.00, -0.00], corroborating the results of the test based on the number officers. Table 9 presents the results of the two sample proportions z-test.

Table 9

Two Proportions z-Test for the Difference of Offender Injuries Based on Total Calls

Samples	Responses	*n*	Proportion	*SD*	*SE*
Before	9	428067	0	0.00	0.00
After	25	431059	0	0.01	0.00

Note. z = -2.73, p = .006, 95% CI [-0.00, -0.00]

Officer Injuries

Research Question 4: Is there a statistically significant difference in officer injuries during apprehension situations after body cameras are deployed in the field when compared to data from similar time periods before body cameras were implemented?

A two proportions z-test was conducted to examine whether there was a significant difference between the proportions of officer injuries during apprehension situations before and after the introduction of body-worn cameras when compared to the total number of officers. The assumption of normality was met for this z-test.

The result of the two proportions z-test was not significant, z = -0.68, p = .498, 95% CI [-0.03, 0.02], indicating the null hypothesis cannot be rejected. This suggests there was no significant difference between the proportions of officer injuries before body-worn cameras and officer injuries after body-worn cameras. The 95% confidence interval for the difference between the proportions of Before and After is -0.03 to 0.02. Table 10 presents the results of the two sample proportions z-test.

Table 10

Two Proportions z-Test for the Difference of Officer Injuries Based on Number of Officers

Samples	Responses	*n*	Proportion	*SD*	*SE*
Before	24	551	0.04	0.20	0.01
After	29	555	0.05	0.22	0.01

Note. z = -0.68, p = .498, 95% CI [-0.03, 0.02]

A two proportions z-test was conducted to examine whether there was a significant difference between the proportions of officer injuries during apprehension situations before and after the introduction of body-worn cameras when compared to the total calls. The assumption of normality was met for this z-test.

The result of the two proportions z-test based on the number of calls was not significant, z = -0.64, p = .523, 95% CI [-0.00, 0.00], corroborating the results of the test

based on the number officers. Table 11 presents the results of the two sample proportions z-test.

Table 11

Two Proportions z-Test for the Difference of Officer Injuries Based on Total Calls

Samples	Responses	*n*	Proportion	*SD*	*SE*
Before	24	457549	0	0.01	0.00
After	29	469664	0	0.01	0.00

Note. $z = -0.64$, $p = .523$, 95% CI [-0.00, 0.00]

Summary

This chapter reported the results of the analysis of the data provided by the SRPD. The data was collected yearly from 2012-2017 by the SRPD in the ordinary course of business. The dependent variables were use of force incidents, citizen complaints, offender injuries during apprehension situations, and officer injuries during apprehension situations. The independent variable was the body-worn cameras. The purpose of the research was to determine if the introduction of the independent variable had a significant impact on the dependent variables. The SRPD began to use body-worn cameras in the field starting in January 2015. Two of these research questions were statistically significant (RQ1 and RQ3), and two of the research questions were not statistically significant (RQ2 and RQ4). The analysis for each question compared the dependent variable in question to both the total number of officers and the total calls for service. This was done to determine if the number of officers or the total calls made a statistically significant difference in the reported outcomes (neither did not). Further, the analysis was

completed both ways to see if the results corroborated each other (there was corroboration on each question).

Research question 1: Is there a statistically significant difference in the number of use of force incidents by the police after body cameras are deployed in the field when compared to data from similar time periods before body cameras were implemented?

Research question 1 answer: The results of the two proportions z-test were significant when compared to the total officers ($p < .001$) and the total calls ($p = .001$).

Research question 2: Is there a statistically significant difference in citizen complaints against the police after body cameras are deployed in the field when compared to data from similar time periods before body cameras were implemented?

Research question 2 answer: The results of the two proportions z-test were not significant when compared to the total officers ($p = .631$) and the total calls ($p = .574$).

Research Question 3: Is there a statistically significant difference in offender injuries during apprehension situations after body cameras are deployed in the field when compared to data from similar time periods before body cameras were implemented?

Research question 3 answer: The results of the two proportions z-test were significant when compared to the total officers ($p = .006$) and the total calls ($p = .006$).

Research Question 4: Is there a statistically significant difference in officer injuries during arrest situations after body cameras are deployed in the field when compared to data from similar time periods before body cameras were implemented?

Research question 4 answer: The results of the two proportions z-test were not significant when compared to the total officers ($p = .498$) and the total calls ($p = .523$).

