The Effects of Stratified Policing on Key Organizational Change Components

by

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Abstract

This study examined the effects of stratified policing on four key organizational change components, leadership, communication, transparency, accountability, as well as satisfaction with proactive crime reduction within one large police agency, the Delaware State Police (DSP). Stratified policing is an organizational framework that aids police departments in systematizing the use of evidence-based policing strategies into their daily operations. It accomplishes this through the use of crime analysis, implementation of evidence-based strategies, and clear accountability structure and mechanisms. The same anonymous survey was administered to DSP personnel in 2016 and 2019 after the implementation of stratified policing, obtaining perceptions of leadership, accountability, communication, transparency, and satisfaction with the agency's proactive crime reduction. The analysis examined changes in each of the four key organizational change components individually as well as which were the best predictors of satisfaction with crime reduction efforts both pre-implementation and post-implementation. Using a one-group pretest-posttest research design, independent t-tests showed that all four key organizational change components, as well as satisfaction with proactive crime reduction, significantly improved following the implementation of stratified policing with some variation by rank. The multiple regression analyses showed that while most of the organizational change components were significant for both waves, there were some notable differences in their importance and the significance of rank and division.

The study's findings suggest that stratified policing may be the necessary bridge for translating "what works" in policing and "making it work" within a police department. It accomplishes this by facilitating successful organizational change through its ability to improve the key organizational change components.

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Dedications

I would like to dedicate my work to my loving parents, Michael and Rosemary, for all they have done for me. Coming from humble beginnings with aspirations for a better life for their children, they had the courage and dedication to make that dream a reality. They instilled the determination and work ethic that made it possible for me to be a first-generation college student. For them, I'll forever be grateful.

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Chapter 1: Introduction

Over the past several decades, there has been a growing body of research that examines the effects of proactive crime reduction strategies on crime. Among this research is a recently published National Academies of Sciences report that has provided a strong evidence base of "what works" in policing (National Academies of Sciences, Engineering, and Medicine, 2018). Due in part to this increase in research and rising crime rates, innovative police leaders throughout the country have begun incorporating proactive policing strategies into police operations in the hopes of having a more profound effect on crime reduction (National Academies of Sciences, Engineering, and Medicine, 2018).

Unfortunately, many proactive initiatives discussed in the report fall short of their intended goals, which is in large part due to issues with implementing these evidence-based policing strategies (Mazerolle, Darroch, & White, 2012; National Academies of Sciences, Engineering, and Medicine, 2018). Researchers have identified several obstacles faced during the implementation process, including internal resistance to change, a superficial adoption of the initiatives, internal tensions between personnel, policing culture, and difficulties with managing and integrating technology (Mazerolle et al., 2012). Another issue with the implementation of these proactive initiatives is that they often rely too heavily on line-level officers, which researchers argue is ineffective as they are ill equipped to provide the necessary structure required for successful implementation (Santos & Santos, 2015).

A common theme throughout the literature is the role organizational change plays in institutionalizing evidence-based practices. In fact, researchers suggest that facilitating organizational change throughout a police department is a prerequisite to the effective implementation and sustainability of evidence-based policing strategies (Santos, 2018). Several

key elements are considered essential in facilitating widespread organizational change, including leadership, communication, transparency, and accountability (Appelbaum et al., 2017; Santos, 2018). Thus, the sustainability of proactive policing initiatives relies heavily on the agency's ability to create organizational change to facilitate proper integration of the strategies and processes into police work. Hence, by focusing on these key components within an agency, the proactive crime reduction culture of an agency can experience change and allow for the successful integration of crime analysis and evidence-based practices (National Academies of Sciences, Engineering, and Medicine, 2018; Santos, 2018).

Stratified policing, a structure for implementing proactive crime reduction and evidence-based practices, may play an important role in bridging the gap between theory and practice. It seeks to assist in taking "what works" in policing and tries to "make it work" within a police department (Santos & Santos, 2015). It accomplishes this by providing an organizational framework to a police department that aids in institutionalizing problem solving, analysis, and accountability (Boba & Santos, 2011).

The limited body of research that exists on stratified policing support its usage, finding it to be successful in improving key organizational change components and helping agencies achieve their crime reduction goals (Santos, 2018; Santos & Santos, 2015). For instance, a recent study on the effects stratified policing had on key organizational characteristics, leadership, communication, transparency, and accountability, found that perceptions of all the key characteristics increased following the implementation of stratified policing in one agency (Santos, 2018). Additionally, while the study did not seek to test the effects of stratified policing on crime, it did show that the agency was able to reduce its targeted crime by 12% under

stratified policing (Santos, 2018). Thus, it has shown promise as an effective framework for assisting police departments in institutionalizing evidence-based practices.

Consequently, the purpose of this study is to add to the body of research on stratified policing and the study seeks to determine whether stratified policing creates organizational change in another, much larger agency. Additionally, this study seeks to extend Santos' (2018) analysis by examining how stratified policing effects perceptions of these key organizational change components and individual satisfaction with crime reduction efforts by rank, as well as examine which of these organizational change components predict satisfaction.

This research studies the Delaware State Police (DSP) and the changes that occurred within the organization after the implementation of stratified policing. The DSP began implementing stratified policing in 2016 with the goal of utilizing evidence-based practices to reduce crime and traffic complaints, and to utilize its resources in a more efficient and effective way (McQueen, Moriarty, & Crotty, 2019). Two waves of an organizational survey were conducted in 2016 and 2019 that asked sworn personnel their perceptions of the agency's crime reduction activities as well as leadership, communication, transparency, accountability, and satisfaction with proactive crime reduction. This study will utilize the two waves of the survey to determine whether stratified policing led to improved perceptions of the key organizational change components among DSP personnel.

This thesis includes five chapters. Chapter 2 illustrates the issues associated with implementing proactive policing strategies, contains a review of "what works" in policing, discusses the necessity of a framework to aid in institutionalizing evidence-based policing, and argues why stratified policing was chosen as the best organizational framework to institutionalize evidence-based practices. Chapter 3 focuses on DSP's implementation of stratified policing, the

study data, the research design, measurement of variables, and the methodology used to analyze the data. Chapter 4 will present the analysis results, which include the crime reduction results reported by DSP, a pre-test and post-test comparison of the organizational change measures, and a multivariate analysis to examine how the organizational change measures predict individual satisfaction with crime reduction. The final chapter will contain a discussion of the research findings, the practical implications of said findings, the study's limitations, recommendations for future research, and concluding thoughts.

Chapter 2: Practical Foundations and Review of the Research

This chapter is a review of the literature pertaining to the institutionalization of evidence-based practices, organizational change, the effectiveness of proactive crime reduction strategies or "what works" in policing, as well as an overview of stratified policing and the role it plays in facilitating organizational change. One goal is to establish what is currently known about organizational change, including what elements help facilitate effective organizational change. By understanding this literature, it aids in understanding what is necessary to institutionalize the use of evidence-based practices in policing and provides insight to the components of stratified policing. Another goal purpose is to establish "what works" in policing, as by doing so it allows for guidance on what proactive policing strategies police agencies should be utilizing to try and reduce crime. A final goal is to illustrate how stratified policing will aid police departments in institutionalizing the use of evidence-based practices and facilitate successful organizational change.

Institutionalization of Crime Reduction and Organizational Change

Research has found that organizational change is necessary to institutionalize evidence-based proactive crime reduction strategies (Santos & Santos, 2015). The implementation of evidence-based policing strategies into an agency must be a systematic process (Appelbaum et al., 2017; Santos, 2018; Stetler, Richie, Rycroft-Malone, & Charns, 2014). Santos (2018) stated that the successful institutionalization of crime reduction efforts throughout an agency requires a systematic structure. Once this is obtained, crime reduction efforts can be sustained, and organizational change can occur. Stetler et al. (2014) claimed that once institutionalization of evidence-based practices is systematic, it becomes the organizational norm. This allows for the continued use of evidence-based practices opposed to using it for just a single program.

Barriers to implementation.

Institutionalization of evidence-based practices is difficult in part due to a variety of challenges that are faced during the implementation process. There are a number of important factors that are crucial to the implementation of proactive policing initiatives. Among these factors include addressing resistance to change, overcoming uncertainty, having effective communication, having effective leadership, translating policy into practice, and facilitating the necessary elements for organizational change to occur.

Employee resistance to change has been identified as a major obstacle in the change process (Husain, 2013; Kotter, 1996; Maheshwari & Vohra, 2015). Resistance to change stems in part due to employees' uncertainty about the change process (Elving, 2005). Elving (2005) found that employees are worried about the personal and social consequences of change and have concerns on how the change will impact their role and responsibilities within an organization. This uncertainty may lead to rumors and the exaggeration of the negative aspects associated with change (Appelbaum et al., 2017). Alleviating this uncertainty would reduce change resistance (Elving, 2005).

Communication has been identified as a key way to relieve uncertainty during the change process (Appelbaum et al., 2017; Husain, 2013; Kotter, 1996). Appelbaum et al. (2017) found that without effective communication, there is increased uncertainty, reduced change readiness, and reduced organizational commitment among agency personnel. They also stated that communication must be informative on the change process and should explain the rationale behind the necessity of change, as otherwise it can hinder the change process. Husain (2013) stated that a lack of communication increases resistance and leads to a less productive change process. Thus, communication plays a vital role in the change process.

Another obstacle in the change process is a lack of effective leadership. The priorities and values of police leaders largely dictate the actions of their subordinate officers within a police agency (Brandl, 2018). Thus, if police leaders do not see the value in utilizing evidence-based policing strategies, then it is likely these strategies will not be implemented within a police organization. Even when they are implemented, if an agency's leaders do not buy-in and help facilitate the usage of evidence-based practices, it is likely to result in a failed implementation. This was evident in the review of problem-oriented policing conducted by Weisburd et al. (2010). They found that in one study an agency's top personnel did not consider the usage of problem-oriented policing as police work, and thus the department suffered from a lack of effort and the proactive policing initiative was delivered poorly (Weisburd et al., 2010, as cited in Stone, 1993).

One reason for the low success rate of implementing change may be the disconnect that exists between what police leaders say and what they actually do in practice (Smith, Santos, & Santos, 2019). For instance, police leaders might believe utilizing evidence-based practices is important, and believe their agency is utilizing best practices, but they failed to provide the support necessary to facilitate the successful implementation of evidence-based practices (Smith et al., 2019). Other research has also suggested this, finding that police executives will often state that they are innovative, but they were not leading substantive organizational change (Santos & Santos, 2019).

The success rate of implementing proactive policing strategies is low, in large part due to the success of organizational change being low. Research has identified organizational change as essential to the implementation of evidence-based policing strategies (Santos & Santos, 2015). Thus, by improving key organizational change components within an agency, it should assist in

transforming the culture of an agency to one that allows for the successful integration of crime analysis and evidence-based practices (Santos, 2018). Before this can happen, several obstacles to change must be overcome.

Overcoming barriers for successful institutionalization.

In reviewing the literature on organizational change, several reoccurring themes or trends have surfaced. There are key components necessary to facilitate successful organizational change. Among these are those identified in the work of Santos (2018), including leadership, communication, accountability, and transparency. Further research has supported this, stating that leadership and communication are both essential to institute organizational change (Appelbaum et al., 2017). Thus, successful organizational change is the result of the successful implementation of proactive policing initiatives. This successful organizational change allows for the sustainable use of proactive, evidence-based crime reduction strategies.

Leadership. Effective leadership is a critical element of successful organizational change (Appelbaum et al., 2017; Santos & Santos, 2019; Santos & Santos, 2012; Stetler et al., 2014). Effective leaders help articulate a vision, set expectations, and provide focus and direction for their organizations (Santos & Santos, 2012, as cited in Bolman & Deal, 2008, p. 345). Santos and Santos (2012) argued that for organizational change to occur, it must happen from the top-down. In fact, in their study, widespread organizational commitment and the change process did not occur until the agency's command staff became directly involved and mandated participation and change. The work of Stetler et al. (2014) supported this, stating that key leaders must lead the change process. Goldstein (2003) identified strong leadership as necessary for implementing problem-oriented policing. He stated that senior management needed to be the driving force behind implementation, as opposed to line-level officers. Santos and Santos (2019) echoed this,

stating that effective and consistent leadership is what separates police departments that are able to institutionalize evidence-based practices and those that cannot.

Leaders are expected to establish and maintain cultural expectations (Stetler et al., 2014). In the study conducted by Stetler et al. (2014), the leader was able to accomplish this by consistently making references to the new expectations of utilizing evidence-based practices. They did so by making it clear that these expectations are a part of the job, and not simply something that is addressed by somebody else. Santos and Santos (2012) found that most agency personnel continued with the status quo until command staff demanded change. Leaders must demand change from the status quo and set standards for their agency to change the cultural norms.

Effective leadership also requires providing a clear vision for the organization and focusing both inside and outside the organization (Santos & Santos, 2012, as cited in Bolman & Deal, 2008). Mazerolle et al. (2012) found that leaders must be able to change the way people think, and thus must have a vision and provide direction to subordinates so they better understand change. In the work by Stetler et al. (2014), key leaders were able to successfully facilitate organizational change by articulating a vision and its importance, and by preparing for its institutionalization and sustainment. Appelbaum et al. (2017) found that leaders must provide an inspirational vision, and this vision needs to be communicated consistently to facilitate change. Leaders must also motive their subordinates and lead them through this change process (Appelbaum et al., 2017).

The maintenance of these expectations is important; thus, police leaders must hold organizational personnel accountable to these expectations. Responsibility must shift from the lower ranks to the entirety of the department (Santos & Santos, 2015). Every rank must be held

accountable to their involvement in the change process (Santos & Santos, 2015). One way of accomplishing this is to give them ownership of the crime reduction efforts (Santos & Santos, 2012). These leaders must be entrusted with managing the change process at the micro-level (Appelbaum et al., 2017). Police leaders, given the authority that they are afforded, can utilize this authority to enforce accountability (Santos & Santos, 2012).

Thus, the role of police leaders in institutionalizing change cannot be overstated. Research demonstrates that for the successful implementation of evidence-based practices to occur, the support for the initiative must begin at the top (Santos & Santos, 2012). Police leaders must lead change and deliver clear and consistent messages to their subordinates about the expectations for change (Santos & Santos, 2012; Santos & Santos, 2019). Police leaders are also expected to motivate personnel to change, articulate a vision, and hold personnel accountable for the change expectations (Appelbaum et al., 2017; Santos & Santos, 2012).

***Communication*.** Communication has also been identified as a critical component in facilitating organizational change by many researchers (Appelbaum et al., 2017; Elving, 2005; Husain, 2013; Lewis & Seibold, 2016; Santos, 2018; Stetler et al., 2014). Husain (2013) stated that failure to effectively communicate during the change process may lead to decreases in organizational commitment, trust, and job satisfaction, and may lead to increased stress by agency personnel. Lack of proper communication during the change process may lead to an increased resistance to change and the exaggeration of the negatives associated with change (Appelbaum et al., 2017). Contrarily, proper communication during the change process has the opposite effect, leading to a more productive and successful change process (Husain, 2013).

Uncertainty is also a factor in resistance to change (Appelbaum et al., 2017; Elving, 2005). Communication helps reduce resistance to change by increasing personnel's

understanding of the need for change and their role in the change process (Petrescu, 2011). Communication has been described as a means to reduce uncertainty, and thus also reduces resistance to change (Elving, 2005). By reducing resistance to change, it makes the change initiative more productive and more likely to succeed (Husain, 2013). With resistance to change being one of the largest obstacles to overcome, and with communication being a successful means of overcoming resistance, it is vital in the change process.

Training is one means to overcome uncertainty. Training should be department wide to allow for the infusion of knowledge to the entire agency and not just specialized units (Santos & Santos, 2012). Additionally, training should extend beyond the initial introduction stage of change and should be provided regularly as a part of yearly in-service training (Santos & Santos, 2015; Taylor, Boba, & Egge, 2011). This is important to ensure that agency personnel continually adhere to change following the implementation stage (Appelbaum et al., 2017). Training should also be tailored to the responsibilities of those attending the training to provide role clarity (Taylor et al., 2011). Training also allows officers to better understand the value of utilizing proactive crime reduction strategies and crime analysis (Taylor et al., 2011). This may be important in an officer's commitment to change (Maheshwari & Vohra, 2015). Santos and Santos (2019) stated that face-to-face training is necessary for departmental personnel to take "what works" and make it work.

Communication during the change process helps establish the new culture norm (Stetler et al., 2014). This can be accomplished by formulating and consistently communicating a vision (Stetler et al., 2014). This vision should help establish a new expectation for the usage of evidence-based practices. Communication should be clear, provide for role clarity, and be delivered consistently throughout the change process (Santos, 2018; Stetler et al., 2014).

Communication should also seek to inform and educate personnel, as doing so should relieve uncertainty during the change process (Husain, 2013). This communication can be formal, in a structured setting such as a meeting, or informal, which can occur during day-to-day operations (Petrescu, 2011). Uncertainty is a major source of strain during the change process, and personnel are worried about the consequences associated with change (Appelbaum et al., 2017). By clarifying how the change will affect them directly by utilizing effective communication, this strain can be relieved.

Communication has also been observed to create the conditions required for organizational commitment (Elving, 2005). If change seeks to be organizational, the initial change communication should be delivered from top leadership (Husain, 2013). Following this, channels of communication should be open both upward and downward to improve the chain of communication (Appelbaum et al., 2017). Relevant information must be communicated to all agency personnel involved in the change process (Appelbaum et al., 2017). If there is a structured chain of communication, it would allow for better ease of exchanging relevant information.

The work conducted by Taylor et al. (2011) discussed the role communication has in integrating crime analysis into policing. They stated that the effective communication of the products of crime analysis is important. These crime analysis products should be focused and succinct to assist the products' recipients in understanding their meaning. Additionally, the communication of these products should not be based on requests, but should be posted on a platform that allows for real-time access and discussion between relevant personnel (Taylor et al., 2011).

Transparency. For the purposes of this study, transparency refers to the concept of role clarity. The success of proactive policing initiative relies heavily on personnel's ability to understand their roles and responsibilities (Santos, 2018). Thus, it is important that the steps of accomplishing the goal outlined by the police agency are well defined, meaning it is important that they are transparent (Santos, 2018). Research supports the notion that transparency in the change process is important, with increased role clarity leading to increased satisfaction as well as increased performance (Abramis, 1994).

In a meta-analysis of studies that focused on the role of work role ambiguity, job satisfaction, and job performance, Abramis (1994) defined role ambiguity as "uncertainty or ambiguity about how to carry out the work role" (p. 1412). Thus, role ambiguity can be seen as the opposite of transparency as it is defined in this study. The results of the meta-analysis conducted by Abramis (1994) found a statistically significant relationship between role ambiguity and both job satisfaction and job performance. Specifically, there was a moderate, negative correlation found between role ambiguity and job satisfaction. While the relationship between role ambiguity and job satisfaction was only found to be moderate, explaining about 9% of the variance in role ambiguity and satisfaction, the evaluated studies consistently found the relationship to be negative. Additionally, role ambiguity is negatively correlated with organizational commitment, which is unsurprising considering prior research has linked job satisfaction with organizational commitment (Vandenberg & Lance, 1992; Williams & Hazer, 1986). Thus, while the strength of the relationship may vary, the more uncertainty that is felt by personnel about their roles and responsibilities, the less satisfied they are with their jobs, and the less committed they are to the organization in which they work (Abramis, 1994).

Consistent with the findings on the relationship between role ambiguity and satisfaction, role ambiguity is also found to be negatively correlated with job performance, though this relationship was less strong (Abramis, 1994). That is, individuals that are uncertain of their roles and responsibilities tend to perform worse on the job than individuals that have tasks that are clearly defined. Abramis (1994) noted that role ambiguity is also associated with lower motivation and involvement, which indicates that individuals with more uncertainty about their roles perform worse than individuals with well-defined roles.

Abramis (1994) stated that communication plays a key role in role ambiguity. This is in line with prior research, which has found that role ambiguity is negatively related to organizational communication (Rizzo, House, & Lirtzman, 1970). Abramis (1994) argued that as communication increases, that is, as roles become clearer and more defined, satisfaction and job performance both are increased. These findings echo those noted earlier in this review of communication being a vital component of the organizational change process (Appelbaum et al., 2017; Elving, 2005; Husain, 2013; Lewis & Seibold, 2016; Santos, 2018; Stetler et al., 2014). Overall, the findings of the meta-analysis conducted by Abramis (1994) highlight the importance of having clearly defined roles, that is to say, the importance of being transparent during the change process.

***Accountability*.** Researchers argue that organizational change would not be possible without accountability (Boba & Santos, 2011; Santos & Santos, 2015; Smith et al., 2019). Accountability has also been identified as a key component of facilitating the successful implementation of evidence-based practices (Smith et al., 2019). As stated by Taylor et al. (2011), “accountability in crime reduction in policing involves laying out a strategy, creating expectations, & providing resources for accomplishing that strategy, ensuring the work is done,

and evaluating effectiveness" (p. 17). Thus, if those goals can be accomplished, it should help facilitate successful implementation of evidence-based practices into policing.

Research has found accountability to be key to consistency in data collection (Boba & Santos, 2011). As previously discussed, crime analysis is central to implementing proactive policing strategies, and data collection is central to effective crime analysis (Taylor et al., 2011). The research conducted by Taylor et al. (2011) also identified other roles that accountability plays in implementing organizational change. Crime analysis products are only as useful as the data that makes them, thus consistency in data collection by organizational personnel is imperative. Organizational personnel state that an endorsement of crime analysis by command staff provides little value without accountability mechanisms in place to enforce adherence to the new expectations. If agency personnel are held accountable for data collection, as they would be writing reports, it would assist in institutionalizing change (Taylor et al., 2011). If this can be accomplished, it would overcome the accountability obstacle in crime analysis, which some research suggests may be the biggest obstacle to the systematic integration of crime analysis (Taylor et al., 2011).

