

University of Nevada, Reno

**Zeroing in on Reducing Gun and Violent Crime**

A thesis submitted in partial fulfillment of the  
requirements for the degree of  
Master of Arts in Criminal Justice

by

Carolynn F. Fedarko

Weston Morrow/Thesis Advisor

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We recommend that the thesis  
prepared under our supervision by  
**CAROLYNN FEDARKO**

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Be accepted in partial fulfillment of the  
requirements for the degree of  
Master of Arts

Weston Morrow, Ph.D.  
*Advisor*

Emmanuel Barthe, Ph.D.  
*Committee Member*

Shawn Marsh, Ph.D.  
*Graduate School Representative*

Markus Kemmelmeier, Ph.D., Dean  
*Graduate School*

May, 2024

## **Abstract**

From 2013 to 2017, the City of Reno experienced significant increases in gun and violent crime that impeded the safety of the community. The RPD obtained funding through a grant to reduce gun and violent crime by utilizing four intervention strategies: focused deterrence, hot spot policing, crime prevention through environmental design, and community outreach. This thesis examines and evaluates the intervention strategies implemented at specific geographic locations in Reno that experienced disproportionately higher levels of violence and gun crime. The results of this study provide partial support for the effectiveness of the intervention strategies. These findings are further contextualized in the discussion section with an emphasis on the implications for other law enforcement agencies looking to adopt similar evidence-based policing strategies in their cities.

**Keywords:** focused deterrence; hot spot policing; CPTED, community outreach, gun violence, violent crime

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## Chapter 1: Introduction

Ratified in 1791, the Second Amendment of the United States Constitution states that every U.S. citizen has the right to possess a firearm unless legally restricted from firearm possession (Giffords Law Center, 2023). Since its ratification, gun ownership has increased in the United States. According to Saad (2020), 32% of the adult population in the United States personally own a firearm and 44% reported living in a household with a firearm. There are some crucial nuances related to individual characteristics and geographical locations. Saad (2020) found that at the individual level, “Republicans (50%), rural residents (48%), men (45%), self-identified conservatives (45%) and Southerners (40%) are the most likely subgroups to say they personally own a gun” (para. 3). Variations in gun ownership are also apparent at the state level, McCracken, Okuley, and Floyd (2017) collected information on gun ownership by state from 2007 to 2016 on the number of adults residing in a home with a firearm. Montana, for example, had the highest gun ownership rate at 64%, followed by Wyoming and Alaska at 59%, whereas New Jersey and Hawaii had the lowest gun ownership rate at 8% (McCracken, Okuley, & Floyd, 2017). There are several reasons why people own guns in the United States, including protection, hunting, sport shooting, collecting, and/or for professional reasons (Shaeffer, 2023). Although most individuals purchase a gun without malicious intent in mind, guns are often involved in many violent crimes.

Trends and rates of gun violence and related injuries are a significant concern in the United States. Relying on data from the Centers for Disease Control and Prevention, research has found that gun violence generally falls into three categories: murder, suicide,

and other gun deaths—accidental, law enforcement involved, and undetermined circumstances (Gramlich, 2023). At the national level, Gramlich (2023) found that the average murder rate and suicide rate in the U.S. involving a firearm was 6.7 murders per 100,000 people and 7.5 suicides per 100,000 people, respectively. When disaggregating the data by state, Gramlich (2023) found stark differences in gun violence. The average murder rate with the use of a firearm in the District of Columbia was 22.3 per 100,000 people, which was nearly three times higher than the national average. Some cities across the United States have also experienced increases in gun violence in recent times. In 2021, the Big Cities Health Coalition (BCHC) found that Memphis, TN (54.18 per 100,000), Detroit, MI (47.25 per 100,000), Baltimore, MD (44.17 per 100,000); Cleveland, OH (41.05 per 100,000), and Kansas City, MO (38.26 per 100,000) had the highest rates of gun deaths in the U.S.

The prevalence of gun violence has many consequences at the individual and community levels beyond physical injuries and deaths. At the individual level, consequences arise from indirect and/or direct gun violence experiences. Mitchell et al.'s (2021) research on 630 youth, ages 2-17, found that among youth exposed to seeing or hearing gun violence, “more than half (58%) of youth reported being very or extremely distressed as a result of the indirect gun violence” (p. 10). These distressed youth reported being angry, scared, sad, and upset; proceeding an indirect gun violence experience. Indirect experiences with gun violence can also lead to long-term psychological consequences. Vasan et al. (2021) conducted a cross-sectional study with a sample of 54,341 children that compared the utilization of the pediatric emergency department before and after an incident of gun violence in certain neighborhoods. For children

exposed to gun violence, there was an “increase in children’s acute mental health symptoms” (p. 1245), characterized by disruptive behavior in school, withdrawal, and irritability. Gun violence clearly has devastating psychological consequences upon individuals.

The consequences of gun violence may extend beyond the individual and have negative effects on the community too. These negative effects tend to present themselves as a loss of trust in others. Loss of trust can lead to decreased community cohesion, which can have long-term adverse effects on families and communities. Kennedy et al. (1998) found connections between social capital (trust and group membership), income inequality, and violent crimes involving a firearm. One of their findings reported an increase in firearm-related crimes following the decline of a community’s level of trust. This association is a consistent finding as additional studies have concluded that gun violence decreases a community's sense of safety and trust in one another (Wike, 2008). Economically speaking, a sudden increase or surge in gun violence can have a detrimental impact on businesses. Irvin-Erickson et al. (2017) found that these “[s]urges in gun violence reduce the growth rate of new retail and service businesses” as well as slowing the home value appreciation rates by four percent (p. 1-2).

Given its consequences and prevalence, law enforcement agencies have focused their priorities upon gun violence. They have taken various measures to reduce gun violence, including increased efforts in implementing law enforcement and community policing strategies in high-risk areas. Some law enforcement agencies have also started using evidence-based policing practices, which apply research to decision-making through identifying priorities, testing/examining applicable police practices, and studying

police actions (Sherman, 2019). Interventions such as Koper curve patrols, community outreach, crime prevention through environmental design (CPTED), problem-oriented policing, and focused deterrence are all examples of evidence-based policing strategies. Such strategies focus on disrupting and deterring criminal activity while fostering positive relationships with communities. Research has found that evidence-based policing strategies can have a profound effect on various types of crime, including gun crimes and related violence (Lum, Koper, & Telep, 2010).

In 2019, the Reno Police Department (RPD) noticed notable increases in gun violence and, as a result, made it a priority. The city of Reno, from 2013 to 2017, experienced an 87.3% increase in violent firearm-related crimes (such as homicide, domestic violence, assault with a deadly weapon, and suicide). A more specific analysis found that battery, murder, and shootings all increased by over 115%. With such a dramatic increase in firearm-related crimes in the city, RPD applied for and was awarded grant funding for a Strategies for Policing Innovation (SPI) grant to address gun crime. The gun-crime reduction strategy outlined in the SPI grant applied a multifaceted approach that emphasized the impact on offenders, the community, and the environment on gun violence. The RPD devised and implemented several gun-crime reduction strategies in Reno, Nevada, including focused deterrence, hotspot policing, CPTED, and community outreach. Using a quasi-experimental design in combination with data collected from this grant, this thesis examines and evaluates the RPD's intervention strategies at specific geographic locations in Reno that experienced higher levels of violence and gun crime.

## Chapter 2: Literature Review

Traditional policing is a reactive, incident-driven model that relied on rapid response times and patrols. As research has found, this policing style had little effect on crime and disorder, which meant police needed to reconsider their crime-control strategies (Weisburd & Eck 2004). Consequently, in 1979, Herman Goldstein developed a novel way of improving police effectiveness by breaking each community problem down to its contributing factors. Problem-oriented policing (POP) helps law enforcement evaluate problems, find the underlying sources of the recurrent problems affecting the community, and proactively address community concerns and “chronic problems, rather than using traditional reactive efforts” (Hinkle et al, 2020, p. 1). As Weisburd & Majmundar (2018) state,

Problem-oriented policing is an analytic method for developing crime reduction tactics. This strategy draws upon theories of criminal opportunity, such as rational choice and routine activities, to analyze crime problems and develop appropriate responses (Braga, 2008; Clarke, 1997; Reisig, 2010). Using a basic iterative process of problem identification, analysis, response, assessment, and adjustment of the response (often called the scanning, analysis, response, and assessment [SARA] model), this adaptable and dynamic analytic method provides a framework for uncovering the complex mechanisms at play in crime problems and for developing tailor-made interventions to address the underlying conditions that cause crime problems (Eck & Spelman, 1987; Goldstein, 1990). Depending on the nuances of particular problems, the responses that are developed—even for seemingly similar problems—can be diverse. Indeed, problem-oriented policing interventions draw upon a variety of tactics and practices, ranging from arrest of offenders and modification of the physical environment to engagement with community members (p. 53).

A residual effect of POP is that it forced law enforcement agencies, community organizations, and other related agencies at the local, state, and federal levels to establish relationships with one another. Establishing these partnerships is key to the success of

POP because there is an emphasis on using municipal/community resources and non-law enforcement responses to solve crime and disorder problems.

Research analyzing the POP literature reports promising results. Hinkle et al. (2020) conducted a meta-analysis of different POP tactics. They evaluated published and unpublished works that included a control and target area, followed the SARA model (i.e., scanning, analysis, response, and assessment), and were implemented between 2006 and 2018. A total of 39 studies looking at quasi-experimental and randomized experiments were evaluated. Results showed “a 33.8% reduction in crime/disorder in the POP treatment areas/groups relative to the controls”, a statistically significant decrease in crime and disorder within the target area (Hinkle et al., 2020, p. 50). The effect sizes of the interventions were favored in 31 of the 34 studies included in the meta-analysis. Outside of crime and disorder, there were eight place-based studies in this meta-analysis that examined crime displacement and whether there was a diffusion of crime control benefits. Crime “[d]isplacement is the relocation of a crime from one place, time, target, offense, tactic, or offender to another as a result of some crime-prevention initiative” (Guerette & Bowers, 2009, p.1333). This study specifically analyzed the geographical relocation of criminal activity, or spatial displacement. Focus was also placed on a diffusion of benefits, which is considered the opposite of crime displacement in that “reductions of crime (or other improvements) are achieved in areas that are close to crime-prevention interventions, even though those areas were not actually targeted by the intervention itself” (Guerette & Bowers, 2009, p.1334). Importantly, the results of Hinkle and colleagues (2020) research showed that there was “no evidence of spatial

displacement of crime/disorder... [but there was] evidence of a small diffusion effect” (p. 51).

The effectiveness of POP tactics has led to widespread adoption by many law enforcement agencies across the United States. The Reno Police Department (RPD) relied on three policing strategies that were drawn from POP to address gun and violent crime: focused deterrence (i.e., pulling levers), hot spot policing, and crime prevention through environmental design (CPTED). The following sections provide a brief literature review of each policing strategy implemented by the RPD and a concluding section on the importance of involving the community in such POP efforts.

### **Focused Deterrence**

The focused deterrence strategy was developed in the early 1990s to combat the rising gang violence problem in Boston, Massachusetts. The foundation of focused deterrence, which Braga et al. (2001) refer to as “pulling levers”, relies on principles from deterrence theory. For an offender, the swiftness, certainty, and severity of the punishment greatly influence their decision to commit a crime. Harnessing such notions, Braga et al. (2001) pioneered a problem-oriented policing strategy that focused on offenders’ perceptions of committing a crime: “when the costs of committing the crime are perceived by the offender to outweigh the benefits of committing the crime” (p. 201). Changing offender and public perception allows law enforcement to maximize their crime reduction efforts through strategically and directly applying their interventions.

The focused-deterrence approach pioneered by Braga and colleagues (2001) was utilized in their approach known as Operation Ceasefire. This was a multistep process for

addressing homicide victimization among young people, especially those considered gang-involved. The first step involved identifying and selecting individuals who would receive the focused deterrence intervention. The process of selecting high-risk youth required the researchers and stakeholders (law enforcement, prosecutors, and outreach organizations) to devise a data-driven decision-making process that identified high-risk youth in an objective manner. Braga et al. (2001) identified the youth who were associated with a gang and chronically offending as a basis for developing a list of high-risk youth in the community. Once these youths were selected for outreach, the second step involved contact or “call-ins” with youth for a meeting (Reichert et al., 2018). During this conversation, the message was unequivocal: the working group would say “explicitly that violence would no longer be tolerated, and backing that message by ‘pulling every lever’ legally available when violence occurred (Braga et al., 2001, p. 12). Simultaneously, stakeholders (e.g., streetworkers, probation and parole officers, church members, and community groups) would offer youth gang members numerous services to help them avoid engaging in violence. The end goal was for the offenders to “believe that they can cease being law enforcement targets by changing their own behavior, that they can control what happens to them, and that they bear responsibility for being a targeted person” (Scott, 2017, p. 11). The final step was keeping track of the high-risk gang-involved youth. If one of these youth engaged in violence, it resulted in law enforcement pulling every legal lever to punish the offender and their affiliated gang.