In Chapter 5, there will be further discussion of the results along with an interpretation of the findings and recommendations.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

The purpose of this study was to evaluate the effectiveness of body-worn cameras for police officers. Effectiveness was defined as a reduction in citizen complaints, a reduction in police use of force incidents, a reduction in offender injuries during apprehension situations, and a reduction in officer injuries during apprehension situations (dependent variables) after a body camera system (independent variable) was implemented compared to data from similar time periods before cameras were introduced. Maciag (2016) conducted a survey of law enforcement agencies across the United States and found that 95% were either committed to or were already using body-worn camera programs. With so many law enforcement agencies implementing body-worn camera programs, it is important to know if they are effective in accomplishing the goals previously outlined. Police executives should know what to expect when starting a new body-worn camera program. This study will add to the ever-growing academic literature on police use of body-worn cameras.

In this study, I used a quantitative methodology to evaluate the effectiveness of body-worn cameras. The setting for this study was a police department located in the Southeastern United States. I used an interrupted time-series design to compare and contrast the findings with data of citizen complaints and use of force incidents, officer injuries, and offender injuries from the police department from the years prior to implementing body cameras to similar time periods after issuing body cameras. A

purposeful sample of 3 years of data before body cameras were introduced and 3 years of data after body cameras were introduced was analyzed.

Two of the research questions were statistically significant (RQ1 and RQ3), and two of the research questions were not statistically significant (RQ2 and RQ4). There was a statistically significant difference in use of force incidents in the 3 years after body-worn cameras were introduced compared to 3 years before body cameras (RQ1). There was no statistically significant difference in citizen complaints in the 3 years after body-worn cameras were introduced compared to 3 years before body cameras (RQ2). There was a statistically significant difference in offender injuries during apprehension situations in the 3 years after body-worn cameras were introduced compared to 3 years before body cameras (RQ3). There was no statistically significant difference in officer injuries during apprehension situations in the 3 years after body-worn cameras were introduced compared to 3 years before body cameras (RQ4).

Interpretation of the Findings

The results of this study—two research questions (RQ1 and RQ3) with statistically significant results and two research questions (RQ2 and RQ4) with no statistically significant results—reflect current academic literature that has shown mixed results on the effectiveness of body-worn cameras. In SRPD, the 3-year average of use of force incidents before body-worn cameras was 231. The 3-year average of use of force incidents after body-worn cameras was 314. That is a 36% increase in use of force incidents after body-worn cameras were introduced. Katz et al.'s (2014) previous study with the Phoenix, Arizona, Police Department revealed an increase in use of force after

body-worn cameras were assigned to officers in the field. The majority of the previous studies showed a decrease in officer use of force after body cameras were used (Ariel et al., 2015; Gonzales, 2017; Henstock & Ariel, 2017; Jennings et al., 2015; Toronto Police Service, 2016). Ariel et al. (2016) and Yokum et al. (2017) found no change in use of force after body-worn cameras.

The SRPD citizen complaints 3-year average was 81 complaints before body-worn cameras, and the 3-year average was 76 complaints after body-worn cameras. While this is a 6% reduction, it was not statistically significant. This finding aligns with Yokum et al.'s (2017) study with the Washington D.C. Police Department, which also revealed no significant change in citizen complaints. Other previous studies found a reduction in citizen complaints after body-worn cameras (Ariel et al., 2015; Ariel et al., 2017; Jennings et al., 2015; Katz et al., 2014; Moselle, 2017). Only one study revealed an increase in citizen complaints after body-worn cameras were assigned to officers (Toronto Police Service, 2016).

In the present study, only 1 year of data, 2014, on offender injuries was available, which indicated that nine offenders were injured during apprehension situations. This was the year immediately preceding the deployment of body-worn cameras (2015). The 2-year average of offender injuries after body-worn cameras was 25. This is an increase of 278%. Only the Toronto Police Service (2016) showed an increase in offender injuries during the time studied. Moselle (2017) also evaluated offender injuries regarding body-worn cameras and revealed a reduction in offender injuries.

For officer injuries during apprehension situations, there was an increase from the 3-year average before body-worn cameras of 24 injuries to a 3-year average of 29 injuries after body cameras. This is an increase of 21%, but this was not statistically significant. Ariel et al. (2016) and the Toronto Police Service (2016) observed an increase in officer injuries after body-worn cameras were used. Moselle (2017) and ODS Consulting (2011) found a decrease in officer injuries after body-worn cameras were assigned.