Previous policing structures have been utilized to try and incorporate accountability as a means of implementing evidence-based policing strategies. One such structure is CompStat, which required two critical elements: data and accountability (Brandl, 2018). Taylor et al. (2011) stated that while CompStat was positive for furthering crime analysis integration and accountability, it needs improvement. For instance, accountability should be expanded to occur at multiple levels, and accountability meetings should occur regularly to ensure adherence to the organization's goals (Taylor et al., 2011). CompStat also provides too little direction, and largely placed the responsibility on an agency's command personnel (Brandl, 2018). Santos and Santos

(2015) stated this is ineffective, and responsibility, and thus accountability, should be stratified throughout the agency.

***Satisfaction*.** Research suggests that personnel's levels of job satisfaction is an important predictor of other key aspects of their job performance and willingness to stay with an organization (Brady & King, 2018; Jaramillo, Nixon, & Sams, 2005; Judge, Thoresen, Bono, & Patton, 2001; Pelfrey, 2007; Vandenberg & Lance, 1992; Williams & Hazer, 1986). These key aspects include but are not limited to improving turnover rates, improving officer productivity, improving officer proactivity, officer receptivity to change, and organizational commitment (Brady & King, 2018; Judge et al., 2001; Pelfrey, 2007). Similarly, research also suggests that while satisfaction and organizational commitment are related, they are distinguishable (Vandenberg & Lance, 1992). Admittedly, the research examining the relationship between those two concepts is somewhat mixed, with some research suggesting satisfaction precedes organizational commitment, with other research suggesting the reverse is true (Vandenberg & Lance, 1992). Williams and Hazer (1986) tested this relationship and their findings suggested more support for the former, with them finding that satisfaction is a key predictor of organizational commitment. Jaramillo et al. (2005) found job satisfaction to be the biggest predictor of organizational commitment. Regardless of the casual relationship between those two variables, most research strongly suggests that those two variables are interrelated, with increases in one leading to increases in the other (Vandenberg & Lance, 1992; Williams & Hazer, 1986).

While the finding that increased job satisfaction leads to decreases in agency turnover (Jaramillo et al., 2005; Williams & Hazer, 1986) is important for police leaders, the purposes of this study focus on the role job satisfaction has on improving receptivity to change, support for proactive policing initiatives, and increases in officer productivity. In a meta-analysis of studies

that examined the relationship between job satisfaction and job performance, Judge et al. (2001) found a moderate correlation between the two variables. Specifically, the study found a Pearson's *r* of .30, indicating that job satisfaction explains 9% of the variance in job performance, which was found to be statistically significant. The findings of the study conducted by Bowling (2007) were less promising after controlling for a variety of other variables, though their findings still reached a level of statistical significance. Bowling (2007) did state that their findings lend support to the idea that the relationship may be spurious. Regardless, the literature still lends support to the existence of a relationship between job satisfaction and job performance, and indicate it plays an important role in increasing personnel productivity and proactivity (Judge et al., 2001; Pelfrey, 2007).

The study conducted by Pelfrey (2007) examined the role job satisfaction had in officers' support for proactive policing initiatives and the willingness to engage in proactive activity, as well as examining its role in predicting receptivity to change. The findings indicate a cyclical relationship, with officers that have higher levels of satisfaction being more likely to adopt a proactive style of policing, understand the importance of doing so, and have an increased willingness to engage in proactive activities. Additionally, officers that engaged in those behaviors more frequently were found to have higher levels of job satisfaction. Contrarily, officers with lower levels of job satisfaction were found to be more likely to engage in traditional policing tactics and were found to be more likely to engage in reactionary activities. Thus, implementing a proactive policing approach leads to improvements in the working conditions of police officers, increases their levels of proactivity and job satisfaction, and increases their receptivity to change (Pelfrey, 2007).

Proactive Crime Reduction: What Works

Proactive crime reduction strategies have been at the forefront of policing research over the last several decades. In fact, scholars state the last few decades have been the "golden age" of research in evidence-based policing (National Academies of Sciences, Engineering, and Medicine, 2018). Research on proactive policing largely began due to rising crime rates, dissatisfaction with police, and research on traditional approaches to policing, such as random preventative patrol and utilizing rapid response, determining that those tactics are ineffective at reducing crime (Brandl, 2018; National Academies of Sciences, Engineering, and Medicine, 2018).

Proactive policing is a broad term that is used in reference to any policing strategies that have the goal of crime reduction that are proactive in nature, as opposed to the reactive nature of traditional policing tactics (National Academies of Sciences, Engineering, and Medicine, 2018). While there are numerous proactive policing strategies that have been developed, they can generally be categorized based on the focus of the strategy. Four primary categories have been developed, including place-based, problem-solving, person-based, and community-based (National Academies of Sciences, Engineering, and Medicine, 2018). A recent report released by the National Academies of Sciences (NAS) has provided a comprehensive analysis of the research that exists on proactive policing. This report is the product of collaboration between researchers and police leaders that have reviewed meta-analyses results, and contains recommendations made as a result of this collaboration (Santos & Santos, 2019). Thus, it provides for the most comprehensive analytical overview of the research that exists on what works in policing that is currently available.

Place-based approaches.

The NAS report defines place-based policing interventions as those that take advantage of the law of crime concentration (National Academies of Sciences, Engineering, and Medicine, 2018). Simply put, this theory argues that certain geographic locations have a much higher concentration of crime than others, meaning small geographic locations within a larger geographic location account for a large portion of the overall crime. The most popular place-based policing strategy is hot spots policing, a strategy that allows police departments to deploy and mobilize their resources to the areas with the highest concentration of crime. The NAS report states that there is a strong body of research support for hot spots policing, with research indicating it is an effective means of reducing crime. Additionally, there is no evidence of crime displacement, but rather stronger support for the concept of a diffusion of benefits of effect (National Academies of Sciences, Engineering, and Medicine, 2018). This means that crime does not simply move elsewhere when the police focus in on one specific area; rather, crime rates in the areas adjacent to the hot spot area that receives the police focus also decrease.

Problem-solving approaches.

The NAS report defines problem-solving approaches as those that focus on specific problems that are perceived to be the underlying causes for crime, and these strategies implement a systematic response aimed at resolving the problem to prevent future crimes (National Academies of Sciences, Engineering, and Medicine, 2018). The most popular of the problem-solving policing approaches is problem-oriented policing, a strategy developed by Herman Goldstein in 1979 (Brandl, 2018). Goldstein argued that police are too focused on the "means" rather than the "ends" and advocated for police to use a more proactive approach to crime (Brandl, 2018; Weisburd et al., 2010). Problem-oriented policing calls for the police to

understand the underlying causes of crime, as if they can address the underlying cause for crime then they can be successful in reducing crime overall (Brandl, 2018; Weisburd et al., 2010).

Implementing problem-oriented policing requires the use of the SARA model, which is a tool in the problem-solving process that aids police departments in systematically addressing the specific crime problems that they face (Brandl, 2018). The SARA model is a four-step process that involves scanning, analysis, response, and assessment. As described by Brandl (2018) and Telep and Weisburd (2012), the first step of the SARA model is scanning, which involves the identification and prioritization of specific problems faced by the police department. The following step, analysis, requires gathering information on the problem. The next step, response, involves implementing a response that is tailored to the specific problem and that is backed by information discovered in the analysis stage. Finally, the assessment step requires an evaluation of the response to determine its overall effects at reducing or eliminating the specified problem (Brandl, 2018).

The NAS report found that despite the widespread popularity of problem-oriented policing, there has been surprisingly little rigorous evaluations of the strategy (National Academies of Sciences, Engineering, and Medicine, 2018). Of the randomized experimental evaluations of problem-oriented policing, the findings indicate a small but noteworthy crime reduction effect. However, when examining the findings of studies with non-experimental research designs, the results indicate a strong impact on crime (National Academies of Sciences, Engineering, and Medicine, 2018). The report found that even limited applications of problem-oriented policing led to noteworthy reductions in crime (National Academies of Sciences, Engineering, and Medicine, 2018). Additionally, the report cited evidence of problem-solving strategies used along place-based strategies generating more noteworthy crime reduction effects

than using traditional policing strategies alongside place-based (National Academies of Sciences, Engineering, and Medicine, 2018). However, the report stated that police departments often have difficulties implementing problem-oriented policing. The committee argued that improving the process and evaluations of problem-oriented policing may result in more significant crime control gains (National Academies of Sciences, Engineering, and Medicine, 2018). This emphasizes the importance of finding an effective means of translating theory into practice.

Person-focused approaches.

The NAS report defined person-focused proactive strategies as those that capitalize on the concentration of crime amongst a small number of offenders (National Academies of Sciences, Engineering, and Medicine, 2018). Two of the most popular person-focused strategies, being focused deterrence and stop, question, frisk (SQF), were reviewed within the NAS report. Focused deterrence is a policing strategy that has been used to target gang violence, violent drug markets, and repeat offending (National Academies of Sciences, Engineering, and Medicine, 2018). A systematic review was conducted by Braga, Weisburd, and Turchan (2018) to determine the overall effectiveness of focused deterrence strategies. This review included 24 quasi-experimental studies on focused deterrence-based approaches and their effects on crime reduction. These studies included focused deterrence-based approaches aimed at reducing violent gang crime, reducing drug crime, and reducing crime by targeting repeat offenders. Overall, the findings indicate that focused deterrence-based approaches were successful at reducing all three categories of crime. Of the three types of problems focused deterrence-based strategies were implemented to solve, programs that targeted gang violence were the most effective, with programs that targeted drug crimes being the least effective (Braga et al., 2018). The NAS cited this review as evidence of support for the effectiveness of focused deterrence approaches.

However, the report did state that focused deterrence needs more rigorous research testing (National Academies of Sciences, Engineering, and Medicine, 2018).

SQF when used as a person-focused proactive policing strategy involves offices conducting a high rate of citizen stops as a means of deterring crime. Research on SQF is less conclusive as it is difficult to isolate the effects of utilizing SQF from other self-initiated policing activities (National Academies of Sciences, Engineering, and Medicine, 2018). Research has thus been split into two categories: those that use SQF as a general crime prevention approach, and those that utilize it alongside place-based or problem-solving approaches. SQF as a general crime prevention strategy has mixed findings, while using it alongside place-based or problem-solving approaches consistently result in short-term crime reduction (National Academies of Sciences, Engineering, and Medicine, 2018). However, the use of SQF has been controversial, with many claiming it is used in a racially disparate way (Brandl, 2018; National Academies of Sciences, Engineering, and Medicine, 2018).

Community-based approaches.

The NAS report defines community-based approaches as those that involve the community in addressing crime problems, with the approaches seeking to improve the collective efficacy of the community and to improve the police-community relationship (National Academies of Sciences, Engineering, and Medicine, 2018). The most popular of such strategies is community-oriented policing, which garnered widespread popularity amongst police following the introduction of the Community-Oriented Policing Services office (Brandl, 2018).

Research on the effectiveness of community-based policing approaches in reducing crime is less promising than the other three categories of policing approaches according to the NAS report (National Academies of Sciences, Engineering, and Medicine, 2018). In their report, they

were not able to find a consistent crime reduction benefit from community-oriented policing programs. Of those that did have crime reduction benefits, they often contained elements of other types of proactive policing strategies, such as problem-solving strategies, thus it is difficult to determine if the community-based aspects led to any crime reductions (National Academies of Sciences, Engineering, and Medicine, 2018). Research on broken windows policing, another community-based approach, suggests that utilizing aggressive enforcement tactics to deter crime has small to null crime reduction effects (National Academies of Sciences, Engineering, and Medicine, 2018). Scholars also caution against using aggressive enforcement and zero-tolerance approaches as a general crime prevention method as it may lead to less favorable perceptions towards the police (Brandl, 2018; National Academies of Sciences, Engineering, and Medicine, 2018). The NAS report did state that broken windows policing has led to consistent short-term crime reduction when used alongside other types of proactive policing, such as place-based or problem-solving approaches (National Academies of Sciences, Engineering, and Medicine, 2018).

Despite not having any direct crime reduction benefits, the report still advises using community-based approaches, namely community-oriented policing, alongside other proactive strategies, as it could provide benefits to police outside of crime reduction (National Academies of Sciences, Engineering, and Medicine, 2018). These benefits include more favorable perceptions of the police amongst citizens, and increased citizen cooperation with police. Additionally, the report notes that engaging in community-oriented policing has little chance at leading to negative outcomes (National Academies of Sciences, Engineering, and Medicine, 2018).

Overall effectiveness.

The committee states that it is often difficult to isolate the effects of any one proactive policing strategy on crime reduction as in practice they often have large amounts of overlap. That is, when police departments implement proactive strategies, they often contain several elements of place-based, problem-solving, person-based, and community-based approaches (National Academies of Sciences, Engineering, and Medicine, 2018). However, combining elements of all four approaches is in line with the recommendations made by the committee, as they argue they can be used collaboratively to more effectively reduce crime (National Academies of Sciences, Engineering, and Medicine, 2018). At the conclusion of the report, the committee stated "proactive policing efforts that focus on high concentrations of crimes at places or among the high-rate subset of offenders, as well as practices that seek to solve specific crime-fostering problems, show consistent evidence of effectiveness without evidence of negative community outcomes" (National Academies of Sciences, Engineering, and Medicine, 2018, p. 334). Thus, this finding emphasizes the importance of tailoring the response to crime problems to the specific agency, as agencies vary greatly from one another and may require varying responses to reduce crime.

Accountability Approach: CompStat

CompStat is a management tool utilized by police agencies to help them attain their crime reduction goals (Brandl, 2018; Shah, Burch, & Neusteter, 2018). Similar to stratified policing, CompStat aids police leaders in implementing best practices into their department, which assists in institutionalizing organizational change. It is important to understand how CompStat fits with the use of proactive policing, as by understanding the components of CompStat, it will provide

an increased understanding of the shortcomings of organizational frameworks utilized by police and highlight areas that can benefit from improvements.

Police agencies utilizing CompStat use crime analysis to identify crime problems within their communities, and after these problems are identified, they are assigned to police leaders to be resolved (Brandl, 2018). These police leaders are then tasked with the responsibility to develop solutions to these crime problems, with the goal of reducing the targeted crime (Brandl, 2018). Police leaders then meet with other police administrations across jurisdictions to discuss the problems they have identified, and the solutions they have implemented to help resolve those problems (Brandl, 2018; Shah et al., 2018). The frequency of these meetings varies by department; however, they usually occur bi-weekly or monthly (Shah et al., 2018). The goal of these meetings is to enforce accountability for assigned responsibilities, and to evaluate the effectiveness of the implemented solutions to the identified problems (Shah et al., 2018).

While several aspects of the original CompStat have garnered support by researchers, such as its use of crime analysis to identify potential crime problems and accountability mechanisms, CompStat has been the subject of large amounts of scrutiny among scholars due to its shortcomings (Shah et al., 2018). For instance, while scholars have generally agreed that the use of accountability mechanisms is important for implementing proactive policing initiatives, they have also argued that CompStat places too much emphasis on individual responsibility, particularly among middle-management personnel and police leaders assigned to resolve the identified crime problems (Brandl, 2018; Shah et al., 2018). This is problematic for several reasons, with one being the pressure to produce results by the next CompStat meeting (Brandl, 2018; Shah et al., 2018). This has led to many police leaders using CompStat prioritizing the “numbers” of police activities, such as arrests, citations, and stops, opposed to the substance or

overall effectiveness of any implemented solutions (Shah et al., 2018). This also has led to police leaders using aggressive enforcement tactics, such as “zero tolerance” policing, which research suggests are likely not to be beneficial in the long run (Brandl, 2018; National Academies of Sciences, Engineering, and Medicine, 2018; Shah et al., 2018). Heavy emphasis on individual responsibility also has led to documented incidents of police misconduct by way of “fudging” or manipulating the crime data to appear as though crime is being reduced, when in actuality it may be unchanged or even increasing (Shah et al., 2018). Police leaders may misrepresent the facts of certain criminal offenses with the goal of reclassifying them to a different offense, which would lead to the appearance of crime reduction when no crime reduction actually occurred.

Another flaw with the original CompStat framework is the lack of directives provided on how to resolve crime problems (Brandl, 2018). Crime problems are identified and assigned; however, the police leaders assigned to resolving those problems are not provided instruction on the best practices to accomplish that goal (Brandl, 2018). This may lead to them utilizing practices that research suggests are ineffective. Utilizing these ineffective practices is likely to result in the failure to accomplish crime reduction goals (Brandl, 2018).

CompStat also typically does not involve lower ranking personnel within a department, instead placing a heavy emphasis on middle-management and police administrators (Shah et al., 2018). These unengaged lower ranks may not know their role in the crime reduction process or may view their role as being unimportant (Shah et al., 2018). This is problematic as lower ranking personnel are those that will be tasked with executing the responses implemented to resolve the identified crime problems, and thus they should be knowledgeable about their role, responsibilities, and the innerworkings of CompStat meetings (Shah et al., 2018).

Despite the flaws associated with CompStat, its development and subsequent success in reducing crime in the NYPD led to some form of CompStat being adopted by a large number of police departments, including over two-thirds of large police departments (Shah et al., 2018). However, while crime was reduced substantially in New York, upwards of 75% after the implementation of CompStat, there is disagreement among scholars on how much of that success can be attributed to CompStat. The evaluations of the effectiveness of CompStat at reducing crime has found more modest and mixed results outside of the NYPD (Brandl, 2018; Shah et al., 2018). Despite this, CompStat is considered a valuable decision-making tool for police agencies, with some scholars claiming it is one of the most important policing innovations in history (Shah et al., 2018).

With researchers identifying several flaws that exist with the original CompStat framework, several recommendations have been made for improving CompStat. Additionally, many police agencies have revamped their usage of CompStat to be more effective in addressing modern issues in policing (Shah et al., 2018). For instance, in 2016 the NYPD unveiled its version of "CompStat 2.0" with improved data sharing with the public and all policing personnel, including line-level officers (Shah et al., 2018). The NYPD's CompStat data is easily accessible online, which allows for increased transparency with its communities and easier access to information by its officers (Shah et al., 2018). The Philadelphia Police Department (PPD) expanded its CompStat meeting structured and crime problem identification to allow for an increased focus on chronic crime areas, or hot spots (Shah et al., 2018). The PPD's revamped meeting structured allows for increased access to CompStat meetings by the agency's personnel, which allows for an increased exchange of information throughout the department.

One recommendation made by researchers to improve the original CompStat framework is to expand the scope of the problems CompStat seeks to address (Shah et al., 2018). For instance, recommendations have been made to incorporate non-crime related problems, such as community engagement, utilizing procedural justice, and tracking instances of use of force and police misconduct (Shah et al., 2018). Recommendations have also been made to expand the crime related problems CompStat addresses to include long-term problems, such as what is being accomplished by the PPD. Additionally, research supports expanding CompStat to include all members of a police agency, including line-level officers (Shah et al., 2018). This may be accomplished by improving information sharing throughout the department and to the public, similar to what is being done by the NYPD (Shah et al., 2018). Researchers argue that for CompStat to be effective, middle-management and police administration should solicit input from lower-ranking personnel such as line-level officers, as they are likely more aware of the street-level problems and how responses should be implemented to resolve those problems (Shah et al., 2018). Additionally, increasing involvement of lower-ranking personnel will improve role clarity and reduce uncertainty (Shah et al., 2018).

Recommendations have also been made to revamp the typical meeting structure of the original CompStat framework. Shah et al. (2018) claimed that bi-weekly meetings are too frequent to be used to determine the effectiveness of long-term responses to chronic crime problems. Instead they suggested utilizing monthly meetings, as they would be better suited for evaluating responses and providing the "relentless follow-up" needed (Shah et al., 2018). Further recommendations have been made to improve the data collected by police agencies utilizing CompStat to provide for more innovative responses (Shah et al., 2018). Thus, information of the "how" and the "why" behind crime should also be collected and analyzed (Shah et al., 2018).

Crime Analysis and Crime Reduction

Research suggests that crime analysis plays a central role in the successful implementation of proactive policing strategies (Brandl, 2018; National Academies of Sciences, Engineering, and Medicine, 2018; Santos, 2018; Santos, 2014). Smith et al. (2019) stated that crime analysis should be a key area of emphasis for police agencies that wish to utilize evidence-based policing strategies. They also identified crime analysis as a key component in the implementation of policing strategies, stating that it helps take "what works" and makes it work (Smith et al., 2019).

In their guidebook on the integration of crime analysis into patrol work, Taylor et al. (2011) identified several key elements necessary for proper integration of crime analysis. They stated that all departmental personnel should be trained on crime analysis to better understand its capabilities and value. Additionally, training should be a part of their yearly in-service training. Crime analysis must also be implemented into patrol directly to be effective, otherwise it would be largely ignored. The use of crime analysis must be expected, and departmental personnel should be held accountable for the usage of crime analysis, similarly to how they would be for other aspects of the profession, such as uniform upkeep (Taylor et al., 2011).

Data collection is also a key component of crime analysis, as crime analysis products will only be as useful as the data that is used to make them (Taylor et al., 2011). Thus, improving the technological capabilities of the agency is necessary, as it can assist officers in data collection by writing better reports. Lastly, crime analysis products must be actionable and relevant to be useful, otherwise they will largely be ignored (Taylor et al., 2011).

In a review of the role of crime analysis in policing strategies, Santos (2014) found crime analysis to be necessary for effective policing. Study findings indicated that there is no causal

link between crime analysis and crime reduction, similar to how there is no causal link between the use of MRI machines and illness treatment in medical practice. Rather, both are used as a process to guide decision making. Thus, crime analysis cannot be evaluated based on its abilities to reduce crime, but rather can be evaluated based on its role in crime reduction strategies (Santos, 2014).

Santos (2014) determined that crime analysis is a central component in successful crime reduction efforts. Specifically, the findings of the study indicate that in strategies that are ineffective at reducing crime, such as standard policing strategies and community-based policing, crime analysis plays a limited or nonexistent role. Contrarily, in strategies that have garnered research support for being effective in reducing crime, such as place-based, person-based, and problem-solving strategies, crime analysis plays a significant role. As for strategies with limited research testing on their effectiveness, such as CompStat, intelligence-led policing, and predictive policing, crime analysis was found to play a significant role, so much so that these strategies would not be possible without crime analysis (Santos, 2014). Thus, the necessity of crime analysis for effective proactive policing aimed at reducing crime cannot be overstated.