Braga and colleagues’ (2001) novel approach to address youth gang violence had a profound effect on violent crime in Boston. Their approach mainly investigated gang activity, addressed low-level street crimes and drug activity, and implemented strict



probation and parole terms. By targeting gang violence, Braga and colleagues' (2001) team were able to significantly reduce youth homicide numbers from 44 per year in 1991 to 15 per year in 1997—a 65% reduction. Aside from youth homicides, the intervention “was also associated with a 25 percent decrease in the monthly number of citywide gun assaults incidents, a 32 percent decrease in the monthly number of shots-fired calls for service, and a 44 percent decrease in the monthly number of youth gun assaults in district B-2” (Braga et al., 2001, p. 207). Operation Ceasefire targeted a critical problem in Boston and successfully decreased youth violence.

Focused-deterrence has been implemented by many police departments across the U.S. In 2013, the Philadelphia Police Department implemented a direct-focused deterrence approach known as the Group Violence Intervention Model (Reyes, 2022). This model consisted of direct call-in meetings initiated by law enforcement with gang-involved individuals, the “pulling levers” method, social services and support, and informal social control through community involvement. Through this project, the city sought to reduce gun and gang violence. Results showed that compared to the treatment area, “there was a 35% reduction in the rate of criminal shootings post-implementation” (Roman et al., 2019, p. 518). In the gang territories, shootings within a half-mile of the comparison gangs had also decreased, but this reduction was less than that of the treatment gangs. However, after the focused-deterrence intervention period, there was an increase in shootings within the quarter-mile buffer areas.

Fox et al. (2015) deployed a similar strategy incorporating efforts from numerous stakeholders in the criminal justice system to measure the impact of focused deterrence efforts on homicide and gun-related aggravated assaults in Kansas City. The focused

deterrence efforts involved direct and repeated communication with each offender regarding the consequences that would be administered following any criminal activity and providing social services. Homicide reduction rates were statistically significant across the year-long analysis period, with a 40% reduction in homicide reported within the first month, and after 12 months, there was an additional 15.65% reduction. Gun-related aggravated assaults were reduced by 18.46% within the first month and 13.76% within three months of implementation. The six and twelve-month analysis had a relative effect of approximately 5-11%. The results of this study emphasize the effectiveness of tailored, focused deterrence approaches (Fox et al., 2015).

Using a similar approach to Fox et al. (2015), Tita et al. (2003) focused on two concentrated violent crime locations in Los Angeles: Boyle Heights and parts of Hollenbeck. In both of experimental zones, there were increased patrols and officer presence in neighborhoods, more stringent enforcement, rapid communication of offender consequences, and referrals for gun law violations given to federal prosecutors. The individuals of interest in this approach were the “shot callers”, or leaders of a gang, and the “shooters” who were most likely to engage in criminal activity. After the intervention period, “gang and gun crime decreased more rapidly in Boyle Heights than in the remainder of Hollenbeck” (p. 27). Regardless of this difference, the violent crime reduction rates in both areas were nearly identical at about 28% during the intervention period.

Focused deterrence approaches have also been used to keep probationers more accountable for their actions. Hawken & Kleiman (2009) created Project Hope, which randomly assigned probationers to a program with different punishment levels: certain,

zero-tolerance, and non-severe punishments for six months. The sanctions imposed came after a formal “warning hearing” that notified the participants of the punishments for not following regulations, which included a few days in jail, high-intensity drug treatment for probationers repeatedly testing positive for drugs, and prompt hearings within 72 hours of a violation. The study found that there was a 90 percent reduction in the probation violation rate. Additionally, the rate of positive drug tests was “down more than 80% over the first three months and down an additional 50% from that low level thereafter”, and missed appointments were “down more than  $\frac{2}{3}$  [two-thirds] for the first three months and an additional 75% thereafter” (Hawken & Kleiman, 2009, p. 6). Overall, Hawken and Kleiman (2009) found that the more credible and consistent a punishment is, the less often the punishment will need to be invoked and applied in situations.

Research has also examined how focus deterrence strategies can be used to address the repetitive cycle of drug dealers on the street. Corsaro & McGarrell (2009) obtained a grant to break the never-ending cycle of drug dealers entering prison and then back on the streets. Their strategy involved identifying areas with high levels of drug dealing offenses, establishing stakeholders, selecting individuals actively involved in drug sales, notifying the targeted offenders, and delivering resources. Over a five-year period, the researchers found a 55.5% reduction in the monthly narcotic offenses within the targeted community. Additionally, Corsaro and McGarrell (2009) found that focused deterrence in one neighborhood did not displace drug crimes into another neighborhood. They concluded that “there was no evidence of a displacement or shift of drug offending to the nearby neighborhood, but rather a reduction in crime counts that mirrored the one experienced in the target community” (p. 22; see also Engel, 2018; Braga, Weisburd, &

Turchan, 2018). Aside from drug-related statistics, the researchers also found that there was a significant reduction of 18.1% in the calls for service in the target area.

### **Hot Spot Policing**

Hot spot policing stems from the ideas proposed in the Crackdown and Routine Activity theories. Sherman's (1990) Crackdown Theory states that increasing police presence within small geographic areas can reduce the likelihood of crime and disorder. He found that “crackdowns might be more effective if they were limited in duration and rotated across different targets” (p. 1). Residual deterrence refers to the reduction in criminal activity that follows a period of active enforcement due to the offender's likelihood of detection. This idea of detection relates to the Routine Activity Theory, which Marcus Felson and Lawrence Cohen developed regarding the dynamics needed for a crime to occur. This approach shifts the focus from offenders to “the circumstances in which they carry out predatory acts” (Cohen & Felson, 1979, p. 588). Routine Activity Theory operates under the convergence of three conditions: “likely offenders, suitable targets, and the absence of capable guardians against crime” (Cohen & Felson, 1979, p. 588). Both theories contribute to the hot spot policing strategy since they offer combined focus on geographical areas, situational factors, and the offender.

The hot spot policing strategy proposes that when law enforcement applies available resources in small geographic areas with a concentration of crime, it will reduce crime and calls for service. The process involves a rigorous geographical evaluation of crime and disorder (Center for Evidence-Based Crime Policy, 2023). To do so, this strategy begins with the identification of hot spots or areas with high levels of criminal

activity. Plotting the crime data on a map makes it possible to identify areas where crime has been more frequent in the past, which provides law enforcement with good predictors of where crime will occur in the future (Hart & Zandbergen, 2013). Maps, specifically kernel density heat maps and graduated dot maps, are used to display this information. Both types help visualize the concentration of crime within a given area across a large geographical focus, such as a city. The goal of this policing strategy is to maximize crime reduction efforts by using police presence to deter individuals from engaging in criminal activity and increase community satisfaction.

For law enforcement to successfully apply this strategy in the community, it is important to understand the foundation of hot spot policing's success. Sherman and colleagues (1989) assessed the spatial data of calls for service in Minneapolis. Over the course of a year, there were nearly 324,000 calls to the police at over 115,000 addresses across the city. Once these addresses were mapped and analyzed, the researchers found that 3.3% of the locations mapped accounted for 50.4% of the calls. According to these results, crime in Minneapolis is not random. This research suggested that the police should concentrate their efforts in these areas to see notable decreases in criminal activity.

Applying concentrated policing efforts in areas with high criminal activity is beneficial for deterring crime. Sherman & Weisburd (1995) assessed the general deterrence of crime in hot spots after increasing police patrols. There were 110 hot spots assessed in this study with each area being determined by the analysis of Calls for Service (CFS) data. Police patrols were increased from 7:00 pm to 3:00 am in 55 of the 110 areas. The randomly assigned patrols were conducted on foot and in marked police

vehicles. Total crime reduction varied from 6 to 13 percent on a micro-deterrence level, and “[o]bserved disorder was only half as prevalent in experimental as in control hot spots” (Sherman & Weisburd, 1995, p.625). Having different patrol styles enabled officers to remain visible while patrolling large areas in an effective manner.

Since its inception, hot spot policing has become a common strategy among many law enforcement agencies. Researchers have worked in tandem with these agencies to evaluate the effectiveness of such strategies in reducing crime. Several meta-analyses provide support. Braga et al. examined the effects of hot spot policing in high-crime places, reporting their analyses in 2012, 2014, 2019, and 2021. Each proceeding meta-analysis added to and/or supported the conclusion mentioned in the previous study—hot spot policing is an effective strategy for reducing calls for service and crime. In 2012, 19 studies were included in the meta-analysis. The results showed a statistically significant reduction in calls for service within the treatment areas. The magnitude of the effect size, however, was smaller in randomized designs than in the quasi-experimental designs. The proceeding study in 2014 further added that in studies examining police-community relations, there were positive reactions to the police efforts. Additionally, the authors found a statistically significant relationship between hot spot policing and a diffusion of crime control benefits. In other words, the areas immediately surrounding the hot spot also experienced a reduction in calls for service. The meta-analyses presented by Braga and colleagues in 2019 and 2021 included more studies and found similar support for hot spot policing.

It is also important to note that hot spot policing can have long-term effects on crime and disorder. Koper et al. (2021) conducted a quasi-experimental assessment

regarding questions of “the efficacy of HSP outside large cities, its long-term sustainability and effects, and its ability to produce aggregate reductions in crime across large areas” (p. 1110). Operation Laser Point was implemented in 2010, involving preventative patrol in areas at risk for high crime counts. After several years, the Riley County Police Department refined its approach by identifying and focusing on “micro-hot spot locations; regular, daily directed patrol visits; community engagement and problem-solving; and active tracking, management, and evaluation of police activities” (Koper et al., 2021, p. 1115). The micro-hot spot locations were not fixed, having the tendency to change on a weekly or daily basis. From 2011 to August 2019, there were reductions in crime and disorder by 14.3%, disorder by 12.1%, violent crime by 41.4%, and property crime by 18.4%.

Research has also examined how the effects of hot spot policing on crime vary by patrol style. Ariel et al. (2016) conducted a study comparing the effects of discrete Police Community Support Officers (PCSO) and routine police patrols on crime reduction. PCSOs had no arrest powers and no weapons but were uniformed when conducting foot patrols. This patrol type was compared to the crime reduction impact of patrols presenting an immediate threat of arrest. Ariel et al. (2016) concluded that a “greater frequency of discrete PCSO visits may yield more crime reduction benefit than greater duration of those visits” (p. 278). This finding is attributed to the general presence of uniformed officers, regardless of the threat they impose or the power they hold, having a deterrent effect on crime and disorder.

Another form of hot spot policing is called the Koper Curve model. This strategy involves randomized, directed patrols lasting anywhere from 10-15 minutes in crime hot

spots (Koper, 1995). In Koper's (1995) study, there were a total of 16,997 patrol presences, with a majority (94%) being drive-bys and the remainder lasting less than 20 minutes. Findings suggested "that longer presences, at least up to a point, increase uncertainty and raise perceptions of risk at hot spots...probably through a combination of driving away some troublesome persons and making others more cautious for some time afterward" (Koper, 1995, p. 668). By participating in proactive, medium-length, randomized stops, the police were able to maximize their crime and disorder reduction efforts.

Several studies have evaluated the impact of Koper patrols in different cities. Mitchell (2017) used this model and assessed the impact of the duration and frequency of patrols on reducing crime and CFS. Mitchell (2017) found that the duration of the patrols had no effect on CFS, but "the greater the increase in visits per day, the greater the reduction in calls for service" (p. 34). This effect was accompanied by a high correlation between duration and decreased CFS in 42 hot spots. Numerous studies have implemented the Koper Curve model and assessed its impact on calls for service and crime counts, concluding that there were fewer reported crimes when police are monitoring micro-level hot spots (Ratcliffe et al., 2011; Piza & O'Hara, 2014; Haberman & Stiver, 2018). Importantly, each of these studies applied the Koper curve method and had officers conduct foot patrols of the hot spots rather than having the officers remain in their vehicles and drive around.

Aside from the main benefit of Koper Curve patrols reducing crime, foot patrols can offer more opportunities to interact with the community and provide better service. When officers remain engaged with the community, they can ensure that the model is



well-received and viewed as effective. For a patrol method like this, perception is key. If the model is not well-received, the crime counts may be reduced, but the community's perceptions of crime could worsen. This is a risk that has been noticed in numerous studies. Rosenbaum (2006) elaborated on this limitation in that hot spot policing can quickly turn into an aggressive tactic, which "can drive a wedge between the police and the community, as the latter can begin to feel like targets rather than partners" (p. 253). Avoiding such a limitation begins with properly communicating the purpose of the Koper curve method to law enforcement and the community.

### **CPTED**

The crime prevention through environmental design, or CPTED, strategy was conceived in 1971 when C. Ray Jeffery coined the term *environmental criminology*, which emphasized "the environment within which crime occurs, not the individual offender" (Andresen, Brantingham, & Kinney, 2010, p. 6). Jeffery (1976) stated, "[i]f we assume that crime counts are a reflection of the physical environment, then we assume that behavior is rotated to the environment" (p. 151). The environment is a factor that can be easily manipulated; if there is no chance for crime to be committed easily, then the likelihood of crime diminishes. Various intervention strategies have been built onto the CPTED model, such as situational crime theory, which redesigns and manipulates the environment; crime pattern theory, which analyzes crime patterns within certain areas; and broken windows theory, which links social and physical disorder to crime. In general, CPTED is used to discourage, deter, and/or prevent crime by manipulating the environment.