Bentham (Jackson, 1998) and Foucault's (1977) panopticon, or social surveillance theory, provide the theoretical framework for this body-worn camera study. The basic premise of panopticon is that people will obey rules if they think they are being observed. In relation to the present study, the theory holds that police officers who know their actions are under constant surveillance, whether the body camera footage is ever viewed or not, will act in an ethical, legal, and professional manner. Theoretically, officers wearing body cameras will be less likely to use unnecessary force on citizens and will receive fewer citizen complaints. Additionally, fewer use of force incidents would result in fewer offender and officer injuries during apprehension situations.

This theory is supported by Beccaria's (Polinsky & Shavell, 1998) deterrence theory. Deterrence theory holds that if punishment is certain, swift, and severe, it would deter individuals from committing the act. Officers knowing that their actions are being recorded will be less likely to commit unethical or illegal acts because the threat of punishment is greater with video evidence. Additionally, if citizens know that officers are wearing body cameras, the citizens may be less likely to assault officers because the body camera would capture the illegal act. Video recordings can be used against citizens in

court proceedings. These are all reasons criminal justice reformists and body camera proponents point to when justifying the expansion of body-worn camera programs for all police officers. One of the goals of this current study was to determine if the empirical evidence supports these ideas and theories.

The data from this current study did not align with the aforementioned theories. Use of force incidents and offender injuries during apprehension situations increased after body-worn cameras were introduced. There was no significant change in citizen complaints or officer injuries. The 3-year average of use of force incidents prior to body-worn cameras was 231 (2012-2014). In each year after body-worn cameras were introduced, use of force incidents increased (2015, n = 237; 2016, n = 273; 2017, n = 433). Initially, in 2015, all police officers in SRPD with the rank of either corporal or patrol officer were assigned a body camera (n = 419). In 2015, the total number of officers issued a body camera increased (n = 444). In 2016, SRPD applied for and received a grant to purchase more body-worn cameras. For 2017, SRPD expanded the breadth of assigned cameras to include not only corporals and patrol officers, but also sergeants and detectives (n = 542).

As the number of officers assigned a body camera increased, so did the total number of use of force incidents. One explanation for this is that officers are reporting use of force more often because the incident was captured on body camera video, when they may not have reported it prior to body cameras. A use of force incident triggers additional paperwork by the officer(s) involved and an investigation by a supervisor, per SRPD policy (SRPD, 2016b). In the past, a minor use of force may not have been

reported by an officer to avoid additional paperwork or a supervisor may declare an incident not a use of force to similarly avoid performing an investigation and the accompanying paperwork. Now that the incident is recorded on video, the corners that may have been cut in the past are no longer cut to avoid punishment for failure to report use of force. SRPD policy (2016b) requires all use of force incidents be reported and investigated and provides penalties, to include termination, for not doing so. This relates back to the social surveillance theory and the potential for improper behavior, failure to properly document, being captured on video and resulting in punishment.

The increase in use of force incidents may not be related to an increase in reporting. Another explanation for the increased use of force is officer hesitation. In the past, officers, based on their previous training, experience, and prior knowledge, sensing a situation may be getting out of control would preemptively seize a person to avoid a much more serious confrontation. Officers, knowing that their body camera footage may be reviewed by individuals both inside and outside of the criminal justice system, may be hesitating to intervene in a situation which results in an officer needing to use a greater level of force to regain control of the encounter. This could explain the increase in offender injuries during apprehension situations, if officers have to use a greater level of force to gain or regain control of a situation. However, within the SRPD, there was not a resultant increase in officer injuries. Additional research within the SRPD is needed to further evaluate the reason for increased use of force and offender injuries with use of body-worn cameras.

Limitations of the Study

According to the Bureau of Justice Statistics (2018), the average size of a law enforcement agency in the United States is 46 officers. The SRPD has more than 500 sworn law enforcement officers. Additionally, the municipality that the SRPD serves is one of the largest tourist destinations in the Southeast Region of the United States being host to millions of visitors each year. Therefore, the findings of the current study may not be generalizable to agencies that are much smaller or larger or that serve a different demographic. As body-worn camera technology is fairly new the amount of historical data to be analyzed is limited. For the current study only 3 years of data with body-worn cameras in the field were available. In the future, a more in-depth analysis of data over many years may provide more precise results.

An internal threat to validity that must be addressed is maturation. Maturation involves changes in the group being investigated that naturally occur and are not influenced by the researcher or the research study (O'Sullivan et al., 2008; Frankfort-Nachmias & Nachmias, 2008). The total number of officers employed by the SRPD before body cameras (n = 551) was relatively equal to the number of officers employed after the introduction of body-worn cameras (n = 555). This does not mean it was the exact same officers during all six years observed. Police departments, like all organizations, have personnel turnover due to resignations, terminations, promotions, and retirements. The data from officers in 2012 was not the same exact group observed in 2017. The data provided by the SRPD is kept in yearly totals only and was not available broken down by individual officers.