Specific Challenges in Implementing Proactive Crime Reduction

Research has found that proactive policing strategies often fail, or at least are not as effective as they otherwise would be, due to issues with implementation (Appelbaum et al., 2017; Beer, 2000; Elving, 2005; Mazerolle et al., 2012; National Academies of Sciences, Engineering, and Medicine, 2018). For instance, the work by Mazerolle et al. (2012) identified several obstacles faced during the implementation process. These include internal resistance to change, a superficial adoption of the initiatives, internal tensions between personnel, policing culture, and difficulties with managing and integrating technology (Mazerolle et al., 2012).

Crime analysis, which has been identified as central to the use of proactive crime reduction strategies, also faces difficulties during implementation. Taylor et al. (2011) identified several obstacles that may be faced during the integration of crime analysis into a police agency. These include the policing culture, an agency's hierarchy, a failure to support innovation, technological shortcomings, the applicability of crime analysis products, and the usefulness of the products produced. They stated that for the successful integration of crime analysis, agencies need to improve their technological capabilities to support crime analysis. By doing so, they should also improve their data collection, which can be used to make the crime analysis products more relevant and actionable (Taylor et al., 2011). Additionally, the use of crime analysis should be systematic and automatic (Santos & Santos, 2015).

One common complaint by police leaders is that their agency lacks the time or resources necessary to implement proactive policing strategies (Brandl, 2018). However, research tends to support the claim that police officers have a sizeable amount of uncommitted time (Famega, Frank, & Mozarolle, 2005; Johnson, 2015; Smith, Novak, Frank, & Lowenkamp, 2005). Admittedly, though the research supports the idea that officers have a large amount of uncommitted time, the amount of time left uncommitted is still debated. For instance, Famega et al. (2005) found that upwards of 80% of a police officer's time is left uncommitted. Smith et al. (2005) provided a more conservative estimate of about 26% of an officer's time being unassigned. The work by Johnson (2015) found that officers have approximately 270 minutes of uncommitted time per shift. These disparities are likely due to how the studies defined uncommitted time. Regardless of these disparities, these findings run counter to the argument of not having enough time often made by police leaders.

Despite having a sizeable amount of uncommitted time, research finds that officers rarely use that time to engage in proactive activities. Johnson (2015) found that despite having 4.5 hours of uncommitted time per shift, officers only engaged in one proactive activity per shift. Famega et al. (2005) found that only 4% of an officer's uncommitted time was used on proactive activities. For reference, a much larger percentage of an officer's discretionary time is spent on motorized patrol, with estimates ranging from that encompassing 29%-50% of an officer's time (Brandl, 2018; Famega et al., 2005; Smith et al., 2005).

This large deficit in proactive activity may stem from the lack of supervisory directives. Famega et al. (2005) found that following supervisory directives only accounted for a mere 6% of an officer's unassigned time. Additionally, they found that even when directives are provided, the directives themselves tend to be vague and poor, which leads to officers being largely inefficient in accomplishing their tasks. Another issue that may be causing a lack of proactivity is the disparities in proactivity between officers. Research has found that a small percentage of officers account for a large percentage of proactive activities (Holgersson & Knutsson, 2012). This indicates that a small number of officers frequently engage in proactive activities, while the majority of officers engage in a very minimal, or no amount of proactive activities.

Overcoming these obstacles will be essential in increasing officer proactivity, which in turn should lead to more opportunity to utilize proactive policing strategies. The study done by Johnson (2015) looked at the role supervisors may play in increasing officer proactivity. His findings indicate if supervisors venture into the field and engage in proactive police work, their subordinates will model their behavior. Officer proactivity doubled when supervisors were being proactive themselves. Another study conducted by Johnson (2011) found that if officers perceived that their supervisors prioritized a certain task, if they felt that their agency rewarded

them for completing prioritized tasks, or if they personally felt the task was a priority, all were positively correlated with an increase in officer proactivity. Thus, if supervisors properly emphasized the importance of task prioritization, gave adequate directives, and led by example, officer proactivity would increase (Famega et al. 2005; Johnson, 2011; Johnson, 2015).

Stratified Policing Framework and Rationale

Stratified policing is an organizational framework that was developed and introduced by Drs. Rachel and Roberto Santos (Santos & Santos, 2015; Santos, 2018). Stratified policing is the organizational framework that is being evaluated in this study as it is the framework that was used in the Delaware State Police SPEAR initiative. DSP utilized stratified policing to aid in institutionalizing the use of evidence-based practices as a means of crime reduction (McQueen et al., 2019). The specifics of the SPEAR initiative and its outcomes will be discussed further in chapter 3; however, to understand the importance of utilizing the stratified policing organizational framework, it is imperative to establish what researchers have found to be as flaws to implementing proactive policing.

Stratified policing seeks to institutionalize effective crime reduction strategies through the implementation of problem solving, analysis, and accountability processes throughout the entirety of a police department with the goal of enhancing and increasing the agency's ability to address its crime and disorder problems (Boba & Santos, 2011, p. 3). Stratified policing can assist agencies in identifying and implementing effective crime reduction strategies, or by enhancing the efficiency of strategies already utilized by a police agency (Boba & Santos, 2011). Thus, the overall goal of stratified policing is to institutionalize evidence-based practices in policing, or to put it simply, it takes "what works" and "makes it work" (Santos & Santos, 2015).

Boba and Santos (2011) stated institutionalizing evidence-based practices is essential to stratified policing, and for proper institutionalization to occur, it requires the use of crime reduction strategies to be integrated into the organization's operations. Crime reduction strategies would be institutionalized just as calls for service or investigations are, making it a part of the day-to-day operations of the agency (Santos & Santos, 2015). Thus, the success of stratified policing is predicated on successfully institutionalizing organizational change.

Implementation of proactive crime reduction strategies often fails due to much of the burden of responsibility for their success being placed solely on line-level or low-ranking personnel (Mazerolle et al., 2012; Santos & Santos, 2012). Stratified policing seeks to overcome this by stratifying the responsibility for crime reduction goals linearly (Boba & Santos, 2011). That is, as problems become more complex, they are assigned to higher-ranking personnel within the organization (Boba & Santos, 2011). This ensures that every rank within the agency shares the burden of responsibility, and that every rank is actively involved in achieving the agency's crime reduction goals, and that they are held accountable for doing so (Santos & Santos, 2015).

Crime analysis plays a central role in the successful implementation of proactive policing strategies (Brandl, 2018; National Academies of Sciences, Engineering, and Medicine, 2018; Santos, 2018). Thus, stratified policing requires agencies to improve their data collection and analysis capabilities (Boba & Santos, 2011). One method of accomplishing this is improving the detail within police reports. Stratified policing requires officers to include information about modus operandi, routine activities of individuals, crime prevention methods utilized, surrounding environment, and other information in their reports to help guide the agency's response to crime problems (Boba & Santos, 2011). Detectives are also required to ask more detailed questions during interrogations, specifically relating to the offender's risk perceptions (Boba & Santos,

2011). Stratified policing tailors these data collection and analysis improvements to the specific needs of the agency, thus data collection would be guided by the agency's crime reduction goals (Boba & Santos, 2011). This increased data collection is also in line with recommendations made within the NAS report, calling for a substantial increase in the collection of reliable data (National Academies of Sciences, Engineering, and Medicine, 2018).

While stratified policing is not a form of problem-oriented policing, it seeks to incorporate its effective elements with the effective elements of other crime reduction strategies (Boba & Santos, 2011, p. 4). One such element of problem-oriented policing that is utilized in stratified policing is the SARA model. The SARA model is a tool used in the problem-solving process that allows an agency to identify and address the specific problems that exist within their communities (Brandl, 2018; National Academies of Sciences, Engineering, and Medicine, 2018). Stratified policing uses the SARA model in a similar fashion, which allows for problems and solutions to those problems to be tailored to the specific agency that is using stratified policing (Boba & Santos, 2011).

As stated by Boba and Santos (2011), stratified policing categorizes problems based on complexity. This allows for the responsibility of addressing these problems to be stratified by rank, with problems deemed more complex being assigned to higher-ranking personnel. Stratified policing places problems into one of three categories, including immediate, short-term, and long-term. Immediate problems are those that tend to manifest over a short period of time, but also can be resolved in a short period of time (Boba & Santos, 2011). Immediate problems are also considered to be isolated. There are two types of immediate problems: incidents and serious incidents. An incident is a problem that arises from citizen or officer-generated calls for service and is typically a lower-level offense and can be resolved quickly. A Ssrious incident is

similar to an incident and also arises from citizen or officer-generated calls for service, but the crime committed is deemed to be more serious. What incidents are deemed serious varies by department. For instance, some departments may consider robbery to be serious, while others may only consider robberies that involve a weapon to be serious. Serious incidents usually require a more sophisticated or immediate response. Since immediate problems are of lower complexity, and since they can be resolved rather quickly, they are typically assigned to lower-ranking personnel such as line-level officers or detectives (Boba & Santos, 2011).

Short-term problems occur over longer periods of time, such as several days or weeks (Boba & Santos, 2011). Thus, a short-term problem requires a more short-term response, as opposed to an immediate response. There are two categories of short-term problems: repeat incidents and patterns. A repeat incident is when two or more of the aforementioned "incidents" occur that are similar in nature. Patterns are two or more occurrences of the same crime that are related in some way, such as by location or offender. These tend to be stranger crimes, where the victim does not know the offender. Responses to short-term problems are typically more sophisticated, and thus the responsibility of resolving short-term problems is typically assigned to middle-ranking personnel, such as a sergeant (Boba & Santos, 2011).

Long-term problems occur over even longer periods of time, such as months or even years (Boba & Santos, 2011). The severity of long-term problems varies from common disorder activities to serious violent offenses. There are several different types of long-term problems, including problem locations, problem victims, problem offenders, problem areas, problem products, and compound problems. Since long-term problems are the most complex, they typically require a very sophisticated and multifaceted response; thus, they are typically assigned to the highest-ranking personnel, such as a police commander or chief (Boba & Santos, 2011). It

is worth mentioning that long-term problems are manifested from short-term problems going unresolved; thus, if short-term problems can be resolved successfully, they would not manifest into long-term problems (Boba & Santos, 2011).

One fundamental component of stratified policing is accountability, as successful organizational changes require accountability (Santos & Santos, 2015). This accountability ensures that all agency personnel are consistently and effectively implementing and maintaining crime reduction efforts (Boba & Santos, 2011, p. 8). While under the stratified policing framework accountability occurs daily, the framework also utilizes a stratified meeting structure (Santos & Santos, 2015). These meetings correspond to the problem's complexity, and thus are also stratified by rank (Boba & Santos, 2011). There are four different types of meetings, including daily, weekly, monthly, and semiannual.

Daily meetings often occur during roll call, are line-level, and are used to discuss immediate and short-term problems and develop appropriate responses (Boba & Santos, 2011; Santos, 2018; Santos & Santos, 2015). Weekly meetings occur at the mid-manager level and typically are attended by several divisions within the organization. These are utilized to allow organizational personnel to develop, coordinate, and assess the crime reduction strategies that have been implemented in response to short-term problems. Both daily and weekly meetings are action oriented as they are used to ensure organizational personnel are adhering to their responsibilities (Boba & Santos, 2011; Santos & Santos, 2015; Santos, 2018).

Monthly meetings are utilized to assess the effectiveness of the implemented responses to short-term problems, to identify if long-term problems are developing, and to monitor the responses implemented to resolve long-term problems (Boba & Santos, 2011). These occur at the command level and are typically attended by high-ranking personnel such as police commanders

(Santos & Santos, 2015). Semiannual meetings are utilized to assess the effectiveness of the implemented responses to long-term problems, to identify new long-term problems, and to develop organizational goals to be achieved (Boba & Santos, 2011). The results of semiannual meetings are shared with the agency and the public to show how everyone is being held accountable, and to share the progress towards accomplishing the agency's goals (Santos & Santos, 2015). Both monthly and semiannual meetings are evaluation oriented as they seek to evaluate the effectiveness of responses to both short-term and long-term problems (Boba & Santos, 2011).

This stratified accountability structure allows for organizational personnel to hold the ranks directly under them accountable for their crime reduction responsibilities (Boba & Santos, 2011). It allows for all organizational personnel to have detailed directives and enforces accountability through the already top-down hierarchical structure of police departments. Ultimately, it is up to an agency's top leaders to hold all personnel accountable for their responsibilities in their agency's crime reduction goals (Boba & Santos, 2011).

CompStat and Stratified Policing

Both CompStat and stratified policing seek to assist agencies in incorporating and implementing evidence-based policing and best practices into departmental operations. Due to this, both organizational frameworks are comparable. Thus, understanding the benefits and shortcomings of both frameworks is imperative in determining which is a more effective means of addressing a police agency's crime reduction goals.

One of the mentioned flaws of CompStat is that its accountability structure places too much emphasis on middle- and upper-management personnel. Stratified policing overcomes this by dispersing accountability throughout the police department, with problems and

responsibilities being stratified by rank (Boba & Santos, 2011). By providing this shared ownership of the agency's crime reduction goals, it allows for infusing the responsibilities through the organization (Boba & Santos, 2011). Additionally, by stratifying accountability throughout the department as opposed to placing it on any individual person or groups of persons, stratified policing reduces the incentives to engage in police misconduct and misreport crime statistics.

Another benefit of stratified policing is that it identifies problems of varying complexities, identifying not just immediate and short-term issues, but also long-term issues like chronic crime areas (Boba & Santos, 2011). As stated by Shah et al. (2018), the original CompStat framework only examined short-term problems, and thus they recommended CompStat 2.0 to also examine long-term problems as well. While CompStat 2.0 can surely benefit from this improvement, this is something that is already imbedded within the stratified policing framework. Likewise, since crime is a local phenomenon, agencies need to be able to tailor any strategies to their individual needs and priorities (Shah et al., 2018). CompStat is criticized for not doing an effective job at allowing agencies to do this (Shah et al., 2018). However, by incorporating the SARA model into the problem-solving process, stratified policing allows for the tailoring of crime reduction strategies to the individual agency that is using stratified policing needs (Boba & Santos, 2011). This includes tailoring the data collection, analysis, and solution to the individual agency's needs (Boba & Santos, 2011).

Shah et al. (2018) stated that the core processes of CompStat are useful in promoting organizational change within a police organization. CompStat influences departmental priorities and is useful in implementing evidence-based practices agency-wide (Shah et al., 2018). While this certainly is a strength of CompStat, it also is a strength of stratified policing. Prior research

on stratified policing has found it to be an effective means of improving key organizational change characteristics, which is important in facilitating agency-wide change (Santos, 2018). Thus, while both frameworks are successful in facilitating organizational change, by improving key organizational change characteristics, stratified policing allows for the continuance of utilizing evidence-based practices in addressing future crime problems, and not just for a singular problem or timeframe.

When police leaders throughout the United States were asked why they utilize CompStat, the top five responses included to identify crime problems, to develop solutions to crime problems, to increase accountability, to effectively deploy resources, and to increase information sharing throughout the agency (Shah et al., 2018). While all of these things are accomplished by CompStat, they also are accomplished when utilizing stratified policing. Stratified policing's problem-solving process allows for the identification of crime problems of varying levels of complexity, as well as developing solutions to those problems, effectively deploying resources, and stratifies accountability throughout the police department (Boba & Santos, 2011). As for information sharing, the original CompStat framework was lacking in that regard, as information was mainly only provided to the high-ranking personnel that attended the CompStat meetings (Shah et al., 2018). Thus, one recommendation for CompStat 2.0 was to increase information sharing and allow easier access to information, similar to what the NYPD has been doing in recent years (Shah et al., 2018). Stratified policing increases information throughout the department and allows for information to be received by all departmental personnel. Line-level officers receive quality, action-oriented crime analysis reports regularly, which can be used to guide their actions (Boba & Santos, 2011). Also, stratified policing recommends creating an online website or blog that can be utilized by agency personnel in real time, which would

increase information sharing, in line with the recommendations for CompStat 2.0 and the programs used by the NYPD (Smith et al., 2019). By increasing information sharing, it provides for role clarity as they have a better understanding of their role and the roles of others, thus improving transparency. This is a benefit of stratified policing, as research suggests that if line-level personnel understood what tasks are prioritized and why, it would increase officer proactivity (Johnson, 2011).

The expanded meetings structure of stratified policing is also a benefit over CompStat. Shah et al. (2018) stated that the bi-weekly meetings structure of CompStat is ineffective, as it does not allow for a large enough time frame for solutions to crime problems to be implemented and evaluated. Thus, they recommended expanding the meeting structure to be monthly for long-term crime problems. The stratified policing framework already has an expanded meeting structure, which incorporates problems ranging from immediate, short-term, to long-term (Boba & Santos, 2011). This structure recognizes that a longer timeframe is necessary for the evaluation of implemented responses; thus, only the monthly and semiannual meetings are evaluation oriented (Boba & Santos, 2011). This meeting structure also increases involvement of all agency personnel as they all have meetings to attend, instead of solely police administrations being privy to the information being shared in meetings. Thus, while CompStat can surely benefit from an expanded meeting structure and strides have been taken to accomplish this in CompStat 2.0, it is something stratified policing already does and already does well.

Another mentioned flaw of CompStat is the lack of directives that are provided on what solutions should be implemented to address the identified crime problems (Brandl, 2018). Research suggests that providing directives to officers is important, as a lack of supervisory directives may lead to a reduction in proactivity and effectiveness (Famega et al., 2005). It is

important for these directives to be reliable and based in research. CompStat has been criticized for implementing problem solutions based on what efforts have previously been successful in their organization or other organizations or utilizing problem solutions based on the popularity of the strategy at the time (Shah et al., 2018). Stratified policing uses problem solutions that are evidence-based, and thus have been tried and tested. This is an advantage of stratified policing, as using strategies that are based in research are likely to result in more effective crime reduction (Brandl, 2018). Additionally, the use of these evidence-based practices is institutionalized within the police organization, allowing for it to become part of the day-to-day operations of the department, something that CompStat is criticized for not doing (Santos & Santos, 2015; Shah et al., 2018).

Lastly, one final recommendation made to improve the original CompStat to CompStat 2.0 is the need to increase the information that is collected by police departments (Shah et al., 2018). Shah et al. (2018) argued that for innovative responses to crime to be developed and implemented, it would require collecting better information on the "how" and "why" of crime. This is something that is addressed by stratified policing. Stratified policing requires officers to include information about modus operandi, routine activities of individuals, crime prevention methods utilized, surrounding environment, and other information in their reports to help guide the agency's response to crime problems (Boba & Santos, 2011). Detectives are also required to ask more detailed questions during interrogations, specifically relating to the offender's risk perceptions (Boba & Santos, 2011). By increasing the types and amount of information that is collected by police agencies, stratified policing allows for more innovative and specifically tailored responses to be implemented.

Thus, while CompStat is undoubtedly one of the most innovative policing developments in history, and police departments have benefitted greatly from its creation and implementation, the benefits of utilizing the stratified policing framework instead are hard to deny. The idea of "CompStat 2.0" has gained traction in recent history, with many departments incorporating recommendations by scholars on how to improve the original CompStat framework. While this will surely be beneficial, and agencies and CompStat in general will become better at reducing crime, many of the recommendations for CompStat 2.0 are already integrated into the stratified policing framework. Things such as improving data collection, increasing information sharing, having an expanded accountability structure, and implementing evidence-based practices are a part of stratified policing, and are things it does well. Thus, an argument can be made, and a sound one at that, for police departments to utilize stratified policing over CompStat.

Gaps in the Literature

There is not a strong body of research on stratified policing due to it being a relatively new development. However, the research that does exist lends support to its overall effectiveness, and states that stratified policing shows promise as an effective means of institutionalizing evidence-based crime reduction (Santos, 2018). For instance, a study conducted by Santos (2018) on the Walton County Sheriff's Office (WCSO) found statistically significant improvements in the four key organizational change components, found that personnel were more satisfied with the agency's proactive crime reduction efforts, as well as finding improvements in the frequency of proactive crime reduction activities. The agency also saw a 12% reduction in its targeted crime over the course of a single year (Santos, 2018). Another study of a similar nature was conducted on a sheriff's department in Florida, finding similar

results. That is, the implementation of stratified policing led to significant improvements in all four key organizational change characteristics (Santos & Santos, 2018).

Thus, while the body of research on stratified policing is not particularly vast in terms of published studies, the findings of prior research lend strong support for its continued usage. In fact, the stratified policing framework has been adopted by numerous police agencies, both throughout the United States and internationally (Stratified Policing Resources and Services, 2016). This widespread adoption of stratified policing provides for continued support for its usage.

Santos and Santos (2019) discussed the large disconnect between research and practice, stating that while research has been able to establish an evidence base on "what works," there is a gap in how to translate "what works" into everyday procedure. They argued that there are many barriers in the translation process, and they provided examples of how stratified policing may play a role in overcoming some of those barriers (Santos & Santos, 2019). Thus, this study will review stratified policing in the context of the SPEAR initiative implemented in DSP. This study seeks to add more to the research basis of translating research into practice by evaluating the effectiveness of the stratified policing organizational framework in facilitating organizational change.

Prior research has identified some other gaps that exist in the current literature. For instance, Santos (2018) noted that his WCSO study was the first to utilize the survey that is used in this study; thus, there was no basis for comparisons. Additionally, he noted that future research should explore how stratified policing effects perceptions of key organizational change characteristics by rank (Santos, 2018). This study seeks to fill those gaps, first by providing another study that can be used as a comparison, and second by analyzing the data by rank. Also,

while prior research has discovered that stratified policing increases satisfaction among agency personnel, it has not been established what best predicts this satisfaction. This study seeks to fill that gap by determining which of the four key organizational change characteristics, being leadership, communication, transparency, and accountability, best predicts levels of personnel satisfaction.