The effectiveness of CPTED depends on understanding and identifying crime opportunities and attractions, including crime generators, crime precipitators, crime detractors, and crime attractors. *Crime generators* are areas that attract many people for legitimate use, like a bus stop or shopping mall. In this context, there may be a large number of opportunities for offenders and targets to intersect. A *crime precipitator* is an environment that serves as a catalyst for crime from law-abiding people; an example is the lack of public toilets that could encourage public urination (Wortley, 2008). Areas that do not possess many or any crime attractions tend to eliminate the opportunity to commit crime, known as *crime detractors* (Kinney et al. 2008). The opposite effect can be created when a location's environment motivates an individual, on its own, to participate in criminal behavior, known as a *crime attractor*. Areas that could be considered a crime attractor are those with little security and/or low visibility. Crime precipitators and attractors differ because crime attractors are areas with a reputation for being a place to engage in criminal behavior, thus attracting individuals who are likely to engage in the behavior. Crime precipitators are situational factors that cause stress, pressure, and provocation that encourage criminal behavior (Wortley, 2008).

Apart from environmental factors that increase the likelihood of criminal activity, additional crime facilitators can assist offenders in committing crimes. These facilitators can be physical (e.g., a truck that would help move stolen goods), social (e.g., gangs encouraging criminal activity), or chemical (e.g., alcohol/drugs allowing the offender to ignore the risks) (Clarke & Eck, 2005). All the environmental factors of a location and the type of crime facilitators present are vital to identify and understand.

The selection of an area or location for CPTED follows the same method as hot spot policing, where the calls for service or incident data is collected city-wide, and then the locations with the highest frequency of calls and criminal activity are selected for the intervention. Following the selection process, each area is assessed for its environmental factors. According to Poyner (1993), numerous factors can positively alter the environmental design to influence crime, including lighting, fencing, surveillance, cleanup, landscaping, building maintenance, visibility, street changes, and parking meters. Once CPTED is implemented, it “can lead to a reduction in the fear of crime and the incidence of crime, and to an improvement in the quality of life” (Crowe & Fennelly, 2013, p. 4).

CPTED can be used to reduce both the frequency of crime and fear of crime. Fear of crime is the fear of being a victim of a crime. Lee et al.’s (2016) study examined the fear of crime and resident walking frequency within certain neighborhoods that had implemented CPTED measures. These were compared to similar neighborhoods that did not implement CPTED strategies. Between the experimental and control neighborhoods, 623 participants completed the electronic surveys that included Likert scales about fear of crime. Analysis revealed that “sufficient closed-circuit television, street lighting, and maintenance played a significant role in mitigating fear of crime” (p. 1).<sup>1</sup>

Not only has research examined fear of crime, but also the relationship between CPTED and the level of crime. Minnery and Lim (2005) developed a way of identifying and measuring the impact of CPTED practices on the level of crime and fear of crime. To

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<sup>1</sup> Maintenance implied the creation of murals, parks, and community facilities, as well as the use of paving patterns and the removal of non-transparent fencing.

measure fear of crime, they created a survey to measure individuals' fear and concern of crime. Findings revealed that “[a]round 18 percent of respondents fell into the ‘high fear’ category and some 26 percent fell into the ‘high concern’ category” (p. 336), with no statistically significant relationship between victimization and fear of and concern about crime. However, there were statistically significant relationships between CPTED measures and victimization, “with higher levels of CPTED correlating with lower levels of crime victimization” (Minnery & Lim, 2005, p. 338).

Research has examined the effect of CPTED on violence. Chalfin et al. (2022) set out to reduce the rate of violent crime in New York City by increasing the presence of street lighting in the urban landscape. The New York Police Department identified 80 high-priority housing developers with high crime counts. Forty of the developments were placed into the control and treatment group. Public housing developments in the city received 40 street lights to be placed in each of the development's streets as part of the treatment group. Results showed “a 35% reduction in outdoor, nighttime index crimes [and] reduced serious offending in these communities by approximately 4%” as this crime type accounted for 12% of the city’s index crimes (Chalfin et al., 2022, p. 151). Chalfin and colleagues (2022) demonstrated that a discrete environmental change, such as street lighting, can reduce violent crime and provide a more financially beneficial investment in place of incapacitation.

### **Problem-Oriented Policing: Considering the Community**

Many geographic areas have a diverse set of problems that negatively impact the community. For these problems to be identified and understood, each response depends

on the community's input and assistance. However, including more people in an intervention creates a more complex situation. For instance, when attempting to invoke assistance from business owners, the San Angelo Police Department (2006) noted heavy opposition as it would be seen as an inconvenience to their customers and the possible "economic ramifications that would result from the eviction of criminal tenants" (Hinkle et al., p. 27). The difficulty did not end with business owners; some community organizations resisted the formation of partnerships due to their distrust in and unwillingness to cooperate with the police (Cooley et al., 2019; Kochel & Weisburd, 2017; Tuffin et al., 2006). These difficulties are important considerations when wanting to involve the community in problem-oriented policing efforts.

Although it can be challenging to obtain community buy-in for police program, it is not impossible. Kochel and Weisburd (2019), for example, implemented two strategies (problem-solving and directed patrols) in the community to understand how they influence collective efficacy. Collective efficacy "arises in communities or neighborhoods that contain an interdependent network of people who feel a sense of community, shared ownership, and trust in one another" (p. 901). This bond is pertinent when attempting to establish a partnership with community organizations. Kochel and Weisburd (2019) found that in the direct patrol areas, police presence and assistance in high crime areas encourage the community to take action, and "once residents are engaged in self-policing, they can begin to feel comfortable enough dropping the anonymity and getting to know each other and spend time together" (p. 922).

Establishing a mutual beneficial and non-anonymous relationship between police and the

community is the key to the success of any community intervention strategy and starts with the police showing the community they are there to help.

### **Chapter 3: Methodology — Crime Data and Police Strategies**

The Reno Police Department relied on several policing strategies to address gun crime and violence in specific geographic areas in Reno. The policing strategies implemented in this study were focused deterrence, hot spot policing, and crime prevention through environmental design (CPTED). Focused deterrence was used to identify high-risk, chronic offenders and deter them from committing further violence or participating in criminal activity. This practice used principles related to swiftness, certainty, and severity of punishment to influence an offender's decision-making process. The hot spot policing strategy increased police presence in high-crime geographic areas to reduce criminal activity. The last strategy, CPTED, manipulated the physical environment by reducing an offender's opportunity to commit crimes in certain areas by increasing visibility and security at high-crime locations. In this study, the independent variable was the crime-control intervention (i.e., focused deterrence, hot spot policing, and CPTED). The dependent variables were violent and gun crimes in the geographic areas of interest.

The RPD deployed these crime-control strategies in areas associated with high levels of gun crime incidents and violence. The current study relied on geographic data points, or address-level data, from the SAP Crystal Reports database for 2021, 2022, and 2023<sup>2</sup>. The Crystal Reports dataset consisted of information recorded by the officers after they arrived on the scene, including an individual's personal involvement, crime address, crime committed, and identifiable information/characteristics. The data consisted only of violent crimes involving a gun. Each of these crime locations were geocoded and mapped to provide a spatial distribution and concentration of violent crimes involving a gun in the city of Reno. These distribution and concentration levels were determined through kernel density heat and graduated dot maps. Kernel

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<sup>2</sup> Access to the data included in the current study was obtained from the Reno Police Department, where I worked as the research analyst for the SPI gun grant

density heat maps are created based on a spatial interpolation technique that provides a visual representation of areas with high and frequent occurrences (Stek, 2021). A location's frequency in the dataset determines if the location is a low or high-risk area. Additionally, locations in close proximity to one another are often absorbed into the same hot spot, depending on set parameters, which causes the size of each cluster to vary. These maps allow researchers and practitioners to determine which areas attract the most criminal activity. Graduated dot maps, however, create a more precise visual representation of the locations attracting the most criminal activity. These maps utilize varying dot sizes to represent the frequency of each location (Arnold et al., 2017).

Once there were visual representations of the hot spot areas and locations, the research team and the Reno Police Department met several times to select specific geographic zones. Locations were selected based on the frequency of criminal incidents for the location/area, as well as the officers' knowledge of the areas that were identified as high-risk locations. The department provided insight into how efforts could be applied at locations and whether police interventions were possible at the locations. The RPD, in collaboration with the research team, identified two geographic areas that were similar in terms of size and amount of violence involving guns.

A quasi-experimental design was used by the RPD to test whether these policing strategies were effective at reducing gun crime and violence in the selected geographic areas. The research team and RPD selected a quasi-experimental design for several reasons. First, quasi-experimental designs provide the methodological rigor to help establish cause-and-effect relationships (Thomas, 2023). In short, a quasi-experimental design is advantageous for making a causal connection between the RPD's intervention and outcomes of interest because it helps establish time order, association, and non-spuriousness between the intervention (i.e., independent variable) and crime outcomes (i.e., dependent variables). Second, a quasi-experimental design was selected as the methodology because a true experiment was not feasible. In other words, the researchers could not randomly select geographic areas or individuals for



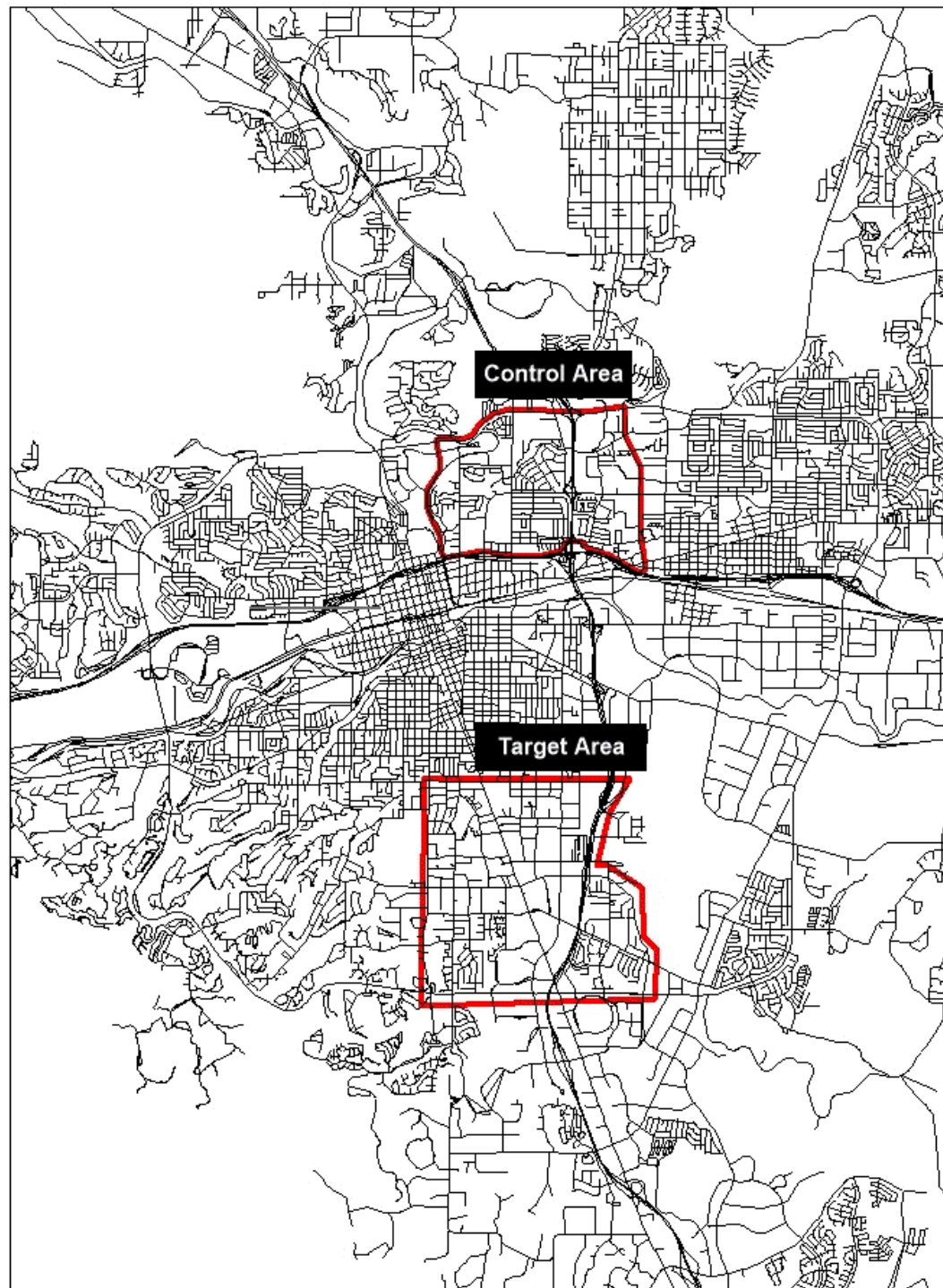
inclusion in the study because crime does not randomly occur throughout a city; crime concentrates in specific locations. The geographic areas, therefore, had to be predetermined because violent crime involving a gun were concentrated in several geographic areas in Reno.