Recommendations for Future Research

For future research into body-worn cameras, both quantitative and qualitative research should be pursued. Specifically, further research with the SRPD to determine the reasons for an increase in both use of force incidents and offender injuries after body-worn cameras were used is needed. When determining if police use of force is justified or excessive, the assessment is intensely fact-specific and must be evaluated on a case-by-case basis, not taken as a whole. In the present study, total numbers of use of force incidents increased after the introduction of body-worn cameras. This does not mean that SRPD officers have become more violent or that the increase should be viewed in a negative light. The state in which the SRPD is located requires certified police officers to have de-escalation training each year. This requirement went into effect in 2017, which was the last year of available data for this current study. There could be several reasons behind the increase, to include increased reporting, citizens offering more resistance than in previous years, officer hesitation due to cameras, or a combination of all of the previous suggestions. Additional research on the underlying causes should be undertaken as that analysis is outside of the scope of the current study. This could be accomplished through interviews of SRPD personnel. Interviews of police officers and police supervisors could explore the reasons why the number of use of force incidents and offender injuries increased significantly. A deeper dive into the data by reviewing individual use of force reports from the years before and after body-worn cameras were introduced may reveal possible explanations for the differences in the data from the years before and after body-worn cameras were used. Surveys of citizens, police officers,

police executives, and government leaders to identify their expectations of body-worn camera programs are needed. Before a body-worn camera program is implemented, the expectations of the various stakeholders should be explored to determine what the goals of the body-worn cameras are and how those goals will be measured.

Implications

The potential for positive social change with the present study can be found at the organizational level and the societal level. The SRPD administration will be provided with the results of this study. The results can be used in an evaluation of their body-worn camera program to determine if it is meeting their expected goals. The SRPD, as an organization, may want to evaluate for themselves why the number of use of force incidents and offender injuries increased during the time periods study. The SRPD may also want to investigate why citizen complaints and officer injuries did not decrease during the study time frame. Changes in policy or in policy application may be needed. Additionally, the results can be used to determine what, if any, improvements or adjustments need to be made within the program. Other law enforcement agencies are able to use the academic research to determine if creating or expanding a body-worn camera program is appropriate for their organization and an appropriate use of taxpayer money.

On the societal level, body-worn cameras have been touted as a method to increase police legitimacy, reduce citizen complaints against the police, reduce the incidents of use of force by the police, and obtain evidence that can be used in criminal prosecutions (Ariel et al., 2015; Katz, Choate et al., 2014; Miller & Toliver, 2014;

Palmer, 2016; Stratton et al., 2015; White, 2014). Activists, legal scholars, journalists, and academic researchers have advocated that body-worn cameras will increase the visibility of police actions resulting in a reduction of use of force incidents and increased accountability (Brucato, 2015). The present study, taken with the previous academic literature, has shown that expectations must be tempered. The results have been mixed with no clear, definitive answer at this time. Body-worn cameras are not the sole solution to improving police-community relations.

Methodologically, constant refinement and experimentation with various research designs and analyses on body camera programs should continue. A classic experimental design with tightly-controlled laboratory conditions is not possible when evaluating body-worn cameras. Some law enforcement agencies have allowed researchers to have experimental and control groups, while other agencies have denied such a research design (such as in the current study). It appears from the review of the literature that the experimental/control group designs were used when agencies first rolled out body camera programs. In the future, when researchers go back and review years of historical data for these same organizations, an interrupted time-series design, similar to what was used in this study, will be more appropriate.

Conclusion

The Bureau of Justice Statistics (2018, November) reported that approximately 47% of law enforcement agencies in 2016 had a body-worn camera program. According to Maciag (2016), nearly all law enforcement agencies will eventually have a body-worn camera program. This moves the question for many researchers from “Should law

enforcement agencies have body-worn cameras?" to "What results can be anticipated from body-worn camera programs?" This study adds to the growing body of academic research that is finding mixed results on the effectiveness of body-worn cameras. In this study, both use of force incidents and offender injuries increased while citizen complaints and officer injuries remained relatively stagnant. These results do not support the hypotheses of what body-worn cameras would accomplish when implemented in a law enforcement agency.

Body-worn cameras will almost certainly increase police transparency, as more incidents are captured on video recording devices. It appears that the cameras will not be a cure-all for improved police-community relations or police reform. Expectations of the outcomes of body camera programs must be realistic. The cameras should be one part of a much larger effort that will be needed to obtain the desired reforms.

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