Research Questions

The agency of focus in this study is the Delaware State Police Department. The goal is to determine whether stratified policing had any significant effects on perceptions of the four key organizational change components: leadership, communication, transparency, and accountability. In addition, this study seeks to determine if stratified policing had any significant effects on perceptions of satisfaction with proactive crime reduction. Each of these research questions will be explored further by analyzing changes in perceptions by rank. Ranks have been divided into five categories: All Ranks, Troopers, Detectives, Middle-Ranks, which includes sergeants and lieutenants, and Command Staff, which includes captains, majors, and colonels. This study also seeks to determine which of the four key organizational change components, if any, were the best predictors of change in satisfaction with proactive crime reduction. Overall, this study has six research questions, with 26 hypotheses:

RQ1: How does stratified policing change perceptions of leadership within the Delaware State Police Department?

HYP1.1: Stratified policing improves perceptions of leadership among all ranks within the Delaware State Police Department.

HYP1.2: Stratified policing improves perceptions of leadership among troopers within the Delaware State Police Department.

HYP1.3: Stratified policing improves perceptions of leadership among detectives within the Delaware State Police Department.

HYP1.4: Stratified policing improves perceptions of leadership among middle-ranking personnel within the Delaware State Police Department.

HYP1.5: Stratified policing improves perceptions of leadership among command staff within the Delaware State Police Department.

RQ2: How does stratified policing change perceptions of communication within the Delaware State Police Department?

HYP2.1: Stratified policing improves perceptions of communication among all ranks, excluding detectives, within the Delaware State Police Department.

HYP2.2: Stratified policing improves perceptions of communication among troopers within the Delaware State Police Department.

HYP2.3: Stratified policing improves perceptions of communication among detectives within the Delaware State Police Department.

HYP2.4: Stratified policing improves perceptions of communication among middle-ranking personnel within the Delaware State Police Department.

HYP2.5: Stratified policing improves perceptions of communication among command staff within the Delaware State Police Department.

RQ3: How does stratified policing change perceptions of transparency within the Delaware State Police Department?

HYP3.1: Stratified policing improves perceptions of transparency among all ranks within the Delaware State Police Department.

HYP3.2: Stratified policing improves perceptions of transparency among troopers within the Delaware State Police Department.

HYP3.3: Stratified policing improves perceptions of transparency among detectives within the Delaware State Police Department.

HYP3.4: Stratified policing improves perceptions of transparency among middle-ranking personnel within the Delaware State Police Department.

HYP3.5: Stratified policing improves perceptions of transparency among command staff within the Delaware State Police Department.

RQ4: How does stratified policing change perceptions of accountability within the Delaware State Police Department?

HYP4.1: Stratified policing improves perceptions of accountability among all ranks within the Delaware State Police Department.

HYP4.2: Stratified policing improves perceptions of accountability among troopers within the Delaware State Police Department.

HYP4.3: Stratified policing improves perceptions of accountability among detectives within the Delaware State Police Department.

HYP4.4: Stratified policing improves perceptions of accountability among middle-ranking personnel within the Delaware State Police Department.

HYP4.5: Stratified policing improves perceptions of accountability among command staff within the Delaware State Police Department.

RQ5: How does stratified policing change perceptions of satisfaction with proactive crime reduction within the Delaware State Police Department?

HYP5.1: Stratified policing improves perceptions of satisfaction among all ranks within the Delaware State Police Department.

HYP5.2: Stratified policing improves perceptions of satisfaction among troopers within the Delaware State Police Department.

HYP5.3: Stratified policing improves perceptions of satisfaction among detectives within the Delaware State Police Department.

HYP5.4: Stratified policing improves perceptions of satisfaction among middle-ranking personnel within the Delaware State Police Department.

HYP5.5: Stratified policing improves perceptions of satisfaction among command staff within the Delaware State Police Department.

RQ6: How do changes in leadership, communication, transparency, and accountability predict changes in satisfaction with proactive crime reduction?

HYP6.1: Communication will be the best predictor of changes in satisfaction with proactive crime reduction.

All of these questions have been formed and guided by reviewing the gaps that exist in the literature on this topic. Prior research suggests that stratified policing should result in increases in perceptions of the key organizational change components (Santos, 2018). Thus, I hypothesize that this study will find similar results. Examining research question 6 will be less straightforward, as research has suggested that several factors may lead to changes in personnel's satisfaction. Additionally, a study conducted by Pelfrey (2007) suggests that the relationship between engaging in proactive activities and satisfaction may be cyclical. Thus, discerning between which of the key organizational change components leads to higher levels of satisfaction will aid in identifying which component may lead to officers increasing their

proactivity, highlighting the importance of this finding. The hypothesis for research question 6 is reflective of prior research on communication. Abramis (1994) found communication to be vital for increasing both transparency and satisfaction. The work by Stetler et al. (2014) identified that leaders must be able to communicate effectively in order to drive change. Thus, as communication plays a role in both effective leadership and transparency, as well as prior research finding it to be related to satisfaction, I hypothesize that it will be the best predictor of change in satisfaction.

Chapter 3: Response Implementation, Data, and Methodology

This chapter provides a description of the Delaware State Police (DSP) and its implementation of stratified policing since that is the focus of the study. The chapter also covers the survey methodology and questions that were used to collect the perception data, the coding and nature of the variables, and the statistical analysis that will be conducted to determine whether stratified policing had an impact.

Overview of Delaware State Police

The DSP is a division within the Delaware Department of Public Safety and Homeland Security. It was established in 1923 and serves a population of nearly one million residents, alongside an estimated nine million annual visitors to the state (McQueen et al., 2019). The agency employs approximately 716 sworn state troopers and an additional 240 civilian support employees, and troopers are divided amongst the eight operational troops that oversee the jurisdiction of DSP (McQueen et al., 2019). The DSP rank structure includes 12 different ranks, ranging from trooper to colonel, with colonel being the highest. This structure can be seen in Appendix A, which shows the organizational structure of DSP obtained directly from its 2018 annual report. The jurisdictions of each of the eight operational troops can be viewed in a geographic map in Appendix B.

The DSP holds statewide law enforcement responsibilities policing both rural and urban areas and a largely diverse population (McQueen et al., 2019). As DSP has jurisdiction over most of the state of Delaware, they engage in a variety of law enforcement and public service activities. This includes responding to traffic accidents and infractions, maintaining order, responding to calls for service for a wide variety of offenses, investigating crimes, and engaging in community outreach (About the Job, n.d.).

DSP also holds several full-time and part-time special operations units. The full-time units include aviation, Delaware Division of Gaming Enforcement, Executive Protection Unit, Homicide, Intelligence Homeland Security, and the State Bureau of Identification (Coupe & McQueen, 2019). The part-time units include conflict management, scuba, Explosive Ordnance Disposal Team (EOD), and a Special Operations Response Team (Coupe & McQueen, 2019). This expansive number of special operations illustrates the wide variety of responsibilities and activities engaged in by DSP personnel. These units receive monthly training and are frequently called upon to address issues throughout most of the state (Coupe & McQueen, 2019).

As part of their commitment to utilizing community-based policing, the DSP has a designated unit for community outreach. This unit engages in a wide variety of community-based activities involving all segments of their communities, with hosting "Trunk or Treat" programs for children and working alongside community members in Neighborhood Watch programs, among many others. DSP engages in this community outreach to build relationships with the community and enhance their police-community partnerships, with the goal of increasing dialogue between the police and community and to increase the favorable perceptions of the police among community residents (Community Outreach, n.d.).

DSP's Implementation of Stratified Policing

In 2014-2015, the superintendent colonel of DSP, Nathaniel McQueen, sought to make the agency more effective and efficient at reducing crime and traffic collisions (McQueen et al., 2019).[1] Traditionally, DSP utilized a CompStat model as a means of addressing their crime and traffic-related problems. However, due to a variety of factors, including the need for greater

[1] Much of the information gathered on DSP's implementation of stratified policing was gathered from an article written by senior leadership of the agency in the International Association of Chiefs of Police (McQueen et al., 2019).

flexibility and better accountability mechanisms, it was determined an alternative approach was necessary to address the varying nature of the agency's problems. Ultimately, Colonel McQueen elected to utilize stratified policing to aid the agency in crime reduction. Stratified policing was selected due to its focus on using evidence-based practices, its ability to embrace and enhance community engagement, and its ability to utilize personnel and resources in the most efficient and effective manner (McQueen et al., 2019). This initiative to utilize stratified policing as a means to enhance the efficiency and effectiveness of DSP was entitled the Delaware State Police Enhanced Analytical Response, or SPEAR. This adoption of stratified policing made the DSP the first state police agency to do so (McQueen et al., 2019).

The following subsections include the key events that occurred during each phase of the implementation of stratified policing into DSP. These phases include implementation development, which occurred prior to the first wave of the organizational survey, the initial stratified policing assessment including recommendations and training provided by Drs. Roberto and Rachel Santos, the implementation of the recommendations provided by Drs. Santos and the SPEAR committee, and the final phase concerning the second wave of the organizational survey.

January 2015 to October 2015: Implementation Development and Pre-survey.

The first step in the adoption of stratified policing was conducting an in-depth analysis of all crime and traffic data under the DSP's jurisdiction from the previous 5 years. The purpose was to determine the effectiveness of the agency in reducing crime and traffic incidents, alongside identifying areas that could benefit from improvements (McQueen et al., 2019). This analysis identified two main findings, the first of which being that every operational troop had a geographical crime hot spot within their beat, and that there were certain crimes that were prevalent across all troop jurisdictions (McQueen et al., 2019). Additionally, this analysis

established a baseline measure of crime, which could be used for comparisons during evaluations of the initiative.

Following the initial analysis, a SPEAR committee was created and included several personnel from within the agency, including troop leaders and executive staff (McQueen et al., 2019). This committee reached out to outside researchers to increase their understanding of SPEAR and to help ensure a successful implementation. These researchers were Drs. Santos, the developers of stratified policing, who have had great success in implementing stratified policing in other police departments (McQueen et al., 2019).

November 2015 to January 2016: Stratified Policing Assessment, First Wave of Organizational Survey, Recommendations, and Training.

Drs. Santos began the systematic process of implementing stratified policing into the structure of DSP. The first stage of this process was to conduct an initial organizational assessment of the agency, which provided an increased understanding of the policies, practices, and culture of DSP, as well as provided baseline measures for future evaluation (Stratified Policing Implementation Assistance, 2016). This assessment examined the data and technological capabilities of DSP, the crime analysis products currently being produced by DSP, the crime reduction policy and practices DSP currently had in place and examined the organizational structure that was being utilized by DSP. It was during this time that the first wave of the organizational survey was administered.

Following this assessment, Drs. Santos provided tailored recommendations for implementation of stratified policing to the needs of DSP. The first recommendation was for policy development, with the goal of aiding the committee in writing sound policy that would be in line with the necessary requirements of implementing evidence-based practices. The SPEAR

committee began writing policy that established strategic goals for the agency, provided a structure that would support the use of evidence-based practices, and established a timeline along with evaluation mechanisms (McQueen et al., 2019). The committee also considered the need for the policy to identify and account for the varying complexities of crime and traffic incidents (McQueen et al., 2019). This meant that the committee would establish parameters for immediate problems, short-term problems, and long-term problems guided by the agency's needs within stratified policing.

Additionally, at the recommendation of Drs. Santos, the committee defined the roles and responsibilities for all ranks within the agency, ranging from line-level personnel to the agency's command staff. This was done with the goal of defining accountability, determining who would be accountable for each task and what goals the agency would be held accountable to reach (McQueen et al., 2019).

Drs. Santos also provided a 1-day training for DSP leadership, which was attended by all ranks lieutenants and above. This training occurred on the outset of the implementation of stratified policing, and provided an overview of the approach that would be taken and why certain changes to the DSP structure were necessary.

February 2016 to December 2016: Implementing Recommendations.

Following policy discussion and development, the committee completed an assessment of the organizational structure of DSP (McQueen et al., 2019). Subsequently, the committee provided recommendations for changes to the DSP structure that would better support stratified policing, all of which were implemented. The first recommendation was centralizing crime analysis to the Delaware Information Analysis Center (DIAC), with the purpose of ensuring consistent reporting of crime data and to provide an objective assessment of the use of evidence-

based practices within each troop (McQueen et al., 2019). The second recommendation was to change the meeting structure of DSP's command staff (McQueen et al., 2019). Prior to the adoption of stratified policing, meetings were held only monthly and were attended only by commanders and executive staff, reflective of their use of the traditional CompStat model. This structure changed to be more inclusive and more frequent. Meetings were changed to coincide with problem complexity (McQueen et al., 2019).

Reviewing the results of the crime analysis and the recommendations provided by Drs. Santos, the committee identified several crimes to be problematic for DSP. This information was then considered by Colonel McQueen, who subsequently established strategic crime reduction and traffic safety goals (McQueen et al., 2019). In total, there were five crime reduction goals established and four traffic safety goals. The crime reduction goals included reducing instances of robbery, burglary, theft, aggravated and simple assaults (non-domestic), and increasing the number of patrol-generated drug arrests (McQueen et al., 2019). The traffic safety goals included reducing the number of traffic collisions, fatal motor vehicle collisions, and the combined pedestrian and motorcycle-related collisions, and increasing the use of proactive DUI enforcement (McQueen et al., 2019).

After the establishment of crime reduction and traffic safety goals, Colonel McQueen informed and educated the command staff of DSP. This was done based on the premise that the commanders were best positioned to lead and mentor their subordinates through the significant organizational changes that DSP would be experiencing (McQueen et al., 2019). Commanders were educated through information briefings on SPEAR and were provided with follow-up training by researchers Drs. Santos in November of 2016 (McQueen et al., 2019). Following this, the direction of training for DSP was tasked with expanding the training on the SPEAR model to

all agency personnel, sworn and civilian, by making changes to recruitment and in-service training curricula (McQueen et al., 2019). To aid in the transition phase, Colonel McQueen designated a full-time liaison on the SPEAR committee tasked with maintaining communication across troop commanders, the SPEAR committee, and himself (McQueen et al., 2019). This was done with the goal of evaluating best practices and to resolve any issues that might arise during the implementation process.

This open communication results in several positive outcomes. Some of these outcomes include the development of standardized reporting templates for the daily, weekly, and monthly meetings, management of short-term crime and traffic problems that expanded across multiple jurisdictions, and establishing a process of sharing best practices in monthly commanders' meetings (McQueen et al., 2019). Additionally, as a means of ensuring accountability and improving data collection, a mandatory five-step investigative process was developed (McQueen et al., 2019). These five steps included crime scene processing, witness canvassing, checking for video footage of criminal or traffic incidents, identifying stolen property that may be traceable, and utilizing investigative technology for suspect identification and identifying stolen property (McQueen et al., 2019). Troopers were tasked with gathering this information during every incident, or providing written justification for not doing so, and were held accountable to this process (McQueen et al., 2019).

Senior leadership was tasked with overseeing and evaluating commanders' use of stratified policing for short-term and long-term results (McQueen et al., 2019). Each of the eight troops, all overseen by a commander, had defined crime and traffic hot spots within their area. The commanders were given full autonomy in developing a response to address those hot spots, which allowed for substantial flexibility (McQueen et al., 2019). Commanders were tasked with

coordinating and working with their supervisors and subordinates to address the identified hot spots, and all personnel were held accountable to adhering to this by providing productivity measures to be assessed.

January 2017 to December 2018: Ongoing Implementation of Stratified Policing.

The first full-year implementation of the SPEAR model occurred in 2017 (McQueen et al., 2019). Delaware State Police's transition from the traditional CompStat model to the stratified policing, or SPEAR model, was an 18-month process. Troopers were now conducting higher quality investigations and collecting crime data to determine whether incidents are part of a larger trend. Supervisors were ensuring investigations were conducted in line with the newly implemented five-step process and were responsible for facilitating information to the appropriate personnel. Commanders were tasked with reviewing crime data analysis and developing strategic responses to address the identified crime and traffic problems based on that analysis and sharing the outcomes of these responses with senior leadership (McQueen et al., 2019).

Over the course of this process, DSP identified that frequent analysis of crime data, increased agency-wide information sharing, and providing definite roles and responsibilities were all crucial elements of the initiative's success (McQueen et al., 2019). This largescale organizational change shifted the culture of DSP towards one that is better equipped to utilize evidence-based practices, making them a more efficient and effective agency at addressing crime and traffic problems.

January 2019: Second Wave of Organizational Survey.

The second wave of the organizational survey was administered in January of 2019. This survey provided post-implementation measures of perceptions of the key organizational change

components, which included perceptions of communication, leadership, transparency, and accountability, as well as overall satisfaction with proactive crime reduction. These post-implementation measures were compared to the baseline measures that were collected from the first wave of the organizational survey to determine whether the agency saw improvements in the key organizational change components following two full years of the implementation of stratified policing. The results of this analysis will be discussed in depth in chapter 4.

Research Design, Survey Data, and Measurement of Variables

The research being conducted in this study is applied research, as the findings can be utilized by police policy makers to help guide their decisions on how to effectively incorporate evidence-based practices into their daily operations. This study utilizes a one-group pretest-posttest research design. This design is used as there is only one group being examined with no comparison group and no randomization (Rennison & Hart, 2019). The group being examined in this study is the Delaware State Police, with the comparison being the perceptions of the key organizational change components obtained via the first wave of the organizational survey versus the perceptions of the key organizational change components obtained from the second wave of the organizational survey. For research questions 1-5, the treatment that is the basis for evaluation in this study is the implementation of stratified policing into DSP. Research question 6 was also interpreted in a pretest-posttest fashion as both models of the multiple regression were compared to determine whether the predictor variables experienced any changes in their ability to predict satisfaction following the implementation of stratified policing.

Both waves of the survey were gathered by Drs. Santos as part of the assessment process described above. Since this study uses the same survey instrument as the Santos (2018) study,

the description of the questions is similar. In addition, this study seeks to replicate the Santos (2018) analysis, so the study variables are coded the same.

To measure organizational change after implementing stratified policing, two waves of the same anonymous survey were administered to all sworn DSP personnel, one wave pre-implementation of stratified policing, and one wave post-implementation of stratified policing. The first wave was administered in December of 2015, with the second wave being administered in January of 2019. In the first wave, the survey was distributed using SurveyMonkey by the colonel to all sworn personnel. One email was sent with the link for the survey and after a week, s second email was sent as a reminder giving them one more week to complete. In the second wave, the same process was used except the email was sent by the DIAC captain.

While the first wave of the survey was administered at the very end of 2015, the year 2016 will be used as the baseline as this was the year the department fully began the process of implementing stratified policing. The first wave provided a baseline measurement for perceptions of leadership, communication, transparency, accountability, and satisfaction, whereas the second wave provided measurements for comparison following the model's implementation. The survey provided an introduction that ensured respondents were focused exclusively on proactive crime reduction activities, and also ensured anonymity for all respondents. In both waves, respondents were told that they would be asked to take the same survey again in the future to examine changes in the organization.

Table 1 shows the survey response counts by rank as well as the response completion rate based on the total number of sworn personnel that received the survey and attempted to respond. Cases with missing or incomplete data were removed, with a total of 60 cases being excluded from the analysis. Of the 60 cases that were excluded, 16 were excluded for not identifying their

rank, and 44 were excluded for having not completed the survey in its entirety. In 2016, the completion rate was 90.2%, with 586 personnel completing the survey out of 650 surveys administers; in 2019, the completion rate was 91.6%, with 401 of a possible 438 surveys being completed.

Table 1. Survey responses by rank and completion rate

	Baseline (2016)	Post-implementation (2019)
Troopers	327	180
Detectives	143	118
Middle-Ranks	95	80
Command staff	21	23
Total surveyed	650	438
Total completed*	586	401
Completion rate*	90.2%	91.6%

Categories by Rank

Since this study is not only examining changes in perceptions of key organizational change components across the entire agency, but also by rank, personnel have been divided into four distinct categories. “Troopers” are comprised solely of uniform patrol personnel, also referred to as line-level personnel. “Detectives” are comprised solely of personnel with the rank of detective. “Middle-Ranks” are comprised of supervisory personnel: sergeants and lieutenants.

"Command Staff" are command and executive staff of the agency: captains, majors, and colonels.

One purpose of combining ranks for the last two categories is to provide enough respondents to allow for meaningful conclusions to be drawn from the analysis results. Due to the nature and structure of a police department, there are significantly more lower ranking personnel, which provides for a sizeable sample. For higher-ranking personnel, the opposite is true; thus, it requires combining ranks into larger categories.

Another purpose of combining ranks into categories is to be in line with the stratified structure of stratified policing. Stratified policing requires different ranks to have different roles and responsibilities, with higher-ranking personnel tasked with addressing problems that have increased complexity. As different ranks in DSP will have different roles and responsibilities, it is logical to view the effects of stratified policing on their perceptions of key organizational change components separately. The table below provides the frequency of each group, as well as the group's respondents representation in the study by percentage.

Table 2. Survey response frequency by rank.

	Baseline (2016)	Percent of total (2016)	Post-implementation (2019)	Percent of total (2019)
Troopers	327	56%	180	45%
Detectives	143	24%	118	29%
Middle-Ranks	95	16%	80	20%
Command Staff	21	4%	23	6%

Total surveyed*	650	100%	438	100%
Total responded*	586	90.2%	401	91.6%

Composite Measures

Each survey question's answers were based on an 8-point scale (0-7) to allow the analysis to detect incremental changes in perceptions over time. Five different scales were used with the following values:

Table 3. Scales used & their values.