### **Geographic Zones and Crime**

The RPD, in conjunction with their research partners, selected two geographic areas in Reno for inclusion in the quasi-experimental design because of their high levels of violent crimes involving a gun (see Figure 1). The comparison area did not receive the crime-control intervention. The quasi-experimental area, referred to as the target area, received crime-control intervention that included focused deterrence, hot spots policing, and CPTED.

Figure 1

### City of Reno with Target and Comparison Area, 2023



### ***Comparison Area and Crime Data***

The comparison area, depicted in Figure 2, was located in northern Reno above the intersection of i-80 and Highway 395. The total area is around 1,570 acres and contains a little over 3,100 parcels of land comprising businesses, homes, and apartment complexes. Using the United States Census Bureau (2024) demographic data obtained in 2020, the population size of the comparison area was around 23,000 people, with 77% of the population being 18 years or older. Of this population, 41.5% were White, 25.3% were a race not listed, 15.7% were two or more races, 7.2% were Asian, 6% were Black or African American, and less than 5% of the population consisted of American Indian or Alaska Native and Native Hawaiian/Other Pacific Islander. The Hispanic or Latino population was included in the population but was not provided with an option that states their race. Rather, the Census included options that separated the reported data for individuals who reported being Hispanic or Latino and not Hispanic or Latino, but there was no separate statistic.



The RPD selected this comparison area based on violent crime and gun crime. These crimes are reported in Table 1. In the first year of the study, 2020, there were 451 violent and gun crimes in the comparison area. Of these crimes, a total of 61 gun crimes occurred, with 19 occurring in November alone. Additionally, there were 390 violent offense arrests in 2020, with the highest frequency occurring in June at 99.

Table 1: Comparison Area 2020 Crime Counts

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Total
Violent Offense	11	40	16	32	21	99	46	30	24	23	25	23	390
Gun Crime	14	5	0	4	0	3	5	1	2	0	19	8	61
Total	25	45	16	36	21	102	51	31	26	23	44	31	451

The department reported 323 crimes that fell into the categories of violent offense and gun crime in 2021 (see Table 2). In comparison to 2020, there was a 28.4% decrease in crime, 19 of which were gun crimes, which had a peak in August of 10-gun incidents. The total number of violent offenses in 2021 was 304, with the peak months being January, April, and June—42 violent offenses each month.

Table 2: Comparison Area 2021 Counts

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Total
Violent Offense	42	18	20	42	32	42	26	23	22	13	6	18	304
Gun Crime	0	0	0	0	4	1	0	10	0	2	0	2	19
Total	42	18	20	42	36	43	26	33	22	15	6	20	323

In 2022, shown in Table 3, there was a 38.4% decrease in the comparison area for crimes falling into the categories violent offense and gun crime. Of the 199 total crimes, there were 10-

gun crimes and 189 violent offenses that occurred over the course of the year. For 2022, August reported the most violent offenses at 26, and the most gun crimes occurred in November at 5.

Table 3: Comparison Area 2022 Crime Counts

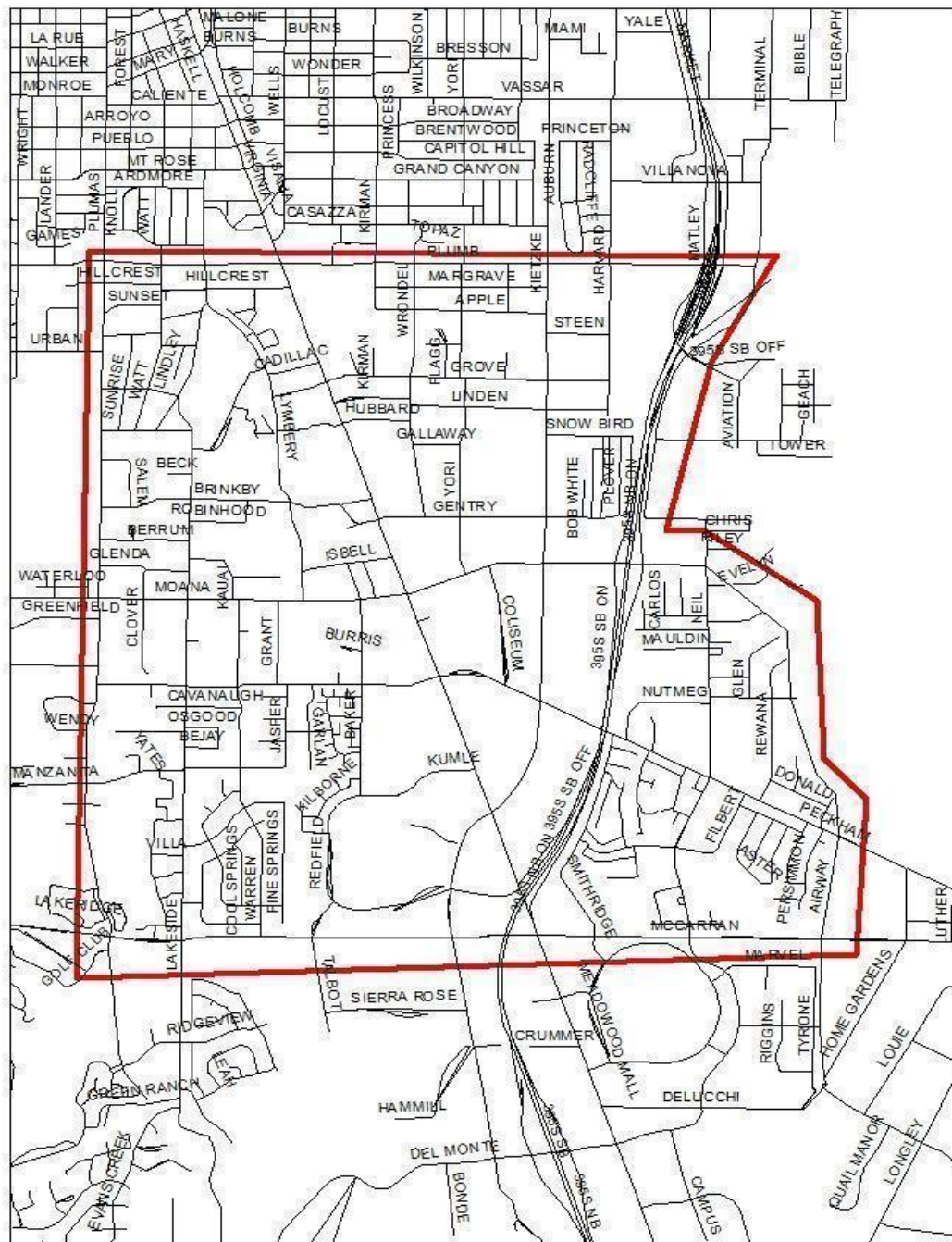
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Total
Violent Offense	18	8	16	8	14	17	17	25	26	16	15	9	189
Gun Crime	0	0	0	0	0	1	1	1	4	3	0	0	10
Total	18	8	16	8	14	18	18	26	30	19	15	9	199

### ***Target Area and Crime Data***

The target area was located in southern Reno, just west of the Reno-Tahoe International Airport (see Figure 3). The target area comprises around 2,400 acres, which covers a larger area than the Comparison Area but contains a similar amount of property—3,201 parcels of land. This area contains businesses, homes, parks, schools, churches, and apartment complexes. Using the United States Census Bureau (2024) demographic data obtained in 2020, the population size of the target area was around 27,500 people, with 75.5% of the population being over the age of 18. This population resembled the distribution of the comparison area with slight variation in racial makeup. According to the Census Bureau (2024), 42.5% of individuals were White, 26.7% were a race not listed, 16.9% were two or more races, 6.3% were Asian, 4.8% were Black or African American, and less than 5% of the population consisted of American Indian or Alaska Native and Native Hawaiian/Other Pacific Islander.

Figure 3

### Target Area



In 2020, there was a total of 251 crimes that transpired in the target area (see Table 4). Of the total crimes, 245 arrests were for violent offenses, with most occurring in November. As for gun crime, there were a total of 6, half of which had occurred in January.

Table 4: 2020 Target Area Crime Counts

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Total
Violent Offense	19	14	8	19	33	27	19	12	1	10	54	29	245
Gun Crime	3	1	0	0	0	0	1	0	1	0	0	0	6
Total	22	15	8	19	33	27	20	12	2	10	54	29	251

Violent offenses and gun crime arrests increased in 2021. As reported in Table 5, there were 399 violent offenses and 24-gun crimes. The month with the most violent offenses was May at 51, and for gun crimes, October held the highest count at 10.

Table 5: 2021 Target Area Crime Counts

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Total
Violent Offense	19	35	25	16	51	46	49	41	28	27	32	30	399
Gun Crime	0	1	3	1	2	0	1	3	0	10	2	1	24
Total	19	36	28	17	53	46	50	44	28	37	34	31	423

By the end of 2022, the number of crimes had decreased to 241 violent offenses and gun crimes (see Table 6). Gun crimes totaled 31, with the most occurring in March at 7. Violence-related offenses totaled 210, with the highest number reported in February at 42.

Table 6: 2022 Target Area Crime Counts

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Total
Violent Offense	27	42	8	20	14	29	4	23	12	9	8	14	210
Gun Crime	6	2	7	6	0	0	0	6	2	1	1	0	31
Total	33	44	15	26	14	29	4	29	14	10	9	14	241



### ***Buffer Zones within the Target Area and Crime Data***

There were several smaller geographic areas within the target area that became the focus of law enforcement and community resources, which the RPD referred to as “buffer zones” (see Figure 4). These zones were selected based on the concentration of violent offenses and gun crime in the target area. The process of identification began with the collection of all crime data within the target area for two years, from January 2020 to December 2021. The incident data was geocoded and mapped in ArcGIS to provide the team with a visual representation of the distribution and concentration of crime. Once this was complete, the data analyst created and overlaid a graduated dots and kernel density map to determine which areas recorded the most violent and gun crimes in the target area. After the maps were created, the RPD was brought in to assess the hot spots and offer their insight into the underlying reasons for the criminal activity. The RPD, for example, identified businesses, apartment complexes, neighborhoods, and parks that were known for violence and gun crimes. The last step was creating clear geographic boundaries (i.e., buffers) for each hot spot zone, which were depicted as polygons. The reasoning behind polygons being used over circles was for more accuracy in capturing the exact location of the crimes.



In 2020, the buffer zones accounted for around 47% of the violent and gun crimes that occurred in the target area. According to Table 7, Zone 1 reported the highest number of violent offenses at 54 and the highest number of gun crimes at 5. Zone 4 had the second most violent offenses at 30 but did not have any gun crime in 2020.

Table 7: 2020 Buffer Zone Crime Counts

	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6	Zone 7	Total
Violent Offense	54	10	10	30	2	6	1	113
Gun Crime	5	0	1	0	0	0	0	6
Total	59	10	11	30	2	6	1	119

In 2021, there was a 2% increase in criminal activity, with 121 violent and gun crimes occurring in the Buffer Zones (see Table 8). Zone 1 continued to have the highest number of violent crimes in the Buffer Zones at 55. Zone 4 reported the highest amount of gun crimes in 2021 at 3.

Table 8: 2021 Buffer Zone Crime Counts

	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6	Zone 7	Total
Violent Offense	55	8	11	24	6	7	3	114
Gun Crime	1	1	1	3	0	0	1	7
Total	56	9	12	27	6	7	4	121

In 2022, there was an additional 6% increase in violent and gun crimes within the target area. According to Table 9, the criminal activity continued to be highest in Zone 1 for violent offenses. The gun crime total doubled in 2022, with the highest number of gun crimes also being in Zone 1 at 8.

Table 9: 2022 Buffer Zone Crime Counts

	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6	Zone 7	Total
Violent Offense	71	2	2	26	7	3	4	115
Gun Crime	8	0	0	6	0	0	0	14
Total	79	2	2	32	7	3	4	129

## Overview of Police Strategies

### *RPD and Focused Deterrence*

The RPD implemented a focused-deterrence strategy in an effort to address gun crime and violence in the target area. This strategy required coordinated efforts between RPD officers, the Regional Gang Unit (RGU), and several social service organizations. The RPD led the planning and organization of the strategy. The first step was creating a score sheet for determining which offenders in the community would be the recipients of focused deterrence. The score sheet was created to establish a reliable and unbiased way of determining which offenders were considered to be the highest risk in the community. An existing score sheet from the Yakima Police Department was used as the template for the RPD's score sheet. The RPD individualized their own score sheet to include eight categories that were used to determine risk level (see Table 10).

Table 10: Offender Score Sheet

<b>Category</b>	<b>Description</b>
<b>Validated Gang Member/Affiliate (5 points)</b>	Gang membership/affiliation was validated through RGU in the RPD.
<b>Prior Arrest with Firearm (8 points/arrest)</b>	Offenders with prior arrests with firearms were identified through NNRIC background checks.
<b>Violent Criminal History (5 points)</b>	Offenders with violent criminal histories were identified through NNRIC background checks.
<b>Repeat Offender Program Target (5 points)</b>	The Northern Nevada Repeat Offender Program (ROP) is a county initiative to keep track of individuals identified by NNRIC with an extensive criminal history.
<b>Shooter in Incident - 10 points/incident</b>	Identified through NNRIC
<b>Victim of Shooting (1 point)</b>	Identified through NNRIC
<b>Associate of Shooter (1 point)</b>	Identified through NNRIC
<b>Probation/Parole/Prison (5 points)</b>	Validated through Nevada Parole and Probation
<b>Total Score</b>	Cumulative score of the above criteria

The second step in this process involved the identification of prolific offenders engaging in criminal activity within the target area. Individual-level data on chronic offenders came from the SAP Crystal Reports database, which was used to identify individuals associated with gun violence in the target area. Using Crystal Reports, a list was generated of all the individuals who committed a violent crime involving a gun. Subsequently, the list was reviewed for accuracy and scored by command staff from several units, including the Regional Gang Unity (RGU), Repeat Offender Unit (RGU), Probation and Parole, Regional Street Crime Unit (RSCU), and the Northern Nevada Regional Intelligence Center (NNRIC). The participation of these law enforcement entities was critical in the evaluation of these offenders because they often had real-time intelligence of high-risk offenders that was not yet available in the SAP Crystal Reports database. This process generated a list of 10 offenders who were selected for the focused deterrence efforts.

Following identification, contact was made with offenders in the community to notify them about the additional supervision. Contact by the outreach team was made either via telephone or in person at a neutral location. In-person meetings primarily occurred at the offender's residence, a local park, a motel, or a convenience store. When an offender was notified, regardless of the method, they were presented with a message communicating how and why they are on notice, future steps, and resources, similar to the message below:

*You are on notice. You have been identified as a prolific offender in your neighborhood and your criminal behavior will no longer be tolerated. This is your one opportunity for a second chance, a fresh start. Today we have assembled a group of resources and people willing to invest time and energy into you and make you a productive member of your community. If you choose not to accept these resources and continue your criminal conduct, we will be forced to seek maximum penalties each and every time you violate the law.*

During these contacts, law enforcement were present as a precautionary measure to ensure the safety of all parties involved, and social workers were present to offer help and assistance for any issues that the offenders and their families were facing. For any individuals that were determined to be dangerous and problematic, officers would attend the contact alone and notify the offender. Occasionally, these contacts were seen as intrusive and unwarranted police contact for the targeted individuals and their families.

After these initial contacts and assistance from social services, the outreach had to be discontinued. Unfortunately, the services being provided were discontinued from the association's budget, and they were no longer able to offer services to the community. Additionally, the RPD legal team advised officers to stop contacting individuals due to the legal concerns. Aside from legal advice, the American Civil Liberties Union (ACLU) contacted RPD regarding their offender outreach efforts. The ACLU explained to them that they were unjustly engaging in profiling on the basis of past criminal behaviors that they were already adjudicated

for. Furthermore, they cannot stigmatize individuals based on suspected gang and/or criminal involvement.

### ***Directed Patrols in Hot Spots—Buffer Zones***

The RPD engaged in different directed patrols in hot spots (i.e., buffer zones) located in the target area. When the patrol officers engaged in the proactive patrols of the buffer zones, they would conduct area checks, business checks, and foot patrols. The area and business checks included the officers driving around to increase police presence in each buffer zone. Area checks also consisted of engaging with the community to discuss their concerns in their community, which they would aim to address. During business checks, the officers would speak specifically to business owners and employees regarding their issues with the area. The foot patrols served as a more personal way to engage in area and business checks, along with getting to know residents in the area. According to Table 11, there were 259 area checks, 123 foot patrols, 117 business checks, 80 traffic stops, 42 subject stops, 23 consensual contacts, 22 vehicle checks, and a nominal number of activities that fell into the categories of citizen hail, consent stop, and other.

Table 11: Type of Patrol Activity Carried Out in the Target Area

<b>Types of Proactive Patrol</b>	<b>Number</b>	<b>%</b>
Other	0	0.00%
Consent Stop	6	0.88%
Citizen Hail	6	0.88%
Vehicle Check	22	3.24%
Consensual Contact	23	3.39%
Subject Stop	42	6.19%
Traffic Stop	80	11.80%
Business Check	117	17.26%
Foot Patrol	123	18.14%

<b>Types of Proactive Patrol</b>	<b>Number</b>	<b>%</b>
Other	0	0.00%
Consent Stop	6	0.88%
Citizen Hail	6	0.88%
Vehicle Check	22	3.24%
Consensual Contact	23	3.39%
Subject Stop	42	6.19%
Traffic Stop	80	11.80%
Area Check	259	38.20%
Total	678	100.00%

The original intent behind implementing hot spot policing in the target area was to have a set number of officers assigned to conduct their patrols in each buffer for an equal amount of time. This assignment would have also allowed officers to get to know their community and develop a level of rapport with them. Unfortunately, at the operational level, this was not possible due to the limited number of officers in the target area and union rules that dictated how overtime patrol assignments had to be carried out on a rolling basis so that all patrol officers had a chance to participate. This hampered the idea of a few dedicated officers being assigned to the target area. As a result, there was a constant rotation of officers participating in the directed patrols in buffer zones. Ideally, each participating officer was given knowledge pertaining to the grant's goals and directions for conducting the directed patrols, but there is no clear evidence that this was carried out in a systematic fashion.



Table 12: Time Spent in Each Buffer Zone

<b>Buffer</b>	<b>Total Time spent (HH:MM:SS)</b>
1	88:50:00
2	7:14:00
3	1:18:00
4	1:15:00
5	2:02:00
6	13:37:00
7	24:19:00
Outside Buffer, Inside Target	67:29:00
Outside Buffers and Target	4:42:00
Incomplete or Unknown Address	0:25:00

The time spent in each buffer zone, as depicted in Table 12, are dramatically different. Buffer Zone 1, a large casino named the Peppermill, accounted for a majority of patrol hours at nearly 89 hours. A cumulative record of Buffer Zones 2 through 7 account for approximately 50 hours, which was not close to the time spent in Buffer 1. Aside from the time spent within each buffer, 67.5 hours were spent inside of the target area but outside of any of the buffer zones and around 5 hours were spent outside of the entire target area. An apparent patrol dosage issue was present during project implementation. The unequal dispersal of patrol hours could be attributable to random list of officers participating in directed patrols, a lack of coordination between officers, and/or officers prioritizing buffer zone 1 because of its high crime levels.

### ***CPTED Projects in Hot Spots—Buffer Zones***

The RPD's Community Action Office (CAO) started two CPTED projects in the target area. The CAO officers strive to establish partnerships between themselves and community members, as well as place an emphasis on community engagement. The two CPTED projects, the

Vagabond Inn (or Quality Inn) and a 7-Eleven, were located in one of the buffer zones and selected because their businesses reported higher levels of violent offenses and gun crimes. The Vagabond Inn, shown in Figure 5, was characterized by poor exterior lighting, unkept recreational areas, broken fencing and windows, vandalized property, inconsistent management, and abandoned/unregistered vehicles surrounding or on the property. Recommendations for this business were replacing exterior lights, repairing/replacing fencing, maintaining the landscape (removing weeds), replacing broken windows, creating parking regulations, and establishing a limit on the number of short-term rental agreements.

Figure 5: The Vagabond Inn



The second property, the 7-Eleven, was in close proximity to the Vagabond Inn as it was across the street (see Figure 6 and 7). The issues on this property that contributed to the crime counts were poor exterior lighting, lack of visibility into the business due to advertisement and gaming machines covering the windows, wood fencing blocking natural surveillance, lack of parking and loitering regulation, and areas accessible to everyone behind the store. The recommendations for the 7-Eleven were to replace the exterior lights, provide more visibility into the store by cleaning advertisements and machines, replace wood fencing with chain link fencing,

and post signs to discourage loitering and the use of the property along the back of the property. By mitigating these conditions, the business would increase visibility, improve security, and deter further vandalism or destruction of property.

Figure 6: Outside of the 7-Eleven



Figure 7: Inside of the 7-Eleven



### ***Community Outreach and Education***

The RPD engaged in several community-building efforts to inform residents about the interventions by holding events and making community contact in the target area. To engage in community contact, RPD formed a partnership with the Community Service Agency (CSA), which is a local agency that strives to help residents in need by offering various forms of assistance, such as finding employment opportunities, helping with childcare costs, providing assistance for bills, and providing them with skill-building opportunities. In this partnership, CSA assisted RPD with outreach activities. During outreach, CSA would extend assistance and resources to the community members for any issues that they were facing. Unfortunately, after offering assistance to some community members, CSA drained their funds not long after implementation so the team was unable to continue outreach efforts.

The RPD and research team also attended the National Night Out event and hosted a table to advertise the efforts being made through the grant project. By discussing the goals of the grant with the community, people were made aware of the community's crime problems and that the police department was investing resources to make their communities safer. Local news discussed the event as well as the topics being discussed by the team (see Figure 8).

Figure 8: News Article on RPD Outreach

By [Karlie Drew](#)

Published: Oct. 5, 2021 at 5:39 AM PDT



RENO, Nev. (KOLO) - The [Reno Police Department](#) is hosting an event to create a sense of safety and community. [National Night Out](#) is an event where local police and neighbors come together in a positive environment.

The event is in partnership with several community groups including the Boys and Girls Club of Truckee Meadows, Girl Scouts of the Sierra Nevada, Save Mart, Community Service Agency, Heritage Bank, Amplified Entertainment, and the RPD.

This event at [Miguel Ribera Park](#) on Neil Road will include barbecue, games, activity booths, a bounce house, local vendors, and live music.

The goal for organizers is to promote a better relationship between law enforcement and the community.

"It gives us a chance to let the community know that we are here for them, it tells them we want to be a part of them where they are at," said Adam Blount, Public Information Officer for RPD. "We're not asking them to come anywhere other than their neighborhood. We want them to get to know the police in their neighborhood, as well as getting to know the resources that are available to them."

National Night out begins October 5th, at 2 p.m. and runs until 7 p.m.

For more information and to register to attend, [click here](#).

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To foster community engagement, officers began door-to-door conversations with the community. Flyers were handed out that contained information about the grant project and a QR code that linked to a survey that allowed the community to discuss their concerns in their neighborhood. This strategy had the potential to begin building a relationship between the community and the police, but few residents participated in learning about the project and engaging in the quiz. An issue with the outreach was related to the community's technical capabilities to scan a QR code. Aside from the funding and technical hurdles faced during community outreach efforts, COVID-19 placed additional restrictions on community contact. The

pandemic made it difficult for the community and officers to feel comfortable having conversations.

## **Chapter 4: Analysis and Impact Evaluation**

The Reno Police Department implemented its four intervention strategies—focused deterrence, hot spot policing, CPTED, and problem-oriented policing—from March 1st, 2022 until October 31st, 2022. During the implementation period, aggregate-level crime data were gathered from the target area, comparison area, and buffer zones (i.e., hot spot zones) on a monthly basis. Of these areas, only the target area and buffer zones received the intervention to address violence and gun crimes. Crime data were examined within and between the geographic zones of interest to determine if the intervention had an effect on these types of crime. The following sections describe the measures and statistical analyses and they report the findings from the descriptive and inferential statistics.

### **Measures and Analytic Strategy**

To obtain the data necessary for analyses, arrest data were retrieved from the main police call and incident database called SAP Crystal Reports. The data were split into three time periods for analytic comparisons, which included crime data from before, during, and after the implementation of the intervention. For each time period, there were eight months of crime data. The implementation period was from March 1st, 2022 until October 31st, 2022. The pre-intervention time period was from September 1st, 2021 to February 28th, 2022, and the post-intervention time period was from November 1st, 2022 to April 30th, 2023. Subsequently, the data were geocoded in ArcMap and individual

shapefiles were created representing the arrest data in the areas of interest—target area, comparison area, and buffer zones.

After the data was limited to only the areas needed for the study, crime types were recoded into three classes: other crime (1), gun crime (2), and violent crime (3). Gun crime is defined as a person manufacturing, importing, possessing, or using a “dangerous weapon or silencer; carrying concealed weapon without permit; penalties; issuance of permit to carry concealed weapon”, with exception to people who do not intend to inflict harm, allowed to manufacture firearms, or are implied by the State/Department of Corrections (Justia, para. 1). Gun crimes included in this study were defined as any criminal charge that had the keywords firearm or gun in the narrative or in the crime description. In the State of Nevada, violent crime is defined as criminal activity “[i]nvolving the use or threatened use of force or violence against the person or property of another” (Crime of violence, 2019). For this study, violent crimes included assaults, charges with a deadly weapon, murder/homicide, battery, and other violent crimes. Any crimes not classified as a violent or gun crime were grouped into the “other” category, which included charges such as property and car crimes. The crimes coded into the “other” category were excluded from the analyses since violent crime and gun crime were the focus of the RPD’s intervention strategy.

The analytic strategy involved both descriptive and inferential statistics. The descriptive statistics provide a summation of the dependent variables—violent crime and gun crime—gathered from each time period and area, along with percentage changes in these crimes. The inferential statistics used in the analyses included Bivariate Pearson correlations, independent samples *t*-tests, and paired *t*-tests. Each of these tests helps to



examine whether the intervention had an effect on violence and gun crime in the target area and buffer zones.