Value	Agreement Scale	Frequency Scale	Transparency Scale	Amount Scale	Satisfaction Scale
0	Completely Disagree	Never	At All	Nothing	Extremely Dissatisfied
1	Mostly Disagree	Very Rarely	Marginally Transparent	Very Little	Very Dissatisfied
2	Somewhat Disagree	Rarely	Slightly Transparent	A Little	Somewhat Dissatisfied
3	Slightly Disagree	Occasionally	Somewhat Transparent	Some	Slightly Dissatisfied
4	Slightly Agree	Often	Fairly Transparent	A Good Amount	Slightly Satisfied
5	Somewhat Agree	Frequently	Transparent	A Lot	Somewhat Satisfied
6	Mostly Agree	Very Frequently	Very Transparent	A Whole Lot	Very Satisfied
7	Completely Agree	Always	Extremely Transparent	Everything	Extremely Satisfied

Composite measures have been created from multiple questions to be representative of perceptions of leadership, communication, transparency, and accountability. For each composite measure, individuals' responses for the selected items that made up the composite were averaged for an overall score of between 0 and 7. This allows the findings to be interpreted on the same scale as the individual items (Santos, 2018). A Cronbach's alpha test were conducted for each composite measure for both waves of the survey together to test for internal consistency, with the results of these tests being reported in Chapter 4.

Perceptions of leadership were represented with six items that included:

1. How much do you agree that the agency's leadership is collectively focused on proactive day-to-day crime reduction and problem solving?
2. How much do you agree that the people in the rank directly above you do the following: …Directly participate in day-to-day proactive crime reduction and problem solving;
3. … Teach those in your rank about day-to-day proactive crime reduction and problem solving;
4. … Encourage those in your rank to participate in day-to-day proactive crime reduction and problem solving;
5. … Promote teamwork for those in your rank to participate in proactive day-to-day crime reduction and problem solving?
6. How much do you agree that there are clear expectations for your rank in participating in day-to-day proactive crime reduction and problem solving?

The first five questions examined perceptions of leadership participation among agency personnel. The sixth question examined perceptions of whether clear expectations were provided by agency leadership.

Perceptions of accountability were represented by responses to the same question: How much do you agree that each group is being held accountable for day-to-day proactive crime reduction and problem solving?

1. Troopers
2. Detectives
3. Sergeants
4. Lieutenants
5. Captains
6. Majors
7. Colonels
8. D.I.A.C./CIOs (Delaware Information and Analysis Center/ Criminal Intelligence Officers)

This question is examining perceptions of accountability throughout DSP by examining personnel's perceptions of accountability for each rank in the agency. Accountability is a major component of stratified policing, and successful organizational change requires that all personnel are being held accountable to their responsibilities (Santos, 2018). Thus, it is important to measure the overall organizational perception of accountability across, as well as between, ranks.

Perceptions of communication were examined by presenting respondents with 16 items pertaining to communication, which included:

1. How often do the following groups have clear communication about day-to-day proactive crime reduction and problem solving?

   …Those in your rank;

2. …Those in your rank and the Criminal Investigations Unit (CIU);
3. …Those in your rank and Special Investigative Sections;
4. …Those in your rank and Headquarter Traffic Units;
5. …Those in your rank and D.I.A.C./CIOs?
6. How often do you think the following groups have clear communication about day-to-day proactive crime reduction and problem solving?

   …Among detectives;

7. …Among detectives and patrol;
8. …Among detectives and Special Investigations Sections;
9. …Among detective and D.I.A.C./CIOs;
10. …Among detectives and Headquarters Traffic Units;
11. …Among detectives and sergeants;
12. …Among troopers and sergeants;
13. …Among sergeants and lieutenants;
14. …Among lieutenants and captains;
15. …Among captains and majors;
16. …Among majors and colonels?

The first five questions measure communication within and between groups. The following 11 questions measure communication between ranks.

Perceptions of transparency were examined by presenting respondents with 17 items, which included:

1. How transparent are the roles and responsibilities of personnel in the agency's overall day-today proactive crime reduction and problem solving?

   How much do you know about what each group is supposed to do in day-to-day proactive crime reduction and problem solving?

2. Troopers
3. Detectives
4. Sergeants
5. Lieutenants
6. Captains
7. Majors
8. Colonels
9. D.I.A.C./CIOs

   How much do you know about what each group actually does for day-to-day proactive crime reduction and problem solving?

10. Troopers
11. Detectives
12. Sergeants
13. Lieutenants
14. Captains
15. Majors
16. Colonels

17. D.I.A.C./CIOs

The first question examined perceptions of transparency in general throughout DSP. The following eight questions measured personnel's understanding of what each rank is supposed to do, which is a measure of an understanding of the roles and responsibilities of each rank. The final eight questions measured personnel's understanding of what each rank actually does, which is a measure of the perceived ability of each rank to execute their roles and responsibilities.

Respondents were presented with 13 items that asked about the frequency of as well as individuals' satisfaction with the agency's proactive crime reduction efforts, which included:

1. How often does your agency identify the following for response?

   … An individual address with repeat calls over several weeks;
2. Citizen generated calls for service;
3. A pattern of several crimes over one to several weeks (linked by some or all of the following: suspect, area, MO, time/day, property type)?
4. How often does your agency attempt to permanently resolve the following?

   … An individual address with repeat calls over several weeks;
5. Citizen generated calls for service;
6. A pattern of several crimes over one to several weeks (linked by some or all of the following: suspect, area, MO, time/day, property type)?
7. How often does your agency identify the following for response?

   … An address that has been a problem for 1 or more years;
8. A hot spot area that has been a problem for 1 or more years;
9. A chronic offender who has repeatedly been arrested for 1 or more years?
10. How often does your agency attempt to permanently resolve the following?

… An address that has been a problem for 1 or more years;

11. A hot spot area that has been a problem for 1 or more years;
12. A chronic offender who has repeatedly been arrested for 1 or more years?
13. How satisfied are you with your agency's overall day-to-day proactive crime reduction efforts?

The first six questions measured perceptions of DSP's ability to identify and resolve short-term crime problems. The following six questions measured perceptions of DSP's ability to identify and resolve long-term crime problems. Stratified policing aids agencies in both identifying and resolving problems of varying complexities, including short-term and long-term problems (Boba & Santos, 2011). Thus, examining the agency's ability to accomplish this both in the first wave and second wave of the organizational survey provides a means of evaluating whether stratified policing is effective in improving DSP's problem identification and resolution abilities. The final question provides a measure of personnel's satisfaction with the agency's overall proactive crime reduction activities, which is useful in examining whether the agency's overall level of satisfaction improved following the implementation of stratified policing.

A Cronbach's alpha analysis was run for each of the composite measures used for both waves of the organizational survey. The purpose of running this analysis is to ensure the reliability of each measure used in the survey, and a Cronbach's alpha analysis was chosen as it is the most common measure of scale reliability used among researchers (Fields, 2009). All test results found a Cronbach's alpha of at least .87, with most finding an alpha value of above .9.[2] These results are much higher than the 0.70 threshold that is acceptable in social science (Fields,

[2] Cronbach's alpha for both years for each variable: Leadership (.872), Communication all ranks but detectives (.931), Communication for detectives (.904), Transparency (.947), Accountability (.932).

2009). Thus, these findings indicate that the composite measures used on the survey are reliable measures.

Research Variables and Analysis Methods

There are two distinct analyses that were conducted to test the research questions. For research questions 1-5, the purpose is to examine the effects the implementation of stratified policing had on key organizational change characteristics. Thus, for research questions 1-5, the DSP's implementation of stratified policing is the independent variable and the dependent variables for research questions 1-5 are perceptions of leadership, communication, transparency, accountability, and satisfaction with proactive crime reduction, respectively.

The hypotheses for these research questions were tested using independent t-tests in order to examine differences in perceptions from wave 1 to wave 2. Because both waves of the survey were anonymous, responses could not be paired in the two waves, so paired t-tests could not be used to determine individual changes in perceptions from before and after implementation. Instead, independent t-tests were selected for this study as it is comparing two experimental conditions with different participants in each condition (Fields, 2009). Thus, comparisons were made on a per condition basis rather than a per participant basis, as since the populations from wave 1 to wave 2 of the survey may be different, there are other sources of variance that must be considered (Fields, 2009). Using independent t-tests allows for this study to view changes in perception for the key organizational change components for the entirety of the organizational between wave 1 and wave 2, rather than viewing changes in perception for each individual participant. This is the same analysis used by Santos (2018) in his study that is being replicated by this study.

As the survey was anonymous and was administered 3 years apart, it is likely that some respondents to the first wave of the survey no longer were with the department during the second wave, and it is likely that the agency recruited new personnel that responded to the second wave of the survey that were not present during the first wave. Additionally, it is possible that personnel within the agency had been promoted during the years in between the first and second waves of the survey. This may mean they are in an entirely different position than they were during the first wave of the survey when the second wave was administered, which could lead to a change in perceptions in itself. However, the purpose of this study is to examine the effects of stratified policing on the overall organizational change of the agency. Under this context, it makes sense to compare overall changes in perceptions of key organizational change components rather than compare individual perception changes amongst agency personnel. Thus, as stated by Santos (2018) in his study, this analysis focuses on the change in collective perception about the crime reduction culture of the agency, rather than examining individual changes in perception (p. 293).

In total, 25 independent t-tests were run for the first five research questions. Five independent t-tests were run to test for overall change in perception for each key organizational change component between the first and second waves of the organizational survey. Additionally, each rank category was tested for changes in perception for each key organizational change component between the first and second waves of the organizational survey. While prior research has tested the effects of stratified policing on perceptions of key organizational change components, there has been no research that has examined these changes under the context of rank categories. Thus, testing the changes in perception for these five rank categories is an expansion of the work done by Santos (2018).

For research question 6, the purpose is to determine which of the key organization change characteristics is the best predictor of personnel satisfaction with proactive crime reduction. Thus, for this question, the independent variables are the key organizational characteristics themselves, being perceptions of leadership, communication, transparency, and accountability, with the dependent variable being personnel satisfaction.

The hypothesis for research question 6 was tested using a multiple regression analysis. Regression analysis was utilized as it allows for predictions to be made from the data, as the independent variables can be used to predict the values of the dependent variable (Fields, 2009). For this study's analysis, the four independent variables being used are perceptions of leadership, communication, transparency, and accountability, with the dependent variable being satisfaction with proactive crime reduction. As this study is examining multiple independent variables to determine which is the best predictor of satisfaction, a multiple regression analysis was necessary.

A multiple regression analysis was used on both waves of the survey separately, and the model coefficients were compared. That is, model strength stats as well as the B and beta (β) coefficients of the multiple regression model were compared to determine which model is stronger and which independent variable has the strongest influence on each model. Assessing model strength is important in determining whether the model is a good fit for the observed data (Fields, 2009). Thus, model diagnostics were also conducted to examine whether any outlier or influential cases existed and to determine whether they were causing undue influence on the overall model. The model's residual error was standardized, as this allowed for viewing whether there were any outlier cases in the sample data (Fields, 2009). Additionally, a Cook's distance

test was conducted to determine if any individual cases were exerting undue influence on the model.

The B and β coefficients obtained after running the multiple regression analysis can be used to determine which of the independent variables has the strongest influence on the overall model. The B coefficient is an unstandardized regression coefficient that indicates the strength of the relationship between the predictor variable and the outcome variable and demonstrates this relationship in the units of measurement of the predictor variable (Fields, 2009). The β coefficient is very similar to the B coefficient; however, it is standardized. That is, it standardizes the units of measurement, which allows for it to be compared and indicates the change in the outcome variable in standard deviations for every one standard deviation change in the predictor variable (Fields, 2009).

For multiple regression to be used, other assumptions have to be made about the data set, one of which is multicollinearity, which is a measure of the relatedness of the predictor, or independent, variables (Fields, 2009). To test for multicollinearity, a variance inflation factor (VIF) diagnostic was run, as it indicates whether a predictor has a strong linear relationship with the other variables (Fields, 2009, p. 224). Thus, perceptions of leadership, communication, transparency, and accountability were tested for multicollinearity and had their intercorrelations examined. This will be discussed and addressed further in the subsequent section.

Research question 6 was tested only for all respondents and was not examined for each individual rank category. The goal was to determine which of the four key organizational change components, being leadership, communication, transparency, and accountability, are the best predictors of overall changes in satisfaction with proactive crime reduction for the entire agency.

Chapter 4: Crime Reduction Results & Analysis Findings

This chapter reports the results of the analysis of the t-tests and multiple regression, while also examining whether DSP saw any notable reductions in crime following the implementation of stratified policing. Descriptive statistics for each variable are provided in Appendices C through G.

Crime Reduction Results

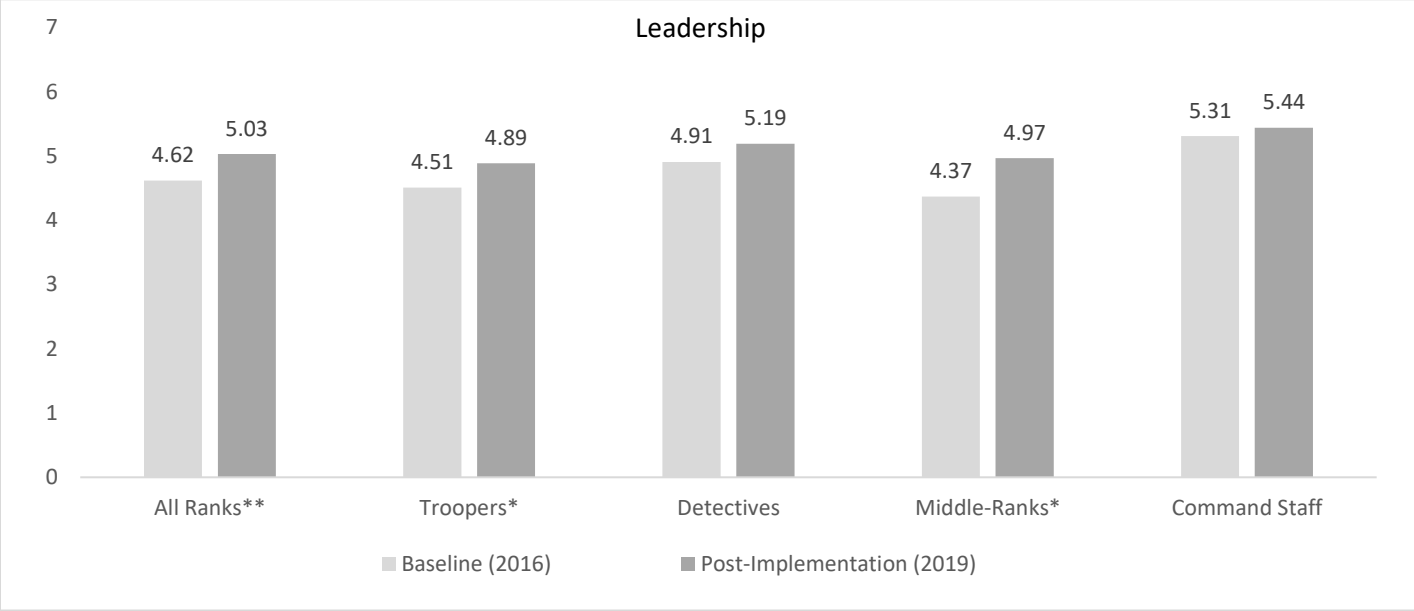
While the goal of this study is not to determine the crime reduction benefits of stratified policing, it is worth noting the changes in crime experienced by DSP following the implementation of stratified policing. During the implementation process, DSP identified several crime reduction and traffic safety goals that they sought to reach through a multifaceted proactive response. Among these goals were to reduce instances of robbery, burglary, and theft.

Comparing crime rates between 2016 and 2017, which was the first full year of implementation of stratified policing, DSP saw a 27.7% reduction in robbery, 26.6% reduction in burglary, and 11.1% reduction in theft, which all were the lowest reported crime totals in at least 15 years (McQueen et al., 2019). In 2018, they saw further reductions in crime, with a 35.6% reduction in robbery, a 19.7% reduction in burglary, and a 5.4% reduction in thefts. For robbery and burglary, there are approximately half as many reported incidents as before the implementation of stratified policing, a major decrease in just two years (Delaware State Police, 2019). Even though they are not conclusive, these findings show promise for the implementation of stratified policing and its ability to aid an agency in achieving its crime reduction goals.

Pre/Post Comparison

Research question 1 examines how stratified policing changes perceptions of leadership within the Delaware State Police. This analysis depicts the results for all ranks together as well

as for each rank category (i.e., troopers, detectives, middle-ranks, and command staff). Figure 1 illustrates the mean values for the leadership composite variable broken down by rank category and year. Table 4 shows the results of the independent t-tests that were conducted to compare perceptions of leadership from the baseline survey to the post-implementation survey. The descriptive statistics for Leadership are included in Appendix C.



*Independent T-test Results for Baseline Survey & Post-implementation: *p<.05, **p<.01*

Figure 1. Perceptions of Leadership

In Figure 1, the first notable finding is that the means for all ranks as well as for each rank category increased following the implementation of stratified policing into DSP. Among all the rank categories, Command Staff had the highest perceptions of leadership before the implementation of stratified policing and remained so post-implementation. Middle-Ranks had the lowest overall perceptions of leadership before the implementation of stratified policing; however, this was not the case post-implementation with perceptions of leadership among Middle-Ranks surpassing that of Troopers. Though, when comparing these two groups, this improvement was not significant (t-value = -.398; SE .21).

Table 4. Independent T-test Results for Baseline Survey and Implementation for Leadership.

Leadership	Mean (SD) 2016	Mean (SD) 2019	Mean Diff.	% Mean Diff.	T-value	SE 2016/2019	P-value
All Ranks	4.62 (1.74)	5.03 (1.50)	+0.41	+8.87%	-3.84	.07/.08	.00
Troopers	4.51 (1.78)	4.89 (1.56)	+0.38	+8.42%	-2.46	.10/.12	.01
Detectives	4.91 (1.51)	5.19 (1.43)	+0.28	+5.70%	-1.53	.13/.13	.13
Middle-Ranks	4.37 (1.90)	4.97 (1.47)	+0.60	+13.73%	-2.35	.20/.16	.02
Command Staff	5.31 (1.28)	5.44 (1.48)	+0.13	+2.50%	-0.32	.28/.31	.75

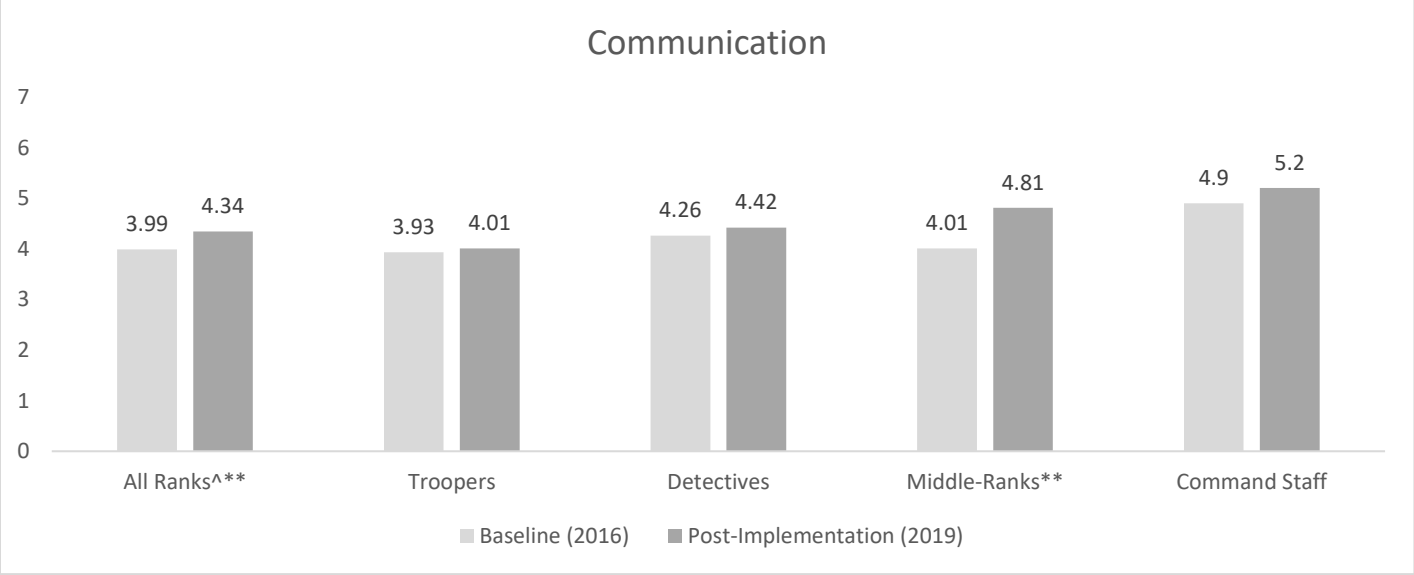
The results of the independent t-tests show that two of the rank categories as well as All Ranks saw a statistically significant increase in perceptions of leadership following the implementation of stratified policing. Specifically, All Ranks, Troopers, and Middle-Ranks showed significant improvements in perceptions of leadership. All Ranks improved from a mean value of 4.62 during the baseline survey to 5.03 post-implementation, an improvement of 8.87% ($p < .01$). Troopers improved from a mean value of 4.51 to 4.89, an improvement of 8.42% ($p < .01$). Middle-Ranks improved from a mean value of 4.37 to 4.97, an improvement of 13.73% ($p < .02$).

While Detectives and Command Staff did see numerical improvements in their mean values following the implementation of stratified policing into DSP, these improvements did not reach a level of statistical significance. Detectives improved from a mean value of 4.91 to 5.19,

an improvement of 5.70% ($p < .13$). Command Staff improved from a mean value of 5.31 to 5.44, an improvement of 2.5% ($p < .73$).

These results find support for three of the five hypotheses for this research question. That is, there were significant increases in perceptions of leadership after the implementation of stratified policing for All Ranks (Hyp. 1.1), for Troopers (Hyp. 1.2), and for Middle-Ranks (Hyp. 1.4). While there were numerical increases for both Detectives and Command Staff, they were not significant (Hyp. 1.3 & 1.5).

Research question 2 examines how stratified policing changes perceptions of communication. Figure 2 illustrates the mean values for communication broken down by rank category and year. Table 5 shows the results of the independent t-tests that were conducted to compare perceptions of communication from the baseline survey to the post-implementation survey. The descriptive statistics for communication are included in Appendix D.