## **Analysis of Violent Crime**

### *Descriptive Statistics*

Within the target area, there were a total of 536 instances of individuals being arrested for a violent crime (see Table 13). The highest frequency of violent crime arrests was reported in the pre-intervention and post-intervention time periods, with 200 arrests each. Violent crime in the pre-intervention and post-intervention time periods each accounted for 37.3% of all violent crime arrests that occurred in the target area.

Table 13: Target Area Violent Crime Arrest Frequencies

Time Period	Frequency	Percentage
Pre-Intervention	200	37.3%
Intervention	136	25.4%
Post-Intervention	200	37.3%
Total	536	100%

Within the target area, there were varying percent changes between each time period (see Table 14). From pre-intervention to the intervention period, there was a 32.0% decrease or a difference of 64 violent crime arrests. However, when comparing the intervention period to post-intervention, there was a 47.0% increase or a difference of 64 violent crime arrests. The only time period without a percent change was from pre-intervention to post-intervention, as the same amount of violent crime arrests occurred.

Table 14: Percent Change Violent Crime in Target Area

	Time Period			Percent Change		
	Pre-Int.	Int.	Post-Int.	Pre-Int. vs. Int.	Int. vs. Post-Int.	Pre-Int vs. Post-Int.
Violent	200	136	200	-32.0%	47.0%	0%

The buffer zones were selected for additional interventions and analysis because they had high concentrations of arrests, which was determined through crime mapping. Within the buffer zones, there were a total of 240 violent crime arrests (see Table 15). In reference to the information gathered in Table 13, the buffer zones accounted for 44.8% of all arrests made within the target area. The highest frequency of violent crime arrests was reported in the post-intervention time period at 138, see Table 15, and this comprised 57.5% of all violent crime arrests in the buffer zones.

Table 15: Buffer Zone Violent Crime Arrest Frequencies

Time Period	Frequency	Percentage
Pre-Intervention	63	26.3%
Intervention	39	16.3%
Post-Intervention	138	57.5%
Total	240	100%

According to Table 16, there were varied percent changes when comparing the time periods for the buffer zones' violent crime arrest rates. From pre-intervention to the

intervention time period, there was a 38.1% decrease or a difference of 24 violent crime arrests. As for the intervention period to post-intervention, there was a large increase in violent crime arrests of 253.8% or a difference of 99 arrests. From the pre-intervention to post-intervention time periods, there was a 119% increase or a difference of 75 violent crime arrests.

Table 16: Percent Change in Violent Crime in Buffer Zone

	Time Period			Percent Change		
	Pre-Int.	Int.	Post-Int.	Pre-Int. vs. Int.	Int. vs. Post-Int.	Pre-Int vs. Post-Int.
Violent	63	39	138	-38.1%	253.8%	119%

In the comparison area, which did not receive the intervention, there were a total of 256 arrests made for violent crimes (refer to Table 17). The highest frequency of violent crime was reported during the intervention time period, with 95 arrests, and consisted of 37.1% of all violent crimes that occurred.

Table 17: Comparison Area Violent Crime Arrest Frequencies

Time Period	Frequency	Percentage
Pre-Intervention	93	36.3%
Intervention	95	37.1%
Post-Intervention	68	26.6%
Total	256	100%

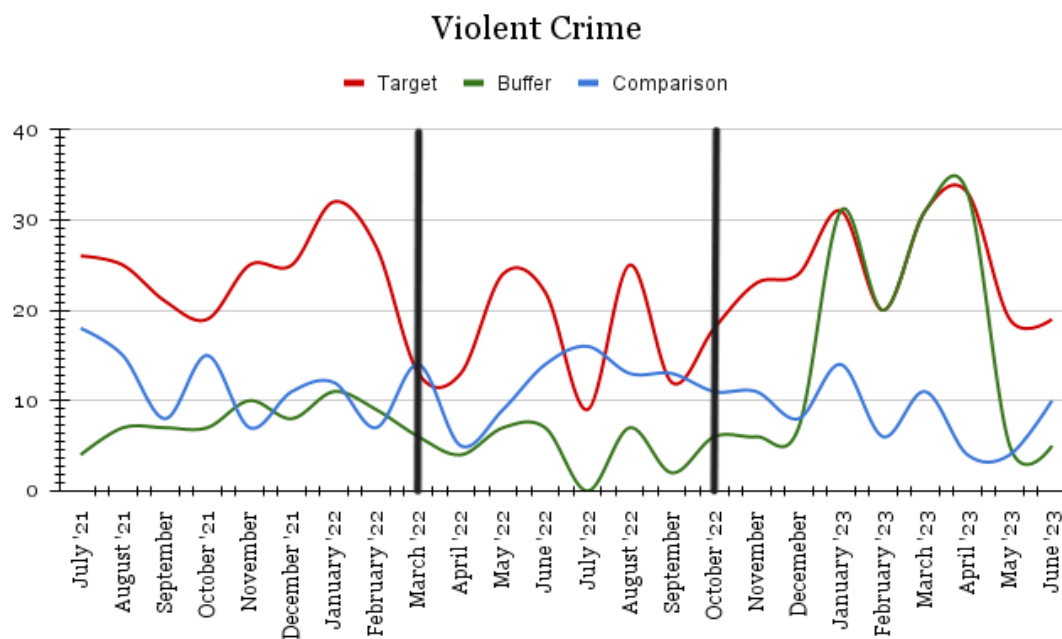
In the comparison area, the percentage of changes in violent crime arrests by time period displayed much variation (refer to Table 18). From pre-intervention to the intervention time period, there was a 2.1% increase or a difference of 2 violent crime arrests. From the intervention time period to post-intervention, there was a decrease in violent crime arrests of 28.4% or 27 arrests. From the pre-intervention to post-intervention, there was a slightly smaller decrease in violent crime arrests of 26.9% or 25 arrests.

Table 18: Percent Change in Violent Crime in Comparison Area

	Time Period			Percent Change		
	Pre-Int.	Int.	Post-Int.	Pre-Int. vs. Int.	Int. vs. Post-Int.	Pre-Int vs. Post-Int.
Violent	93	95	68	2.1%	-28.4%	-26.9%

To visually inspect the increases and decreases in violent crimes, monthly crime counts for violent crimes were graphically represented in Figure 9. In this chart, the target area maintained the highest number of violent crimes for a majority of the months in contrast to the buffer zones and comparison area. From January 2023 until March 2023, the buffer zones accounted for all of the violent crime arrests within the target area. Within the comparison area, there were three months that reported higher arrest rates for violent crime than in the target area. All three months (March, July, and September) were within the intervention time period, marked by the vertical black lines on the graph, in 2022.

Figure 9: Monthly Violent Crime Arrest Frequencies



### *Independent Samples T-test*

An independent samples *t*-test was used to examine whether there was a difference in violent crime arrests between the target area and comparison area pre-intervention. On average, see Table 19, the target area had significantly higher levels of violent crime ( $M= 25$ ,  $SD= 3.89$ ) compared to the comparison area ( $M= 11.63$ ,  $SD= 4.14$ );  $t(8)= 2.01$ ,  $p < .001$ , 95% CI [9.07, 17.68] during the pre-intervention time period.

Table 19: Independent *t*-test for Violent Crime—Pre-Intervention Time Period

	Violent Crime ( <i>df</i> = 14)		
	Mean	St. Deviation	<i>t</i> -Statistic
Target Area	25	3.89	0.49
Comparison Area	11.63	4.14	

An independent samples *t*-test was used to examine whether there was a difference in violent crime arrests between the target area and the comparison area during the intervention time period (see Table 20). There was no significant difference found in violent crime within the target area ( $M=17$ ,  $SD=6.09$ ) and the comparison area ( $M=11.88$ ,  $SD=3.48$ );  $t(8) = -1.24$ ,  $p = 0.06$ , 95% CI [-0.2, 10.45].

Table 20: Independent *t*-test for Violent Crime—Intervention Time Period

	Violent Crime ( <i>df</i> = 14)		
	Mean	St. Deviation	<i>t</i> -Statistic
Target Area	17	6.09	0.03
Comparison Area	11.88	3.48	

An independent samples *t*-test was used to examine whether there was a difference in violent crime between the two areas during the post-intervention time period. On average, see Table 21, the target area post-intervention strategies had significantly higher levels of violent crime ( $M=25$ ,  $SD=5.83$ ) compared to the comparison area ( $M=8.5$ ,  $SD=3.63$ );  $t(8) = 2.43$ ,  $p < .001$ , 95% CI [11.29, 21.71].

Table 21: Independent *t*-test for Violent Crime—Post-Intervention Time Period

	Violent Crime ( <i>df</i> = 14)		
	Mean	St. Deviation	<i>t</i> -Statistic
Target Area	25	5.83	0.07
Comparison Area	8.5	3.63	

### ***Paired t-test***

A paired samples *t*-test was performed to examine within-group variation across the different time periods for the buffer zones, target area, and comparison area. Prior to running the paired *t*-test, a Bonferroni Correction was calculated to adjust my alpha level to account for any issues arising from multiple comparisons. A Bonferroni Correction was used because there is an “increased risk of a type 1 error when making multiple statistical tests”, more specifically multiple *t*-tests (Armstrong, 2014, p. 502). When the risk of this error increases, the tests may conclude there is statistical significance between variables when that is not the case. The typical confidence interval (CI), 0.05, was divided by the tests per area, 3, to establish a new CI of 0.02.

The first set of results, see Table 22, for the paired samples *t*-test summarizes the violent crime results for each geographic area during the pre-intervention and intervention time periods. The mean number of violent crimes in the target area had a non-significant decrease from pre-intervention ( $M= 25$ ,  $SD= 3.89$ ) to the intervention time period in the target area ( $M= 17$ ,  $SD= 6.09$ );  $t(7)= 2.54$ ,  $p= 0.04$ ,  $d= 0.9$ . Without the Bonferroni Correction, the target area test would have reported statistically significant results. As for the level of violent crime arrests in the buffer zones, there was a non-

significant decrease from pre-intervention ( $M= 7.88$ ,  $SD= 2.17$ ) to the intervention time period ( $M= 4.88$ ,  $SD= 2.64$ );  $t(7)= 1.95$ ,  $p= 0.09$ ,  $d= 0.69$ . Within the comparison area, there was a slight increase in violent crime from the pre-intervention ( $M= 11.63$ ,  $SD= 4.14$ ) to the intervention time period ( $M= 11.88$ ,  $SD= 3.48$ );  $t(7)= -0.13$ ,  $p= 0.9$ ,  $d= -0.73$ .

Table 22: Paired  $t$ -test for Violent Crime—Pre-Intervention vs. Intervention

	Pre-Intervention vs. Intervention Time Period					
	Pre-Int. Mean	St. Deviation	Int. Mean	St. Deviation	Effect size	$t$ -Statistic
Target Area	25	3.89	17	6.09	0.9	-0.57
Buffer Zones	7.88	2.17	4.88	2.64	0.69	-0.63
Comparison Area	11.63	4.14	11.88	3.48	-0.05	-0.07

For the second set of results, see Table 23, the paired samples  $t$ -test compares the pre- and post-intervention time periods in each area for violent crime. Violent crime in the target area did not change from the pre-intervention ( $M= 25$ ,  $SD= 3.89$ ) to the post-intervention ( $M= 25$ ,  $SD= 5.83$ );  $t(7)= 0$ ,  $p= 1$ ,  $d= 0$ . In the buffer zones, violent crimes had a non-significant increase from pre-intervention ( $M= 7.88$ ,  $SD= 2.17$ ) to post-intervention ( $M= 17.25$ ,  $SD= 12.9$ );  $t(7)= -2.7$ ,  $p= 0.09$ ,  $d= -0.96$ . In the comparison area, there was a non-significant decrease between the pre-intervention ( $M= 11.63$ ,  $SD= 4.14$ ) and the post-intervention time period ( $M= 8.5$ ,  $SD= 3.63$ );  $t(7)= 1.41$ ,  $p= 0.2$ ,  $d= 0.5$ .



Table 23: Paired *t*-test for Violent Crime—Pre-Intervention vs. Post-Intervention

	Pre-Intervention vs. Post-Intervention Time Period					
	Pre-Int. Mean	St. Deviation	Post-Int. Mean	St. Deviation	Effect size	<i>t</i> -Statistic
Target Area	25	3.89	25	5.83	0	-0.32
Buffer Zones	7.88	2.17	17.25	12.9	-0.96	0.09
Comparison Area	11.63	4.14	8.5	3.63	0.5	-0.3

For the third set of results, see Table 24, the paired samples *t*-test compares violent crime during the intervention with the post-intervention time period. In the target area, there was a statistically significant difference in violent crime, with an increase from the intervention (M= 17, SD= 6.09) to the post-intervention time period (M= 25, SD= 5.83);  $t(7) = -1.12$ ,  $p = 0.02$ ,  $d = -1.12$ . Within the buffer zones, there was a non-significant increase in arrests for violent crime from the intervention (M= 4.88, SD= 2.64) to the post-intervention (M= 17.25, SD= 12.9);  $t(7) = -2.06$ ,  $p = 0.08$ ,  $d = -0.73$ . The comparison area had a slight increase that was non-significant for violent crime arrests from the intervention (M= 11.88, SD= 3.48) to the post-intervention time period (M= 8.5, SD= 3.63);  $t(7) = 1.77$ ,  $p = 0.12$ ,  $d = 0.63$ .

Table 24: Paired *t*-test for Violent Crime—Intervention vs. Post-Intervention

	Intervention vs. Post-Intervention Time Period					
	Int. Mean	St. Deviation	Post-Int. Mean	St. Deviation	Effect size	<i>t</i> -Statistic
Target Area	17	6.09	25	5.83	-1.12	0.28
Buffer Zones	4.88	2.64	17.25	12.9	-0.73	0.08
Comparison Area	11.88	3.48	8.5	3.63	0.63	-0.15

### ***Bivariate Pearson Correlation***

A Pearson correlation coefficient, refer to Table 25, was computed to assess the linear relationship between violent crime arrests reported within the target and comparison area for each time period. There was a significant, negative correlation between the pre-intervention time period and the areas in which the arrests occurred,  $r(15) = -.872^{**}$ ,  $p < .001$ . A second Pearson correlation coefficient was computed to assess the linear relationship in the same areas, but between the violent crime arrest rates that occurred during the intervention time period. There was a moderate, negative correlation between the variables,  $r(15) = -0.48$ ,  $p = 0.06$ . The last Pearson correlation coefficient for violent crime was computed to assess the linear relationship between the violent crime arrest rates that occurred post-intervention in the target and comparison areas. There was a significant, negative correlation between the two variables,  $r(15) = -.876^{**}$ ,  $p < .001$ .

Table 25: Violent Crime Bivariate Correlation

		Area	Pre-Int.	Int.	Post-Int.
Area	Pearson Correlation	1	-.872**	-0.483	-.876**
	Sig. (2-tailed)		<.001	0.058	<.001
Pre-Intervention	Pearson Correlation	-.872**	1	0.264	.693**
	Sig. (2-tailed)	<.001		0.323	0.003
Intervention	Pearson Correlation	-0.483	0.264	1	0.493
	Sig. (2-tailed)	0.058	0.323		0.052
Post-Intervention	Pearson Correlation	-.876**	.693**	0.493	1
	Sig. (2-tailed)	<.001	0.003	0.052	

## Analysis of Gun Crime

### *Descriptive Statistics*

According to Table 26, there were 47-gun crimes that occurred across different time periods. The highest frequency of gun crime occurred in the post-intervention time period, with 21 arrests, which accounted for 44.7% of all gun crime arrests in the target area.

Table 26: Target Area Gun Crime Arrest Frequencies

Time Period	Frequency	Percentage
Pre-Intervention	13	27.65%
Intervention	13	27.65%
Post-Intervention	21	44.7%
Total	47	100%

In the target area, the percent changes in gun crime arrests varied when comparing time periods (see Table 27). From pre-intervention to during the intervention time period, there was no difference in arrest counts. The intervention period to post-intervention and pre-intervention to post-intervention displayed the same increase of 61.5% or 8 violent gun arrests.

Table 27: Percent Change in Gun Crime in Target Area

	Time Period			Percent Change		
	Pre-Int.	Int.	Post-Int.	Pre-Int. vs. Int.	Int. vs. Post-Int.	Pre-Int vs. Post-Int.
Gun	13	13	21	0%	61.5%	61.5%

A total of 21-gun crime arrests occurred in the buffer zones, refer to Table 28. These gun crimes account for 44.7% of the 47-gun crime arrests made in the target area. The highest frequency of gun crime arrests occurred in the post-intervention time period, with 16 occurrences.

Table 28: Buffer Zone Gun Crime Arrest Frequencies

Time Period	Frequency	Percentage
Pre-Intervention	1	4.8%
Intervention	4	19%
Post-Intervention	16	76.2%
Total	21	100%

In the buffer zones, the percent changes were considerably large between each of the time periods for gun crimes (see Table 29). Between pre-intervention and during the

intervention time period, there was a 300% increase in gun crime or an increase of 3 arrests. From the intervention to post-intervention, there was also a 300% increase in gun crime arrests or an increase of 12 arrests. A larger increase of 1,500%, or 15-gun crime arrests, was present between the pre-intervention and post-intervention time periods.

Table 29: Percent Change in Gun Crime in Buffer Zone

	Time Period			Percent Change		
	Pre-Int.	Int.	Post-Int.	Pre-Int. vs. Int.	Int. vs. Post-Int.	Pre-Int vs. Post-Int.
Gun	1	4	16	300%	300%	1,500%

The comparison area reported the most gun crime arrests, at 32, in relation to the target area and buffer zones (see Table 30). Within the comparison area, there was an increase in gun crime arrests as the time periods progressed. Half of the arrests occurred during the post-intervention time period, with 16 arrests.

Table 30: Comparison Area Gun Crime Arrest Frequencies

Time Period	Frequency	Percentage
Pre-Intervention	6	18.7%
Intervention	10	31.3%
Post-Intervention	16	50%
Total	32	100%

The gun crime arrests that occurred in the comparison area varied between time periods (see Table 31). From the pre-intervention to the intervention time period, there was an increase of 66.6% or 4 gun crime arrests. For the percent change from the

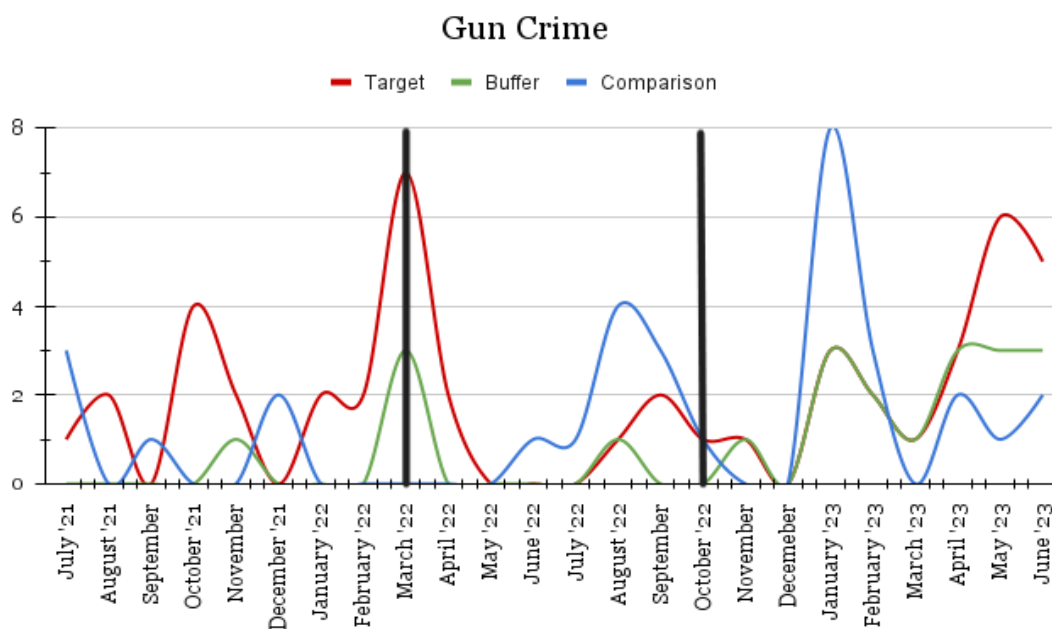
intervention period to post-intervention, there was a smaller increase in gun crime arrests by 60.0% or 6 arrests. Between the pre-intervention to post-intervention, there was a large increase in gun crime arrests at 166.7% or 10 arrests.

Table 31: Percent Change in Gun Crime in Comparison Area

	Time Period			Percent Change		
	Pre-Int.	Int.	Post-Int.	Pre-Int. vs. Int.	Int. vs. Post-Int.	Pre-Int vs. Post-Int.
Gun	6	10	16	66.6%	60.0%	166.7%

To visually inspect the increases and decreases in gun crimes, monthly crime counts for gun crimes were graphically represented in Figure 10. The intervention time period is marked using the black, vertical lines depicted on the graph. The gun crimes reported in this chart were quite sporadic in each area. In the target area, the highest number of gun crimes occurred in August 2021, October 2021, January through March 2022, and April through June 2023. As for the buffer zones, the aggregate level arrest data only matched that of the target area in April 2023. Within the comparison area, there were nine months that reported the highest arrest counts for gun crime compared to the target area. Five of these occurred prior to intervention in July 2021, September 2021, December 2021, January 2023, and February 2023. The remaining months were during the intervention from June through September 2022.

Figure 10: Monthly Gun Crime Arrest Frequencies



### *Independent Samples t-test*

An independent samples *t*-test was used to examine whether there was a difference in gun crime arrests between the target area and the comparison for all time periods. According to Table 32, there was not a significant difference during the pre-intervention time period between the target area ( $M= 1.63$ ,  $SD= 1.3$ ) and comparison area, ( $M= 0.75$ ,  $SD= 1.17$ );  $t(8)= 0.62$ ,  $p= 0.18$ , 95% CI  $[-0.45, 2.2]$ .

Table 32: Independent *t*-test for Gun Crime—Pre-Intervention Time Period

	Violent Crime ( $df = 14$ )		
	Mean	St. Deviation	<i>t</i> -Statistic
Target Area	1.63	1.3	0.93
Comparison Area	0.75	1.17	

An independent samples *t*-test was used to examine whether there was a difference in gun crime during the intervention time period between the target area and the comparison area (see Table 33). No significant difference was found between the gun crime arrests during the intervention time period within the target area ( $M= 1.63$ ,  $SD= 2.33$ ) and comparison area ( $M= 1.25$ ,  $SD= 1.49$ ),  $t(8)= 0.98$ ,  $p= 0.71$ , 95%  $CI[-1.75, 2.5]$ .

Table 33: Independent *t*-test for Gun Crime—Intervention Time Period

	Violent Crime ( $df = 14$ )		
	Mean	St. Deviation	<i>t</i> -Statistic
Target Area	1.63	2.33	0.55
Comparison Area	1.25	1.49	

An independent samples *t*-test was used to examine whether there was a difference in gun crime arrests during the post-intervention time period between the target area and the comparison area (see Table 34). No significant difference was found between the gun crime arrests during the intervention time period within the target area ( $M= 2.63$ ,  $SD= 2.07$ ) and comparison area ( $M= 2$ ,  $SD= 2.67$ ),  $t(8)= 1.19$ ,  $p= 0.61$ , 95%  $CI[-1.94, 3.19]$ .

Table 34: Independent *t*-test for Gun Crime—Post-Intervention Time Period

	Violent Crime ( $df = 14$ )		
	Mean	St. Deviation	<i>t</i> -Statistic
Target Area	2.63	2.07	0.88
Comparison Area	2	2.67	



### *Paired t-test*

For the fourth set of results, see Table 35, the paired samples *t*-test summarizes the gun crime arrests for each geographic area during the pre-intervention and intervention time periods. For the gun crime arrests within the target area, there was no difference between the pre-intervention (M= 1.63, SD= 1.3) and intervention means (M= 1.63, SD= 2.33);  $t(7)= 0$ ,  $p= 1$ ,  $d= 0$ . The gun crime arrests in the buffer zones revealed a slight increase from pre-intervention (M= 0.13, SD= 0.35) to intervention means, but it was not significant (M= 0.5, SD= 1.07);  $t(7)= -0.89$ ,  $p= 0.4$ ,  $d= -0.32$ . Within the comparison area, there was a slight increase in gun crime arrests between the pre-intervention (M= 0.75, SD= 1.17) and intervention time periods, but it was not significant (M= 1.25, SD= 1.49);  $t(7)= -0.76$ ,  $p= 0.47$ ,  $d= -0.27$ .

Table 35: Paired *t*-test for Gun Crime—Pre-Intervention vs. Intervention

	Pre- vs. During Intervention Time Period					
	Pre-Int. Mean	St. Deviation	Int. Mean	St. Deviation	Effect size	<i>t</i> -Statistic
Target Area	1.63	1.3	1.63	2.33	0	-0.2
Buffer Zones	0.13	0.35	0.5	1.07	-0.32	-0.19
Comparison Area	0.75	1.17	1.25	1.49	-0.27	0.04

For the fifth set of results, refer to Table 36, the paired samples *t*-test compares the pre- and post-intervention time periods in each area for gun crime. Gun crimes within the target area had a non-significant increase from pre-intervention (M= 1.63, SD= 1.3) to post-intervention (M= 2.63, SD= 2.07);  $t(7)= -1.13$ ,  $p= 0.3$ ,  $d= -0.4$ . In the buffer zones, there was a significant difference in gun crime arrest, with a large increase from

pre-intervention ( $M= 0.13$ ,  $SD= 0.35$ ) to post-intervention ( $M= 2$ ,  $SD= 1.2$ );  $t(7)= -3.91$ ,  $p= 0.01$ ,  $d= -1.38$ . In the gun crime arrests in the comparison area, there was a slight increase from the pre-intervention ( $M= 0.75$ ,  $SD= 1.17$ ) to the post-intervention in the target area that was not significant ( $M= 2$ ,  $SD= 2.67$ );  $t(7)= -1.21$ ,  $p= 0.27$ ,  $d= -0.43$ .