*Independent T-test Results for Baseline Survey & Post-implementation: *p<.05, **p<.01. ^All Ranks for this figure excludes detectives as they were asked different questions.*

Figure 2. Perceptions of Communication.

It is worth noting from Figure 2 that All Ranks as well as each of the four rank categories show improvements in communication following the implementation of stratified policing into DSP. Command Staff once again had the highest mean prior to the implementation of stratified policing and remained so post-implementation. Troopers had the lowest perceptions of communication prior to stratified policing and remained so post-implementation.

Table 5. Independent T-test Results for Baseline Survey and Implementation for Communication.

Communication	Mean (SD) 2016	Mean (SD) 2019	Mean Diff.	% Mean Diff.	T-value	SE 2016/2019	P-value
All Ranks^	3.99 (1.46)	4.34 (1.40)	+0.35	+8.77%	-3.19	.07/.08	.00
Troopers	3.93 (1.47)	4.01 (1.40)	+0.08	+2.04%	-0.64	.08/.10	.53
Detectives	4.26 (1.42)	4.42 (1.35)	+0.16	+3.76%	-0.90	.12/.12	.37
Middle-Ranks	4.01 (1.46)	4.81 (1.24)	+0.80	+19.95%	-4.03	.15/.14	.00
Command Staff	4.90 (0.95)	5.20 (1.13)	+0.30	+6.12%	-0.93	.21/.24	.36

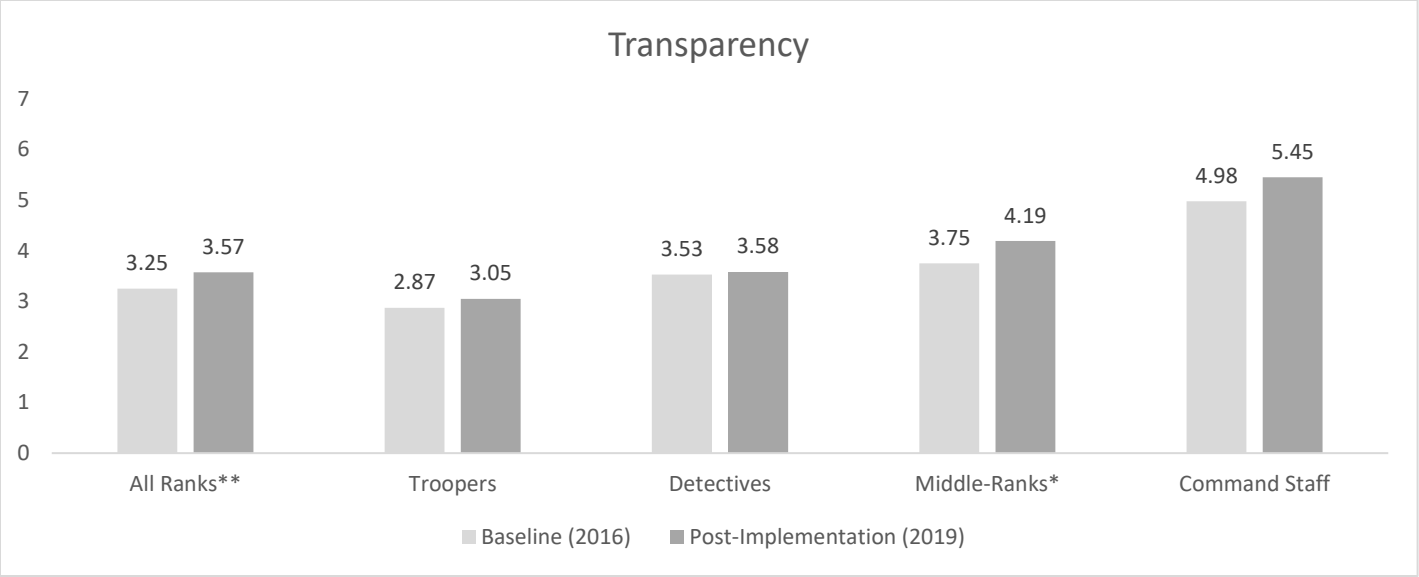
^*All Ranks for this table excludes detectives as they were asked different questions.*

The results of the independent t-tests show that one of the rank categories as well as All Ranks saw a statistically significant increase in perceptions of communication following the implementation of stratified policing. Specifically, All Ranks and Middle-Ranks showed significant improvements in perceptions of communication. All Ranks improved from a mean value of 3.99 from the baseline survey to 4.34 post-implementation, an improvement of 8.77% ($p < .01$). Middle-Ranks improved from a mean value of 4.01 to 4.81 post-implementation, an improvement of 19.95% ($p < .01$).

Three rank categories saw numerical improvements in their mean following the implementation of stratified policing, though these improvements did not reach a level of statistical significance. Troopers improved from a mean value of 3.93 to 4.01, an improvement of 2.04% ($p < .53$). Detectives improved from a mean value of 4.26 to 4.42, an improvement of 3.75% ($p < .37$). Lastly, Command Staff improved from a mean value of 4.90 to 5.20, an improvement of 6.12% ($p < .36$).

These results find support for two of the five hypotheses for this research question. That is, there were significant increases in perceptions of communication after the implementation of stratified policing for All Ranks (Hyp. 2.1) and Middle-Ranks (Hyp. 2.4). There were numerical improvements for Troopers, Detectives, and Command Staff, but they were not significant (Hyp. 2.2, 2.3, & 2.5).

Research question 3 examines how stratified policing changes perceptions of transparency within the Delaware State Police for All Ranks together as well as for each rank category. Figure 3 illustrates the mean values for transparency broken down by rank category and year. Table 6 shows the results of the independent t-tests that were conducted to compare perceptions of transparency from the baseline survey to the post-implementation survey. The descriptive statistics for transparency are included in Appendix E.



*Independent T-test Results for Baseline Survey & Post-implementation: *p<.05, **p<.01.*

Figure 3. Perceptions of Transparency

Figure 3 shows there were again numerical improvements in the means of All Ranks as well as each individual rank category. Command Staff once more had the highest mean values prior to the implementation of stratified policing and remained so post-implementation. Troopers had the lowest mean value prior to the implementation of stratified policing and also remained so post-implementation.

Table 6. Independent T-test Results for Baseline Survey and Implementation for Transparency.

Transparency	Mean (SD) 2016	Mean (SD) 2019	Mean Diff.	% Mean Diff.	T-value	SE 2016/2019	P-value
All Ranks	3.25 (1.41)	3.57 (1.33)	+0.32	+9.85%	-3.60	.06/.07	.00
Troopers	2.87 (1.38)	3.05 (1.22)	+0.18	+6.27%	-1.50	.08/.09	.13
Detectives	3.53 (1.27)	3.58 (1.12)	+0.05	+1.42%	-0.33	.11/.10	.74

Middle-Ranks	3.75 (1.31)	4.19 (1.14)	+0.44	+11.7%	-2.32	.13/.13	.02
Command Staff	4.98 (0.84)	5.45 (1.07)	+0.47	+9.44%	-1.60	.18/.22	.12

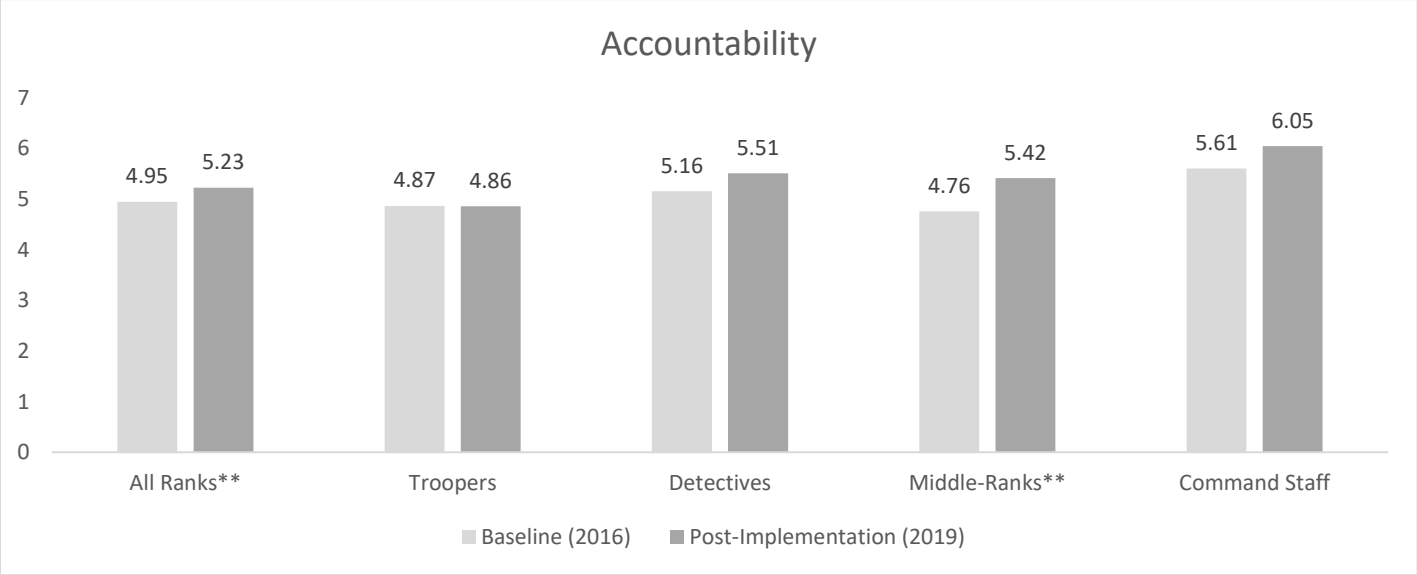
The results of the independent t-tests show that one of the rank categories as well as All Ranks overall saw a statistically significant increase in perceptions of transparency following the implementation of stratified policing. Specifically, All Ranks and Middle-Ranks showed significant improvements in perceptions of transparency. All Ranks improved from a mean value of 3.25 to 3.57, an improvement of 9.85% ($p < .01$). Middle-Ranks improved from a mean value of 3.75 to 4.19, an improvement of 11.7% ($p < .02$).

Three rank categories saw numerical improvements in their mean following the implementation of stratified policing, though these improvements did not reach a level of statistical significance. Troopers improved from a mean value of 2.87 to 3.05, an improvement of 6.27% ($p < .13$). Detectives improved from a mean value of 3.53 to 3.58, an improvement of 1.42% ($p < .74$). Lastly, Command Staff improved from a mean value of 4.98 to 5.45, an improvement of 9.44% ($p < .12$).

These results find support for two of the five hypotheses for this research question. That is, there were significant increases in perceptions of transparency after the implementation of stratified policing for All Ranks (Hyp. 3.1) and Middle-Ranks (Hyp. 3.4). There were numerical improvements for Troopers, Detectives, and Command Staff, but they were not significant (Hyp. 3.2, 3.3, & 3.5).

Research question 4 examines how stratified policing changes perceptions of accountability within the Delaware State Police for All Ranks together as well as for each rank category. Figure 4 illustrates the mean values for accountability broken down by rank category

and year. Table 7 shows the results of the independent t-tests that were conducted to compare perceptions of accountability from the baseline survey to the post-implementation survey. The descriptive statistics for accountability are included in Appendix F.



*Independent T-test Results for Baseline Survey & Post-implementation: *p<.05, **p<.01.*

Figure 4. Perceptions of Accountability.

Viewing Figure 4, it can be seen that three of the rank categories as well as All Ranks overall saw numerical improvements in their means following the implementation of stratified policing. Interestingly, Troopers saw a reduction in their mean value, though it was only by .01. Command Staff had the highest overall perceptions of accountability before the implementation of stratified policing and remained so post-implementation. Middle-Ranks had the lowest overall perceptions of accountability before the implementation of stratified policing, but surpassed that of Troopers post-implementation.

Table 7. Independent T-test Results for Baseline Survey and Implementation for Accountability.

Accountability	Mean (SD) 2016	Mean (SD) 2019	Mean Diff.	% Mean Diff.	T-value	SE 2016/2019	P-value

All Ranks	4.95 (1.63)	5.23 (1.49)	+0.28	+5.66%	-2.76	.07/.07	.01
Troopers	4.87 (1.63)	4.86 (1.69)	-0.01	0.00%	.04	.09/.13	.97
Detectives	5.16 (1.58)	5.51 (1.23)	+0.35	+6.78%	-1.92	.13/.11	.06
Middle-Ranks	4.76 (1.74)	5.42 (1.29)	+0.66	+13.87%	-2.87	.18/.14	.00
Command Staff	5.61 (0.98)	6.05 (0.85)	+0.44	+7.84%	-1.60	.21/.18	.12

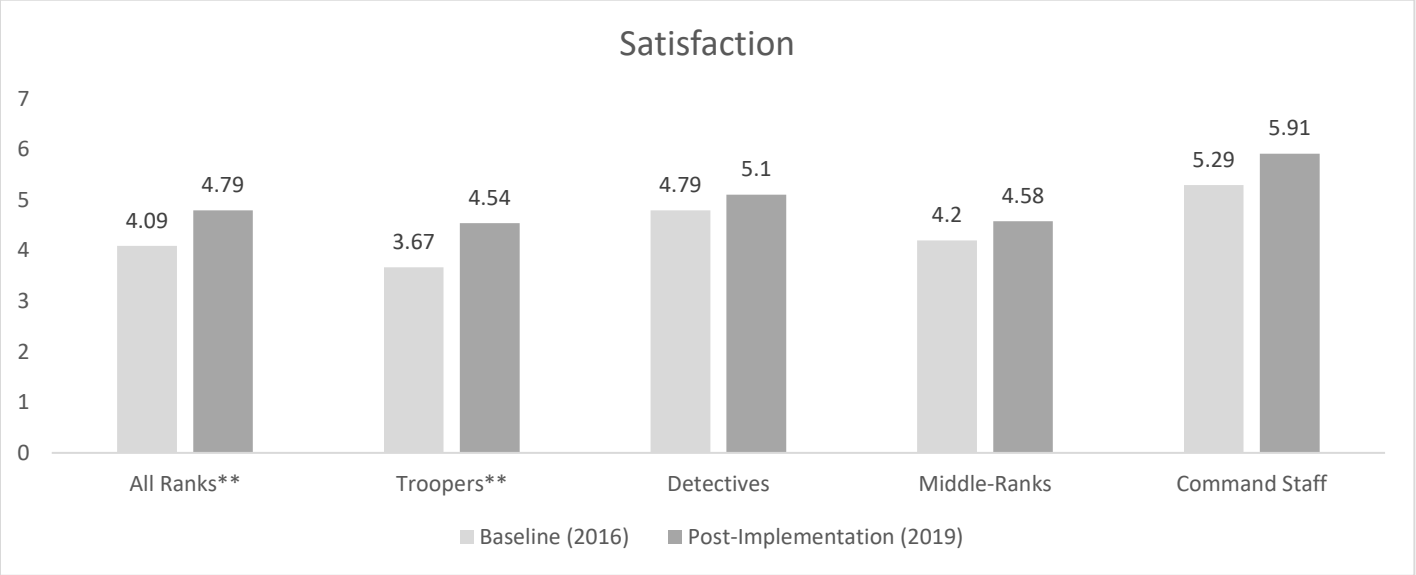
The results of the independent t-tests show that one of the rank categories as well as All Ranks overall saw a statistically significant increase in perceptions of accountability following the implementation of stratified policing. Specifically, All Ranks and Middle-Ranks showed significant improvements in perceptions of accountability. All Ranks improved from a mean value of 4.95 to 5.23, an improvement of 5.66% ($p < .01$). Middle-Ranks improved from a mean value of 4.76 to 5.42, an improvement of 13.87% ($p < .01$).

Two of the rank categories saw numerical improvements in their mean, but these improvements did not reach a level of statistical significance; though, they were both very close. Detectives improved from a mean value of 5.16 to 5.51, an improvement of 6.78% ($p < .056$). Command Staff improved from a mean value of 5.61 to 6.05, an improvement of 7.84% ($p < .12$). Troopers did not improve their perceptions of accountability, but rather had a slight reduction from a mean value of 4.87 to 4.86.

These results find support for two of the five hypotheses for this research question. That is, there were significant increases in perceptions of accountability after the implementation of stratified policing for All Ranks (Hyp. 4.1) and Middle-Ranks (Hyp. 4.4). There were numerical

improvements for Detectives and Command Staff, but they were not significant (Hyp. 4.3 & 4.5). Troopers saw a slight reduction, which was not significant (Hyp 4.2).

Research question 5 examines how stratified policing changes satisfaction with proactive crime reduction within the Delaware State Police for All Ranks together as well as for each rank category. Figure 5 illustrates the mean values for satisfaction broken down by rank category and year. Table 8 shows the results of the independent t-tests that were conducted to compare satisfaction from the baseline survey to the post-implementation survey. The descriptive statistics for satisfaction are included in Appendix G.



*Independent T-test Results for Baseline Survey & Post-implementation: *p<.05, **p<.01.*

Figure 5. Satisfaction with Proactive Crime Reduction.

In Figure 5, the first notable finding is that the means for All Ranks as well as for each rank category increased following the implementation of stratified policing into DSP. Among all the rank categories, Command Staff had the highest perceptions of leadership before the implementation of stratified policing and remained so post-implementation. Troopers had the lowest satisfaction prior to the implementation of stratified policing and also remained so post-implementation.

Table 8. Independent T-test Results for Baseline Survey and Implementation for Satisfaction.

Satisfaction	Mean (SD) 2016	Mean (SD) 2019	Mean Diff.	% Mean Diff.	T-value	SE 2016/2019	P-value
All Ranks	4.09 (2.00)	4.79 (1.72)	+0.70	+17.2%	-5.91	.08/.09	.00
Troopers	3.67 (2.13)	4.54 (1.77)	+0.87	+23.4%	-4.93	.12/.13	.00
Detectives	4.79 (1.66)	5.10 (1.56)	+0.31	+6.5%	-1.55	.14/.14	.12
Middle-Ranks	4.20 (1.83)	4.58 (1.71)	+0.38	+8.9%	-1.40	.19/.19	.17
Command Staff	5.29 (1.01)	5.91 (1.44)	+0.62	+11.9%	-1.66	.22/.30	.11

The results of the independent t-tests show that one of the rank categories as well as All Ranks overall saw a statistically significant increase in satisfaction following the implementation of stratified policing. Specifically, All Ranks and Troopers had significant improvements. All Ranks improved from a mean value of 4.09 to 4.79, an improvement of 17.2% ($p < .01$). Troopers improved from a mean value of 3.67 to 4.54, an improvement of 23.4% ($p < .01$).

Three rank categories had numerical improvements in their mean values following the implementation of stratified policing, though these improvements were not significant. Detectives improved from a mean value of 4.79 to 5.10, an improvement of 6.5% ($p < .12$). Middle-Ranks improved from a mean value of 4.20 to 4.58, an improvement of 8.9% ($p < .17$). Command Staff improved from a mean value of 5.29 to 5.91, an improvement of 11.9% ($p < .11$).

These results find support for two of the five hypotheses for this research question. That is, there were significant increases in satisfaction after the implementation of stratified policing for All Ranks (Hyp. 5.1) and Troopers (Hyp. 5.2). There were numerical improvements for Detectives, Middle-Ranks, and Command Staff, but they were not significant (Hyp. 5.3, 5.4, & 5.5).

Multiple Regression – Predicting Satisfaction

Research question 6 examined how changes in the four key organizational change components predicted changes in satisfaction with proactive crime reduction while controlling for rank category and whether or not the individual worked in the patrol division. Its hypothesis was tested by conducting two multiple regression analyses to determine whether the four organizational change composite variables were significant predictors of satisfaction with proactive crime reduction in each wave of the survey separately. The two control variables—rank category and division—were included to account for differences among these groups since stratified policing requires different levels of responsibility and accountability by rank and for patrol versus other units. Thus, including these variables mitigates the likelihood of finding spurious relationships. Two models were run to determine whether the predictors changed from the first wave (2016 Model) to the second wave (2019 Model) after the implementation of stratified policing.

Prior to conducting the multiple regression analysis, several tests were conducted to ensure that the data met the assumptions necessary to conduct a regression analysis.[3] First, the predictor variables in each wave were tested separately for multicollinearity to ensure each predictor was different enough from the others to be included in the analysis. The results of the

[3] Tables containing the results of these tests can be viewed in Appendix H.

collinearity diagnostics indicated that there are no concerns of multicollinearity for either wave. This is indicated by there being no VIF score greater than 10, with the average VIF being much lower (Fields, 2009). This is also indicated by all the collinearity tolerance values being well above the .2 threshold (Fields, 2009). To test for autocorrelation, a Durbin-Watson test was conducted. The results showed values of 1.97 for the first model and 2.00 for the second model. This indicates that the residuals are uncorrelated as the value for the Durbin-Watson test are extremely close to the value of 2 for both models (Fields, 2009).

Regression diagnostics were examined to determine if there were any potential outlier cases that could be exerting undue influence on the models. For the 2016 model, 8 cases were identified as potential outliers. These cases were identified by them being more than 2.5 standard deviations from the mean, which is only expected to be found in 1% of cases (Fields, 2009). As the sample size for the 2016 model was 586, we would expect approximately 6 cases to meet this threshold. These cases were checked to see if they were exerting undue influence on the model, and they were found to be within acceptable limits. This was determined by running a Cook's distance test, with the results finding that no cases had a Cook's distance greater than .046, which is well below the value of 1, which would indicate that none of these cases are placing undue influence on the model (Fields, 2009). For the 2019 model, 15 of the 401 cases were more than 2.5 standard deviations for the mean, well more than the 4 cases that would be expected to meet this criterion. These cases were also examined to see if they were exerting undue influence on the model. A Cook's distance test was run, with the results indicating that no cases exceeded the value of 1, with the greatest Cook's distance value being .087. This indicates that no cases are exerting undue influence on the model (Fields, 2009).

2016 Model summary.

Model diagnostics shows that the 2016 Model was a good fit for the data. The results of the regression indicate that the model explains 46.8% of the variance in satisfaction and is a significant predictor of satisfaction, $F(7,575) = 72.19$, $p = .000$. All four organizational composite variables were significant predictors. Additionally, the division to which personnel were assigned was found to be significant, while an individual's rank was found to be insignificant. All four composite variables were positively related to satisfaction in that the more leadership, communication, transparency, and accountability there were, the higher the satisfaction among personnel was. Division was negatively related to satisfaction in that individuals assigned to patrol had lower levels of satisfaction compared to those assigned to other divisions.

Leadership resulted in a Beta value (β) of .373, accountability resulted in a β value of .185, transparency resulted in a β value of .126, communication resulted in a β value of .083, and division resulted in a β value of -.203.

Table 9. Multiple Regression Output for 2016 Model.

2016 Model	Unstandardized B	SE B	β	T-value	p
(Constant)	.457	.270		1.69	.09
Leadership	.432	.052	.373	8.29	.00
Accountability	.228	.054	.185	4.20	.00
Transparency	.179	.055	.126	3.26	.00
Communication	.115	.057	.083	2.03	.04
Line-Level vs. Others	-.135	.170	-.027	-0.79	.43
Command Staff vs. Others	.029	.339	.003	0.09	.93

Division: Patrol vs. Other	-.818	.125	-.203	-6.56	.00

$F(7,575) = 72.19$, $p = .000$, $R^2 = .468$, Adjusted $R^2 = .461$.

Based on the β statistic, the strongest predictor variable was leadership in that every unit increase in perceptions of leadership led to a .373 unit increase in satisfaction. This indicates that when controlling for rank, division, and the other organizational change variables, individuals who thought the agency's leadership components were stronger were more satisfied with crime reduction activities.

The second strongest predictor was the division the personnel was assigned, indicating that individuals working in the patrol division were less satisfied than those working in other divisions. The third strongest predictor was Accountability, indicating that when controlling for rank, division, and the other organizational change components, individuals that had higher perceptions of accountability were more satisfied with the agency's crime reduction activities.

The fourth strongest predictor was Transparency in that every unit increase in transparency led to a .126 unit increase in satisfaction. This finding indicates that individuals that perceived higher levels of transparency within the agency were more satisfied with crime reduction activities. Communication was the weakest significant predictor in that every unit increase in communication led to a .083 unit increase in satisfaction. This indicates that individuals that felt there was more communication about the crime reduction activities were more satisfied with those activities.

The finding that all key organizational change components were significant is meaningful; however, it was hypothesized that communication would be the strongest predictor, which was not the case. Rather, the strongest predictor was found to be perceptions of leadership. This model did not show rank to be a significant predictor of satisfaction.

2019 Model summary.

Model diagnostics indicate that the model was a good fit for the data. The results of the regression indicate that the model explains 38.9% of the variance in satisfaction and is a significant predictor of satisfaction, $F(7,392) = 35.66$, $p = .000$. For this model, three of the four organizational change components were found to be significant predictors of satisfaction, and they are perceptions of leadership, accountability, and transparency. Communication was not significant. In contrast to the 2016 Model, rank was a significant predictor, but division was not. Three organizational change components were positively related to satisfaction in that more accountability, leadership, and transparency there were, the higher the satisfaction of personnel was. Rank was positively related to satisfaction, in that line-level personnel and Command Staff had higher satisfaction than Middle-Ranks.

Accountability resulted in a β value of .272, Leadership resulted in a β value of .221, Transparency resulted in a β value of .180, and Rank resulted in a β value of .148 when comparing line-level personnel to all other ranks, and a β value of .094 when comparing command staff to all other ranks.

Table 13. Multiple Regression Output for 2019 Model.

2019 Model	Unstandardized B	SE B	β	T-value	p
(Constant)	.170	.346		0.49	.623
Leadership	.25	.062	.221	4.04	.00
Accountability	.312	.064	.272	4.87	.00
Transparency	.232	.068	.180	3.42	.00
Communication	.107	.068	.087	1.58	.12
Line-Level vs. Others	.575	.158	.148	3.15	.00

Command Staff vs. Others	.685	.327	.094	2.09	.04
Division: Patrol vs. Other	-.042	.146	-.012	-0.29	.77

$F(7,392)=35.66$, $p=.000$, $R^2=.389$, Adjusted $R^2=.378$.

Based on the β statistic, the strongest predictor variable was Accountability in that every unit increase in perceptions of accountability led to a .272 unit increase in satisfaction. This indicates that individuals that felt that there was more accountability were more satisfied with the agency's crime reduction activities.

The second strongest predictor was Leadership in that every unit increase in perceptions of leadership led to a .221 unit increase in satisfaction. This would indicate that individuals that felt that the agency's leadership was focused on crime reduction activities had increased satisfaction with those activities.

The third strongest predictor was in that every unit increase in perceptions of transparency led to a .180 unit increase in satisfaction. This indicates that individuals that had higher perceptions of transparency were also more satisfied with the agency's crime reduction activities.

The two dummy variables for rank were significant, but were the weakest predictors. The first dummy rank variable compared line-level personnel to all other ranks and had a positive relationship with satisfaction, which indicates that line-level personnel had higher levels of satisfaction. The second dummy rank variable compared command staff to all other ranks, which had a positive relationship with satisfaction, which indicates Command Staff had higher levels of satisfaction. Taking these two results together, the third category, middle-ranking personnel, had the lowest overall satisfaction with proactive crime reduction in the 2019 Model. This is because the variables were coded in such a way that the two positive relationships seen with the two rank

dummy variables would indicate that had there been a dummy rank variable for Middle-Ranks, the relationship to satisfaction would have been negative.

It was hypothesized that communication would be the strongest predictor of satisfaction; however, these findings do not support that hypothesis with communication being found to be an insignificant predictor. Rather, in the 2019 Model, Accountability was found to be the strongest predictor of an agency's personnel's satisfaction with proactive crime reduction. This model did not find the division to which personnel were assigned to be a significant predictor.

Model comparisons.

The results of both the 2016 Model and the 2019 Model allow for comparisons to be made between the findings of each to determine whether satisfaction with crime reduction was explained by different factors before and after stratified policing was implemented. Overall, both models were found to be good fits for the data and were both significant predictors of satisfaction. The 2016 Model had an r-squared value of .468 whereas the 2019 Model had an r-squared value of .389, indicating that the 2016 Model explained more of the variance in satisfaction, explaining 46.8% of the variance compared to the 38.9% of the variance that the 2019 Model explained. An adjusted r-squared of .461 in the 2016 Model indicates that it is the stronger of the two models, with the 2019 Model having an adjusted r-squared of .378.

In the 2016 Model, all four of the key organizational change components were found to be significant predictors of satisfaction, whereas in the 2019 Model, only three of the variables were found to be significant, with communication losing its significance. Rank was found to be a significant predictor in the 2019 Model, though was insignificant in the 2016 Model. Contrarily, division was found to be significant in the 2016 Model and was insignificant in the 2019 Model.

In both models, all four of the key organizational change components had a positive relationship with satisfaction. In the 2016 Model, the rank variable for comparing line-level personnel to all other ranks had a negative relationship with satisfaction, but the analysis found this variable to be insignificant. However, in the 2019 Model, the reverse was true, with the rank variable for both comparing line-level personnel to all other ranks and command staff to all other ranks having a positive relationship with satisfaction and being a significant predictor of satisfaction. This indicates that of all the ranks, following the implementation of stratified policing into DSP, middle-ranking personnel had the lowest overall satisfaction. The Division variable had the same direction for both models, being negatively related to satisfaction.

Examining the β value allows for comparisons to be made between the predictor variables of both models. When comparing both models collectively, the strongest overall predictor was perceptions of leadership in the 2016 Model, with a β value of .373. While still a significant predictor, leadership was a weaker predictor in the 2019 Model with a β value of .221. In this model, the strongest predictor was perceptions of accountability, with a β value of .272. This was an improvement when compared to the 2016 Model where accountability had a β value of .185. Transparency also improved in the 2019 Model compared to the 2016 Model, increasing from a β value of .126 to .180. Communication was a significant predictor in the 2016 Model with a β value of .083, but was found to be insignificant in the 2019 Model despite the β value actually increasing to .087.

When examining both rank dummy variables, the direction for comparing line-level personnel to all other ranks changed, with it having a negative relationship to satisfaction in the 2016 Model and a positive relationship in the 2019 Model. Additionally, the significance of both rank dummy variables changed, with them both being insignificant in the 2016 Model, but being

significant predictors in the 2019 Model. This indicates that satisfaction levels among line-level personnel increased following the implementation of stratified policing into DSP. Lastly, the relationship between division and satisfaction remained consistent between the models, with it still having a negative relationship. However, it did lose its statistical significance in the 2019 Model.

Comparing the two models overall, the 2016 Model was stronger based on it explaining more of the variance in satisfaction than the 2019 Model, 46.8% compared to 38.9%. The models also differed in what they found to be significant, with Division being significant in the 2016 Model and the rank dummy variables being insignificant, and the reverse being true of the 2019 Model finding both dummy rank variables to be significant and Division to be insignificant. The 2016 Model found Leadership to be the strongest predictor of satisfaction, with this being the most significant predictor in either model with a β value of .373. In the 2019 Model, Accountability was found to be the strongest predictor of satisfaction. Both models found Leadership, Accountability, and Transparency to be significant predictors of satisfaction.

Chapter 5: Discussion & Conclusion

The findings of this study show promise for the use of stratified policing as an organizational structure for institutionalizing crime analysis and proactive crime reduction strategies, as well as provides insight into how stratified policing impacts perceptions of key organizational change factors. Overall, Delaware State Police saw statistically significant increases in all of the key organizational components, including leadership, communication, accountability, and transparency, as well as saw increases in personnel's satisfaction with proactive crime reduction activities. In addition, DSP was able to achieve several of their crime reduction goals that were formulated during the implementation process, reducing the targeted crimes to their lowest totals in over 15 years. This chapter provides a discussion of the results from the independent t-tests and multiple regression, practical implications, identifies study limitations, and makes recommendations for future research.

Discussion

While DSP saw significant improvements for each of the key organizational change components following the implementation of stratified policing, there were variations in how different ranks perceived changes. These variations can likely be attributed to how stratified policing impacts the role of each rank, as different ranks have different responsibilities for proactive crime reduction. This will be discussed based on the purposes of stratified policing as well as the goals it seeks to accomplish. First, individual component improvements will be discussed, followed by a discussion on the ability of each component to predict satisfaction.

Leadership

Perceptions of leadership within the Delaware State Police improved significantly following the implementation of stratified policing. Overall, there was an 8.87% improvement

for all ranks combined, as well as for troopers and middle-ranks (i.e., sergeants and lieutenants), with trooper's perceptions of leadership improving by 8.42% and middle-ranks by 13.73%, which was the largest improvement of any rank category. The improvements seen in detectives' and command staff's perceptions of leadership did not reach statistical significance; however, both categories had higher baseline averages relative to other rank categories, which is likely a reason since these categories had such high perceptions of leadership initially, it would require more for improvements in these categories to be statistically significant.

These findings lend support for the claim that stratified policing improves leadership within a police agency as there was a significant improvement among the perceptions of all ranks, as well as troopers, sergeants, and lieutenants. The measures used to examine leadership were the agency's ability to teach, encourage, and promote proactive activities, as well as the frequency in which they engaged in those activities. In conjunction with these findings, following the implementation of stratified policing, agency leadership was more focused on proactive crime reduction. Additionally, personnel agree that agency leadership teaches, encourages, and promotes proactive crime reduction while also engaging in proactive activities more frequently. It is likely that the systematic nature of stratified policing in providing directives to subordinates, as well as its increased focus on proactive policing initiatives, is the reason for seeing this improvement.

Communication

Perceptions of communication also improved significantly within DSP following the implementation of stratified policing. An improvement of 8.77% was seen among all ranks collectively. Sergeants and lieutenants had significant improvements in perceptions of leadership, improving by 19.95%, which is by far the biggest improvement of any rank category.

Once again, command staff had higher baseline averages relative to other rank categories, which is likely a reason improvement in their perceptions of communication did not reach a level of statistical significance.

These findings lend support for the claim that stratified policing improves communication within a police agency. The composite variable included questions that asked about the frequency of communication both within and between groups, as well as between different ranks, which attempted to measure the amount and frequency of communication that was being had by DSP personnel.

Stratified policing requires police agencies to develop responses to identified problems and to communicate these responses via directives to the relevant personnel. With all agency personnel having a role in the crime reduction process, everyone is receiving directives on a regular basis, meaning all agency personnel are communicating to ensure they are informed on their roles and responsibilities. Sergeants and lieutenants are actively communicating both to their direct supervisors and subordinates in the stratified policing framework, which is likely why perceptions of communication among those ranks improved so substantially. This clear and consistent communication is likely the reason for seeing improved communication in DSP following the implementation of stratified policing.

Transparency

Perceptions of transparency improved significantly within DSP following the implementation of stratified policing. Collectively, there was an improvement of 9.85% among all ranks. Sergeants and lieutenants saw a significant improvement in perceptions of transparency, improving by 11.7%. Improvements in perceptions of transparency among troopers and command staff were close to reaching statistical significance with significance values of .13

and .12 respectively. Command staff had a much higher baseline average relative to other rank categories, with a mean value of 4.98 compared to the next highest at 3.75. Command staff also saw the highest numerical increase in perceptions of transparency following stratified policing. However, since they had the highest baseline averages initially, the increase of 9.44% ranks third when compared to the other rank categories and all ranks collectively. These higher initial perceptions of transparency once again are likely the reason why a statistically significant improvement was not found among command staff.

These findings lend support for the claim that stratified policing improves transparency within a police agency. The composite variable included questions that asked about role clarity, attempting to measure whether personnel had a good understanding of their roles in proactive crime reduction, as well as an understanding of the roles of other ranks.

The reasoning for seeing improvements in transparency following the implementation of stratified policing is similar to that of communication in that the increased role clarity provided by personnel having a strong understanding of their roles and responsibilities leads to a more transparent change process. Stratified policing aids police agencies in writing sound policy that illustrates the responsibilities each rank would have while also consistently relaying these messages to relevant personnel. Additionally, training is provided to agency leadership on how to train their personnel on their new roles and responsibilities. Thus, these aspects of stratified policing are likely why agency personnel reported a better understanding of their role in proactive crime reduction following stratified policing's implementation.

Accountability

Perceptions of accountability improved significantly following the implementation of stratified policing. Accountability among all ranks collectively improved by 5.66%. Sergeants

and lieutenants saw a significant improvement of 13.87%. Improvements in perceptions of accountability among Detectives and command staff were close to reaching statistical significance, at .06 (.056, very close) and .12 respectively. Once more, these rank categories had higher baseline averages relative to other ranks. Thus, despite seeing some of the largest numerical improvements in their perceptions of accountability, these initially high perceptions are likely the reason for these improvements not reaching a level of statistical significance. Perceptions of accountability for troopers remained virtually unchanged, which is likely because they may have already perceived accountability to exist; thus, the increase in accountability processes may have had little effect on them.

These findings lend support for the claim that stratified policing improves accountability within a police agency. The composite variable asked about the agreement of respondents in whether they felt each rank was being held accountable for their roles and responsibilities for proactive crime reduction. These were asked in an attempt to measure how much actual accountability existed within the department.

Accountability is one of the fundamental components of stratified policing with accountability being facilitated daily, weekly, and monthly via a stratified meeting structure (Santos & Santos, 2015). This included both formal accountability, which is accomplished via the meetings, as well as informal accountability, which occurs due to the stratified nature of stratified policing. Under the stratified policing framework, personnel hold the ranks directly under them responsible for their crime reduction responsibilities (Boba & Santos, 2011). Expectations for proactive crime reduction are well known and become a standard for which personnel are held accountable. If personnel are unable to resolve the problems they are assigned, those problems can manifest and become larger, which would require them to be

reassigned to higher-ranking personnel (Boba & Santos, 2011). As higher-ranking personnel do not want the added responsibility and work, they hold those below them accountable for accomplishing their assignments. Thus, stratified policing is able to ensure that organizational personnel are adhering to their responsibilities and being held accountable for accomplishing the agency's crime reduction goals, which is likely the reason behind finding a significant improvement following its implementation.

Satisfaction

Satisfaction with proactive crime reduction improved significantly within DSP following the implementation of stratified policing. Collectively, an improvement of 17.2% was found among all ranks. Troopers saw a significant improvement in satisfaction, improving by 23.4%. The other three rank categories, detectives, middle-ranks, and command staff, were close to statistical significance at .12, .17, and .11 respectively. All three of these rank categories had higher initial satisfaction, and all three reported higher satisfaction in 2019. Command staff had both the highest baseline averages, as well as the highest end average relative to other ranks. These rank categories having higher baseline satisfaction may be the reason why improvements in those categories did not reach a level of statistical significance.

These findings lend support for the claim that stratified policing improves satisfaction within a police agency. Respondents were asked solely one question for satisfaction, which directly asked them how satisfied they were with the agency's proactive crime reduction.

Prior research has suggested that officers that engage in proactive activities more frequently have increased satisfaction (Pelfrey, 2007). Stratified policing increases the frequency that agency personnel engage in proactive activities by increasing the frequency of directives from their supervisors, as well as increasing the agency's focus on proactive crime reduction.

Additionally, agency personnel saw significant improvements in leadership, communication, accountability, and transparency, which were significant predictors of satisfaction. Thus, increases in these key organizational components, as well as the frequency of proactive activities, is likely the reason for finding improvements of satisfaction within DSP.

Predicting Satisfaction

The ability of the four key organizational change components to predict satisfaction changed following stratified policing. Prior to stratified policing, all four change components were significant predictors of satisfaction, with leadership being the strongest predictor. Following stratified policing, all but communication were significant predictors, with accountability being the strongest. Additionally, the division to which personnel were assigned was a significant predictor before stratified policing, but following stratified policing, it lost its significance, though rank became significant.

The regression analyses provided a valuable illustration of stratified policing's effects on each of the organizational change variable's ability to predict satisfaction because of its ability to isolate the effects of each variable. These findings are important as satisfaction has been linked to job commitment, job performance, and engagement in proactive policing activities (Brady & King, 2018; Judge et al., 2001; Pelfrey, 2007).

Prior to the implementation of stratified policing, all key organizational change components were significant predictors of satisfaction. Among those, leadership was the best predictor of personnel satisfaction, indicating that leadership was the most important of the organizational change variables to personnel. This is in line with prior research that suggests leadership is an essential component for facilitating successful organizational change (Appelbaum et al., 2017; Santos & Santos, 2019; Santos & Santos, 2012; Stetler et al., 2014).

Agency personnel look to leadership to establish and maintain the expectations for the agency (Stetler et al., 2014). Leadership is tasked with defining the roles and responsibilities of personnel, communicating those responsibilities, and holding individuals accountable to their responsibilities. Thus, personnel will prioritize only those activities that leadership communicate as important. Under this context, it makes sense why leadership was vital to personnel prior to stratified policing, as all other organizational change variables relied first on agency leadership.

Following the implementation of stratified policing, communication was no longer a significant predictor of satisfaction. Communication lost some of its importance likely because personnel gained a good understanding of their roles. Prior research has suggested that communication is vital to relieve uncertainty by improving personnel's understanding of their responsibilities (Elving, 2005; Petrescu, 2011). As roles become more clearly defined, or transparent, individuals become more satisfied (Abramis, 1994). Thus, good transparency is likely the cause of communication becoming less important, which resulted it in losing its significance.

While leadership was still a significant predictor of satisfaction following the implementation of stratified policing, it was no longer the most important with accountability becoming a better predictor. This makes sense, as stratified policing places a heavy emphasis on accountability. It provides a structure that allows for role clarity, increased communication, and establishes expectations. Beforehand, personnel looked towards agency leadership for this guidance, as leadership was required to provide the necessary communication and transparency making it the most important in the minds of personnel. However, stratified policing systematized these activities while holding all personnel accountable to expectations for crime reduction, which makes leadership less important.

Conclusion

Considering these results collectively, there are some notable trends. The first is that for all key organizational change components, as well as for satisfaction, command staff had both higher initial and higher end mean values than any other category. This indicates that prior to stratified policing, command staff already perceived high levels of leadership, communication, transparency, and accountability within DSP, and also were the most satisfied with proactive crime reduction. This is likely why command staff did not see a significant improvement for any of the key organizational change components despite them reporting increased perceptions of each.

Another notable finding is that sergeants and lieutenants had significantly higher perceptions of the four key organizational change components following the implementation of stratified policing. However, they also reported being less satisfied than any other rank category. This is likely due to the nature of stratified policing in that it requires those middle-ranking personnel to gain more responsibility and to have more focused efforts on proactive crime reduction. Thus, the changes in their role that they experienced are likely the cause for them seeing improvements for all of the organizational change components, while the extra work they are required to do are likely the reason for them being less satisfied.

The findings from the multiple regression analysis suggest that the four key organizational change components were generally good predictors of satisfaction when controlling for rank and division. The 2016 Model was slightly better as it explained 46.8% of the variance versus 38.9% by the 2019 Model. Interestingly, the components' importance in predicting satisfaction changed after the implementation of stratified policing. That is, prior to stratified policing, leadership was the best predictor of satisfaction and communication was a

significant predictor. However, after stratified policing, accountability became the strongest predictor and communication lost its significance. Communication losing its significance could be one reason as to why the 2016 Model was found to be stronger, as it had more significant predictors.

One of the fundamental components of stratified policing is the accountability structure it incorporates into a police agency. Individuals are regularly held accountable by using the existing rank structure within a police agency, and accountability meetings are commonplace. Thus, accountability becomes even more of a regularity than is anticipated in a traditional police agency. Stratified policing's focus on and shift in accountability is likely the reason why it became the strongest predictor after implementation.