Table 36: Paired  $t$ -test for Gun Crime—Pre-Intervention vs. Post-Intervention

	Pre- vs. Post-Intervention Time Period					
	Pre-Int. Mean	St. Deviation	Post-Int. Mean	St. Deviation	Effect size	$t$ -Statistic
Target Area	1.63	1.3	2.63	2.07	-0.4	-0.06
Buffer Zones	0.13	0.35	2	1.2	-1.39	-0.34
Comparison Area	0.75	1.17	2	2.67	-0.43	0

The final set of results, refer to Table 37, for the paired samples  $t$ -test compares gun crime during the intervention with the post-intervention time period. For the gun crime arrests within the target area, there was a non-significant increase from the intervention ( $M= 1.63$ ,  $SD= 2.33$ ) to the post-intervention time period ( $M= 2.63$ ,  $SD= 2.07$ );  $t(7)= -0.29$ ,  $p= 0.44$ ,  $d= -0.29$ . The gun crime arrest in the buffer zones had a non-significant increase from the intervention time period ( $M= 0.5$ ,  $SD= 1.07$ ) to the post-intervention ( $M= 2$ ,  $SD= 1.2$ );  $t(7)= -2.4$ ,  $p= 0.05$ ,  $d= -0.85$ . Without the Bonferroni Correction, the buffer zones test would have reported statistically significant results. The gun crime arrest within the comparison area had a non-significant increase from the intervention time period ( $M= 1.25$ ,  $SD= 1.49$ ) to the post-intervention time period in the comparison area ( $M= 2$ ,  $SD= 2.67$ );  $t(7)= -0.66$ ,  $p= 0.53$ ,  $d= -0.23$ .

Table 37: Paired *t*-test for Gun Crime—Intervention vs. Post-Intervention

	During vs. Post-Intervention Time Period					
	Int. Mean	St. Deviation	Post-Int. Mean	St. Deviation	Effect size	<i>t</i> -Statistic
Target Area	1.63	2.33	2.63	2.07	-0.29	-0.21
Buffer Zones	0.5	1.07	2	1.2	-0.85	-0.22
Comparison Area	1.25	1.49	2	2.67	-0.23	-0.14

### ***Bivariate Pearson Correlation***

A Pearson correlation coefficient, refer to Table 38, was computed to assess the linear relationship between gun crime arrests reported within the target and comparison area for each time period. There was a weak, negative correlation between the pre-intervention time period and the areas in which the arrests occurred,  $r(15) = -0.35$ ,  $p = 0.18$ . A second Pearson correlation coefficient was computed to assess the linear relationship in the same areas, but between the gun crime arrest rates that occurred during the intervention time period. There was a weak, positive correlation between the variables,  $r(15) = -0.1$ ,  $p = 0.71$ . The last Pearson correlation coefficient for gun crime was computed to assess the linear relationship between the gun crime arrest rates that occurred post-intervention in the target and comparison areas. There was a weak, negative correlation between the two variables,  $r(15) = -0.14$ ,  $p = 0.61$ .

Table 38: Gun Crime Bivariate Correlation

		Area	Pre-Int.	Int.	Post-Int.
Area	Pearson Correlation	1	-0.354	-0.102	-0.139
	Sig. (2-tailed)		0.179	0.707	0.609
Pre-Intervention	Pearson Correlation	-0.354	1	-0.064	0.024
	Sig. (2-tailed)	0.179		0.815	0.93
Intervention	Pearson Correlation	-0.102	-0.064	1	-0.154
	Sig. (2-tailed)	0.707	0.815		0.57
Post-Intervention	Pearson Correlation	-0.139	0.024	-0.154	1
	Sig. (2-tailed)	0.609	0.93	0.57	

## Chapter 5: Discussion and Conclusion

After the RPD's intervention, the target and comparison areas continued to experience instances of gun violence and violent crime. In fact, at the beginning of 2024, an altercation broke out between two individuals in the target area, which resulted in a fatal shooting that took the life of a 39-year-old man who had two young children and a family (Meehan, 2024). Despite the ongoing challenges related to gun violence and violent crime, the RPD's experience implementing their intervention strategy provides results and helpful lessons for other police departments looking to address gun crime and violence through their own unique intervention, especially as it relates to focused deterrence, hot spot policing, CPTED, and community outreach strategies.

The current study provides partial support that the target area experienced a decrease in violent crime during the intervention period. At the time of the intervention, there was an increase in the presence of law enforcement through focused deterrence, hot spot policing, CPTED, and community policing outreach efforts. Based on prior research, deploying more law enforcement in the target area through focused deterrence, hot spot policing, and community policing may decrease violent crime in a target area (Braga et al., 2018; Braga et al., 2019; Niyazi et al., 2022). Additionally, research on CPTED has demonstrated that it can reduce crime, even when minor alterations (such as street lighting), are made to the environment (Welsh et al., 2022). Taken together, a multiprong crime-reduction strategy that combines focused deterrence, hot spot policing, CPTED,

and community outreach has the capacity to decrease crime and enhance police-community relations.

### **Challenges/Limitations of Study**

Despite the RPD's efforts, there was limited empirical support to suggest the intervention had the desired effect on gun crime and violence in the target area and buffer zones. There are a number of factors that may have been responsible. First, COVID-19 changed the timeframe for the start of the grant. The 18-month delay in the grant resulted in the target and comparison areas becoming different from one another in terms of violent, gun, and overall crime counts. Unfortunately, another comparison location could not be identified in Reno, NV, for a true quasi-experimental design. Given such differences in the geographic areas, the interpretation of the paired *t*-test results should take this into account.

Second, COVID-19 had an impact on the implementation of the different interventions. This likely affected gun crimes and other violent crimes. The implementation period was from March 2022 through October 2022, which overlapped with the national lockdown as a result of the COVID-19 pandemic. The pandemic impacted many aspects of the implementation that included conducting outreach and building relationships with community members. The public health restrictions of social distancing also presented major obstacles in communication and collaboration with the community and other social agencies. Prior research has assessed the impact of these restrictions on community outreach for police agencies, concluding that many initiatives across the United States needed to be canceled or modified to follow the social distancing

guidelines put in place (Jennings & Perez, 2020; NPF, 2020). The community outreach component of this project was significantly limited in how, when, and where ~~our~~ officers and the local Community Services Agency (CSA) could comfortably speak with community members without sacrificing everyone's safety. Considering the prevalence and recent nature of this issue, it would be essential (and yet probably difficult to achieve) to prepare for such issues as a contingency in case a lockdown or pandemic occurs again.

Third, the community outreach intervention strategy was not only impacted by the COVID-19 pandemic but also by CSA's mismanagement of their funds. For some reason, they overspent money on paying residents' rents and failed to appropriate monies for other grant requirements. This funding issue required the project's outreach component to be discontinued. Similar limitations have been reported in previous research. Groenewald and Peake (2004) discussed limitations discovered in various studies when implementing community-based policing, including insufficient planning/coordination, institutional resistance, inadequate funding, and inadequate evaluation of progress. To avoid encountering such problems in future research, it is vital for researchers and practitioners to assess their resources and devise a suitable sustainability plan.

Fourth, the RPD's implementation of the intervention was not always consistent with the action plan—the evidence-based plan for addressing gun crime and violence. For example, officers routinely conducted patrols outside the designated target area; there was an unequal distribution of patrols/officers in one buffer zone; the time spent in the target area and buffer zones varied based on the officer; the RPD's legal department

advised them to discontinue focused deterrence; officers did not follow up on CPTED recommendations to make sure they were implemented; and community outreach was minimal from the RPD and largely relied on CSA. Such inconsistencies between the action plan and the RPD's implementation of the intervention may be responsible for the nominal effects. In previous research, police agencies have noted issues regarding a lack of consistency in intervention efforts, proper training of officers to correctly implement strategy, inconsistent applications of strategies, and funding issues (Hobson et al, 2021). Agencies should devise strategies to avoid such limitations in the future.

Fifth, focused deterrence was not implemented for the duration of the intervention period because of community contempt for the practice and legal worries. Focused deterrence requires officers to increase their presence in a neighborhood, which “might aggravate long-standing grievances of community residents ... and more generally create tension and suspicion between the police and the residents” (Durlauf & Nagin, 2011, p. 41). Prior to implementing focused deterrence, it may be beneficial to build police legitimacy through community outreach and procedural justice practices. Procedural justice principles are based on treating every community member, regardless of their involvement in criminal behavior, with respect, fairness, and dignity (Braga et al., 2018). Beginning to incorporate this practice consistently in law enforcement can start the process of building a positive and mutually beneficial relationship between the police and the community. This relationship has the potential to minimize the communities' negative perceptions of police intervention, such as focused deterrence.



Sixth, there were many changes in leadership throughout the duration of the grant that impacted the operational side of the grant and the implementation of the intervention. The original Lieutenant/principal investigator (PI) on the grant retired six months after RPD was awarded the grant. Subsequently, the command staff in charge of the grant changed multiple times, along with numerous sergeants. The inconsistencies in leadership meant new individuals assigned to the grant were being poorly briefed on the project; new ideas were being proposed without much discussion project components were not fully understood by those in charge or those responsible for their implementation, and delays in the implementation of the intervention became commonplace. Maintaining a consistent leadership role is pertinent in any research because “organizational change does not occur from the ‘outside-in’, the ‘bottom-up’, or from the ‘middle-out’, but from the ‘top-down’” (Santos & Santos, 2012, p. 353). The consistent participation and engagement from the agency’s command staff should promoted a widespread organizational change to occur. In the future, it is important to communicate the importance of consistent leadership throughout a project to ensure that there are limited opportunities for the misunderstanding of project components and delays in intervention implementation.

Seventh, given the flux in command staff overseeing the grant, there may have been a lack of buy-in from patrol officers about the overarching grant goals. Pelfrey (2004), for example, found an aversion to community policing practices by the officers as they saw little merit in their duties. Outlining the benefits to both the officers and the community can be a way of avoiding such misconceptions. A study regarding body-worn

cameras (BWCs), showed the officers expressed daily concerns and worries prior to the use of the cameras because they believed people would try to use the footage against them. After more experience using the cameras, however, the officers had more buy-in and support for the BWC participation (Snyder et al., 2019). Instances such as these emphasize the importance of promoting support from the officers who are responsible for using or implementing a strategy prior to implementation to ensure they understand the advancements and studies are to benefit everyone, not as a way of making them more vulnerable. For future research, measuring the difference in opinions regarding this issue from pre-intervention to post-intervention would also be beneficial.

Eighth, the RPD's CPTED recommendations were not always implemented by the management or owners of the Vagabond Inn and the 7-Eleven. Upon arriving at locations found to report the highest levels of crime in the area, aside from apartment complexes and casinos, the officers would discuss changes to be made to the property to lower the risk of crime. These changes were often regarding low visibility inside or outside the store, broken/damaged property, and little to no security measures. Each recommendation was in accordance with the Reno Code Enforcement Division property maintenance and property nuisances. To prompt change, the officers stated they would follow up with the business to make sure the changes were made and if they did not occur, citations would be administered. However, this did not occur. As previous research illustrates, it would have been beneficial to use code enforcement authorities in the CPTED process to hold business owners accountable for making the changes and revitalizing the areas of focus (Crowe & Fennelly, 2013). In the future, police should

establish a partnership with the Code Enforcement Division in their city to ensure that management and owners comply.

### **Conclusion**

The SPI Grant attempted to reduce the gun violence and violent crime rates in Reno to make the community safer. This project was designed to apply four intervention strategies in the target area, which displayed high gun violence and violent crime incidents. The focused deterrence and hot spot policing strategy were designed to influence the community's behavior through the randomized presence of law enforcement in specific areas to discourage criminal activity. The Crime Prevention Through Environmental Design (CPTED) strategy was implemented to influence criminal behavior attracted to particular areas due to environmental factors. The last intervention strategy, community outreach, was developed to strengthen community relations between law enforcement and the community by offering needed resources and building a much-needed rapport.

Even though the RPD's intervention had a limited effect on gun crime and violence, other policing agencies looking to implement similar strategies should not be discouraged. There is a robust literature that support interventions that combine focused deterrence, hot spots policing, CPTED, and community outreach. First, focused deterrence research has proven that it can decrease violent and gun crimes within the targeted area (Fox et al., 2015; Tita et al., 2003). Second, hot spot policing has largely been successful at decreasing overall crime rates and police calls for service, with the

presence of a diffusion of crime control benefits (Braga et al, 2019; Sherman & Weisburd, 1995). Third, analyzing and manipulating the environmental factors attracting criminal activity through CPTED diminishes the likelihood of crime occurring at specific locations (Cozens & Love, 2015). Finally, community outreach efforts help the community have the capacity to improve police-community relations and affect serious crime rates (Connell et al., 2008). Adopting numerous strategies, such as those used in this project, allows researchers to address the wide range of contributing factors to criminal activity (Development Services Group, Inc., 2023). In conclusion, police agencies should continue to be optimistic about the effectiveness of focused deterrence, hot spots policing, CPTED, and community outreach interventions but must be cognizant of the potential challenges and do their best to prepare for them.

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