Another notable finding is that communication lost its significance after stratified policing, which was not anticipated. It is worth noting that while communication did lose its statistical significance at the .05 level, it still has a significance value of .12, which is close to still being significant. Interestingly, despite losing its statistical significance, the β value for communication actually slightly increased in the 2019 Model. It is possible that due to stratified policing's increased emphasis on accountability, leadership, and transparency, communication may not be as big of a factor for personnel when determining how satisfied they are with the agency's crime reduction. It may be that when personnel know that agency leadership is advocating for crime reduction, holding individuals accountable to that goal, and ensuring role clarity for personnel (i.e. transparency), communication is not as important in a practical sense for keeping personnel satisfied with their crime reduction efforts.

Lastly, the findings from the Division and two rank dummy variables suggest an interesting relationship between personnel's assignments and satisfaction. Following the

implementation of stratified policing, it appears that sergeants and lieutenants become less satisfied, while all other ranks become more satisfied. This is likely due to the changes seen in their roles under stratified policing.

These findings have strong implications for stratified policing with variations being found between its effects on different ranks and organizational change variables. While the findings suggest that following the implementation of stratified policing DSP saw statistically significant improvements in all of the organizational change variables for all ranks collectively, this was not the case when examining each rank category individually. Sergeants and lieutenants appear to be impacted the most by stratified policing, experiencing statistically significant improvements in all organizational change components except satisfaction. Contrarily, detectives and command staff appear to be impacted the least, with no statistically significant improvement being found for any of the organizational change variables. Though, as mentioned, for command staff, this may be due to them having such high perceptions of each of the organizational change variables before stratified policing was implemented.

Extending Prior Research

This study was an extension of a study conducted by Santos (2018) that looked at the effects of stratified policing in another, much smaller agency, the Walton County Sheriff's Office (WSCO). In that study, Santos (2018) had similar findings, with stratified policing improving perceptions of all four key organizational change components, as well as satisfaction with proactive crime reduction. Additionally, while neither study intended to test stratified policing's crime reduction benefits, both find that the agency was able to reduce their target crimes following stratified policing's implementation.

This study was able to extend the Santos (2018) study by replicating its findings in another, larger agency: the Delaware State Police. Having found that stratified policing improved all key organizational change components and satisfaction in another agency lends support to the generalizability of this study and prior research, such as Santos (2018). Additionally, as DSP had a longer implementation of stratified policing, having two full years of implementation compared to one for WSCO, these findings help understand the benefits of stratified policing over a longer period of time. Lastly, the analysis conducted in this study was more in depth than that of the Santos (2018) study, as this study looked at changes by rank, as well as looked at each organizational change variable's ability to predict satisfaction.

Practical Implications

These findings also have strong practical implications for police agencies that seek to be more efficient and effective in reducing crime. While there is a strong and growing body of research on "what works" in policing (National Academies of Sciences, Engineering, and Medicine, 2018), it is common for policing initiatives to fail for a variety of reasons (Brandl, 2018; Mazerolle et al., 2012). Thus, while it is now becoming known "what works," it is important to find a way to "make it work" within a police agency, and these findings suggest that stratified policing could be that bridge.

Research has identified that organizational change is important for facilitating proactive crime reduction (Santos & Santos, 2015; Santos, 2018; Stetler et al. 2014), and this study is suggesting that stratified policing is able to facilitate successful organizational change within a police agency. The findings indicate that stratified policing is able to accomplish this goal, which allows the use of evidence-based practices to be part of the day-to-day activities of a police agency. Thus, by its ability to improve the key organizational change components, leadership,

communication, transparency, and accountability, it becomes possible for police agencies to implement proactive strategies that can reduce crime in their communities. Additionally, the finding that it also increases personnel's satisfaction with proactive crime reduction is important in a practical sense. Research has found that individuals that are more satisfied are more willing to engage in proactive activities (Pelfrey, 2007). Thus, not only can stratified policing aid an agency in implementing a proactive strategy, but it also aids them in keeping proactive policing and crime reduction sustainable.

Another important aspect of stratified policing from a practical sense is its ability to systematize the use of proactive strategies, making it an integral part of the day-to-day activities of the police agency (Santos & Santos, 2015). This aids in the sustainability of these activities, and greatly simplifies the process for agency personnel. Every rank and individual have their roles and responsibilities, and by working to accomplish those, the entirety of the agency becomes focused on crime reduction. When people have a better understanding of their roles and the roles of others, meaning these roles are transparent, crime can be reduced more efficiently and effectively.

In addition to facilitating organizational change, support for stratified policing's ability to aid agencies in reducing crime is growing (Santos, 2018). While this study did not seek to test stratified policing's effects on crime, Delaware State Police was able to reach many of their crime reduction goals following its implementation. The target crimes defined by DSP were reduced rather substantially following the first year of implementation and had further reductions the following year.

These findings in conjunction lend support for the use of stratified policing as an organizational framework for police departments, one that would aid them in reaching their

crime reduction goals by first facilitating successful organizational change. While more research needs to be conducted on stratified policing, the research that exists, including this study, lend support for its use. Delaware State Police had great success following the implementation of stratified policing due to many of its aforementioned benefits, and based on these findings, it can be anticipated that other agencies would similarly benefit from the use of an organizational structure such as the one provided by stratified policing.

Limitations and Future Research

While measures were taken to limit the limitations of this study, there are inevitably some worth discussing. The first limitation is that this study used independent t-tests rather than paired sample t-tests, which means that individual respondents were not able to have their answers compared across waves of the survey. As these surveys were distributed approximately three years apart, it is possible that many of the personnel that took the first survey either left the department or changed ranks. Additionally, the department likely hired new personnel that responded to the second survey, but not the first. However, as this study examined organizational change for the entirety of the department as opposed to examining changes in individual personnel's perceptions, this limitation does not take away from any of the study's findings.

Another limitation of this study is that DSP already began the implementation process of stratified policing before the first wave of the organizational survey was able to be distributed. This means that some personnel may have already begun the change process, which could have influenced their responses to the first wave of the organizational survey and diluted the results. Command Staff reported higher perceptions for all of the key organizational change components during the baseline survey, and despite seeing numerical improvements in their perceptions for all organizational change variables, none of the improvements reached the level of statistical

significance. This is likely due to the initially high perceptions, which may have been influenced by them already beginning the implementation process. Thus, it is possible that had they not already begun the change process prior to the first survey, these findings may have become significant as they likely would have reported lower perceptions initially.

A third limitation is that there was a substantially lower number of respondents to the second wave of the survey than the first. This is likely because the first wave of the survey was distributed by agency leadership, whereas the second wave was distributed by D.I.A.C. Thus, respondents may have felt less inclined to respond to the second wave, which resulted in a lower sample size.

Lastly, this study only examined changes in one police department, the Delaware State Police, limiting the generalizability of these findings to other departments. However, prior research on stratified policing has found similar findings in other police agencies (Santos, 2018); thus, as the body of research on stratified policing grows, the findings will become more generalizable.

Future research should aim to extend these findings by addressing the limitations of this study. One such way might be looking at how stratified policing effects individual respondents rather than organizations as a whole. It could be interesting to see which of the four key organizational change components become more or less important for individuals to see if the elements of stratified policing affect different respondents differently. By looking at individual respondents, other variables could also be considered, such as length of time at the department, race, gender, education, and similar variables. Though, there must be balance between gathering this data and preserving respondents' anonymity. Additionally, individuals can be promoted and change ranks and positions; thus, this must be factored in when trying to decide on whether the

changes can be attributed to stratified policing. For these reasons, preserving anonymity and expected changes in the ranks of personnel, the original data was collected with the inability to extend the findings in this way.

Future research could also test the effects of stratified policing in other police agencies to add to the body of literature on stratified policing. While doing so, they should ensure that the surveys are distributed the same way to minimize the likelihood that there will be large differences in the sample size for each wave of the survey. Additionally, they should ensure the survey would be distributed prior to any changes being made to the agency's routine operations. By testing more agencies and having a larger sample size, it would increase the generalizability of the effects of stratified policing.

Future studies could seek to isolate how different aspects of stratified policing affect different ranks, particularly sergeants and lieutenants. These findings suggested that these middle-ranking personnel were impacted the most by stratified policing, and it would be interesting to identify what about stratified policing makes this the case. This finding was interpreted as being due to the large shift in the role and workload of Middle-Ranks, though testing this empirically could be beneficial for understanding this concept.

Conclusion

This study extended that of Santos (2018), replicating the findings in a much larger agency, over a longer period of time, using a more in-depth analysis. Now that there is an established body of research on effective methods of reducing crime, it is time to shift focus towards translating it into practice, and this shift may begin by examining what is important for that translation to be effective. This study contributes to this goal by extending prior research on stratified policing. Stratified policing shows promise as a means of bridging the gap between

"what works" and how to "make it work" for proactive policing strategies in police agencies. It accomplishes this by facilitating successful organizational change, and by providing a structure that allows the use of evidence-based practices to be sustainable.

Police leaders are becoming more innovative in ways to reduce crime with the help of crime analysis, and stratified policing helps take this concept and translate it into practice. Thus, these findings suggest that stratified policing and similar organizational structures have a large role in the future of policing, and as police leaders are increasingly understanding the importance of being proactive to reduce crime, they soon will understand the importance of having a structure in place to do so.

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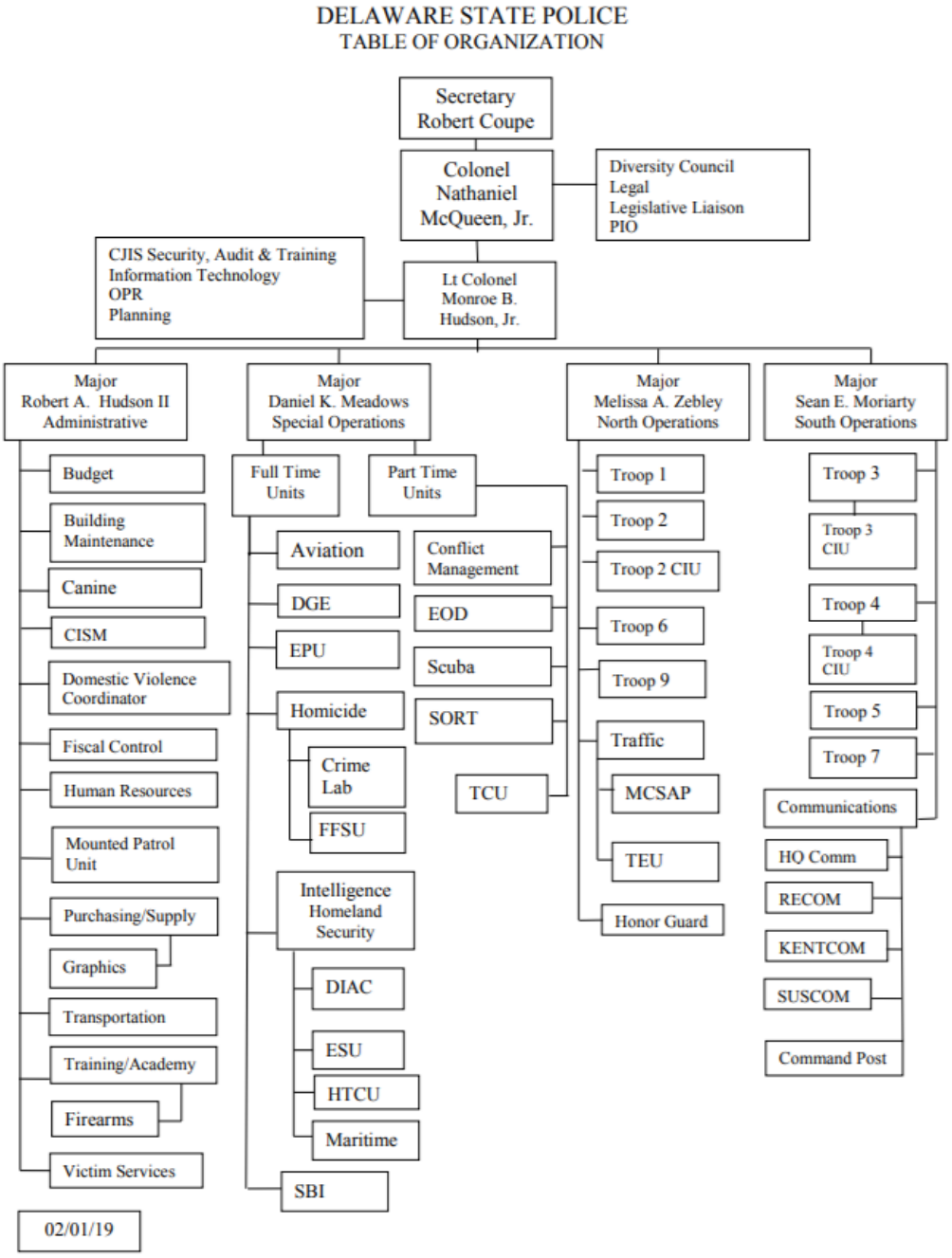
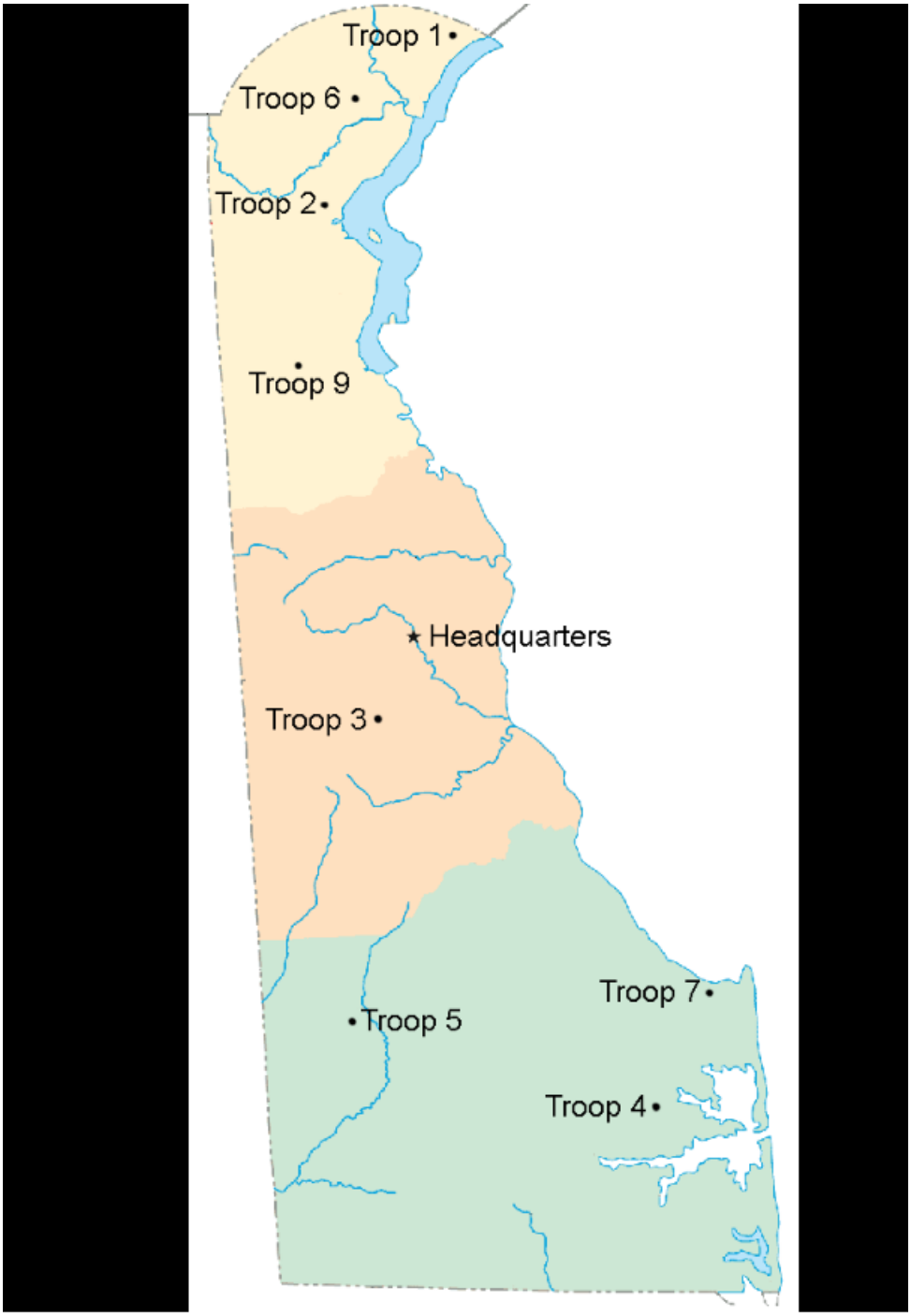
Appendix A

DSP Rank Structure



Appendix B

DSP Troop Jurisdictions



Appendix C

Descriptive Statistics & Analysis Findings for Leadership

Table 10. Descriptive statistics for Leadership.

Leadership	*N*	Mean	Median	SD	Min	Max
All Ranks (2016)	586	4.62	5	1.74	0	7
All Ranks (2019)	401	5.03	5.33	1.50	0	7
Troopers (2016)	327	4.51	4.83	1.78	0	7
Troopers (2019)	180	4.89	5.17	1.56	0	7
Detectives (2016)	143	4.91	5.17	1.51	0	7
Detectives (2019)	118	5.19	5.33	1.43	.67	7
Middle-Ranks (2016)	95	4.37	5	1.9	0	7
Middle-Ranks (2019)	80	4.97	5.25	1.47	1	7
Command Staff (2016)	21	5.31	5.50	1.28	1.83	7
Command Staff (2019)	23	5.44	5.50	1.48	.67	7

Appendix D

Descriptive Statistics & Analysis Findings for Communication

Table 11. Descriptive statistics for Communication.

Communication	*N*	Mean	Median	SD	Min	Max
All Ranks (2016)*	443	3.99	4	1.46	0	7
All Ranks (2019)*	284	4.34	4.25	1.40	0	7
Troopers (2016)	327	3.93	4	1.47	0	7
Troopers (2019)	180	4.01	4	1.40	0	7
Detectives (2016)	143	4.26	4.33	1.42	0	7
Detectives (2019)	118	4.42	4.58	1.35	1	7
Middle-Ranks (2016)	95	4.01	4	1.46	.60	7
Middle-Ranks (2019)	80	4.81	4.90	1.24	1.60	7
Command Staff (2016)	21	4.91	5	0.95	3.40	7
Command Staff (2019)	23	5.20	5.1	1.13	3.40	7

*****_All Ranks for this table excludes detectives as they were asked different questions._

Appendix E

Descriptive Statistics & Analysis Findings for Transparency

Table 12. Descriptive statistics for Transparency.

Transparency	*N*	Mean	Median	SD	Min	Max
All Ranks (2016)	586	3.25	3.21	1.41	0	6.94
All Ranks (2019)	401	3.57	3.47	1.33	0	7
Troopers (2016)	327	2.87	2.76	1.38	0	6.88
Troopers (2019)	180	3.05	3.00	1.22	0	6.88
Detectives (2016)	143	3.53	3.47	1.27	0	6.88
Detectives (2019)	118	3.58	3.47	1.12	1.12	7
Middle-Ranks (2016)	95	3.75	3.71	1.31	.12	6.47
Middle-Ranks (2019)	80	4.19	4.21	1.14	.82	6.76
Command Staff (2016)	21	4.98	5.18	0.84	3.59	6.94
Command Staff (2019)	23	5.45	5.65	1.07	2.76	7

Appendix F

Descriptive Statistics & Analysis Findings for Accountability

Table 13. Descriptive statistics for Accountability.

Accountability	*N*	Mean	Median	SD	Min	Max
All Ranks (2016)	586	4.95	5.38	1.63	0	7
All Ranks (2019)	401	5.23	5.63	1.49	0	7
Troopers (2016)	327	4.87	5.25	1.63	0	7
Troopers (2019)	180	4.86	5.13	1.69	0	7
Detectives (2016)	143	5.16	5.50	1.58	0	7
Detectives (2019)	118	5.50	5.75	1.23	0	7
Middle-Ranks (2016)	95	4.76	5.25	1.74	0	7
Middle-Ranks (2019)	80	5.42	5.81	1.29	0	7
Command Staff (2016)	21	5.61	6.00	0.98	2.88	7
Command Staff (2019)	23	6.05	6.13	0.85	3.88	7

Appendix G

Descriptive Statistics & Analysis Findings for Satisfaction

Table 14. Descriptive statistics for Satisfaction.

Satisfaction	*N*	Mean	Median	SD	Min	Max
All Ranks (2016)	586	4.09	5	2.00	0	7
All Ranks (2019)	401	4.79	5.00	1.72	0	7
Troopers (2016)	327	3.67	4.00	2.13	0	7
Troopers (2019)	180	4.54	5.00	1.77	0	7
Detectives (2016)	143	4.79	5.00	1.66	0	7
Detectives (2019)	118	5.10	5.50	1.56	0	7
Middle-Ranks (2016)	95	4.20	5.00	1.83	0	7
Middle-Ranks (2019)	80	4.58	5.00	1.71	0	7
Command Staff (2016)	21	5.29	5.00	1.00	3	7
Command Staff (2019)	23	5.91	6.00	1.44	0	7

Appendix H

Table 15. 2016 Model Collinearity Diagnostics

Variables	VIF	Tolerance
Leadership	2.19	.457
Communication	1.80	.557
Transparency	1.63	.613
Accountability	2.11	.475
Rank (Line-Level vs. Other)	1.24	.809
Rank (Command Staff vs. Other)	1.17	.857
Division	1.04	.965

Table 16. 2019 Model Collinearity Diagnostics

Variables	VIF	Tolerance
Leadership	1.91	.523
Communication	1.97	.509
Transparency	1.78	.561
Accountability	2.01	.498
Rank (Line-Level vs. Other)	1.41	.712
Rank (Command Staff vs. Other)	1.28	.781
Division	1.03	.968

Table 17. Autocorrelation & Outlier Test Results for Both Regression Models.

Model	Durbin-Watson	Cook's Distance (Max)
2016	1.97	.046
2019	2.00	.087