

EVALUATING PHILADELPHIA'S GUN COURT:
IMPLICATIONS FOR CRIME REDUCTION AND SPECIALIZED JURISPRUDENCE

By

MATTHEW ROBIN NOBLES

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To my family, for sacrificing to provide me with opportunities to think, change, and grow.

To Tasha, for reminding me always that dreams do come true.

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EVALUATING PHILADELPHIA'S GUN COURT:
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By

Matthew Robin Nobles
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Chair: Lonn Lanza-Kaduce
Cochair: Alex R. Piquero
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We evaluated the City of Philadelphia's specialized problem-solving gun court. The gun court program began in 2005, and features mandatory treatment elements in addition to enhanced processing celerity and intensive supervision protocols, with the ultimate goal of impacting aggregate levels of gun violence in Philadelphia. Although gun policy research from criminology and other fields has examined a variety of gun violence interventions with different levels of success, to date there are no peer-reviewed evaluations of a gun court program in the literature. Meanwhile, gun courts continue their expansion into jurisdictions of all sizes with varying levels of social problems, from Providence, Rhode Island (home to the nation's first gun court in 1994) to relatively newer programs including New York City (2003) and Boston (2006). This study first describes Philadelphia's Gun Court program, reviews deterrence theory broadly implicated in anti-crime programs, and recounts what works and what's promising in anti-gun interventions. It then presents an interrupted time series analysis to determine whether there are statistically significant treatment effects observed in Philadelphia after the intervention. The analysis includes a comparison site (Pittsburgh) and non-gun crime series while implementing the proper controls for autocorrelation, seasonality, and non-stationarity. Results indicate that there are no statistically significant declines in the aggregate rates of four gun-related crime

categories in Philadelphia in the 24 months after the introduction of the court program, although this finding does not necessarily preclude individual-level effects for offenders processed through gun court. Implications for gun policy and problem-solving courts are discussed.

CHAPTER 1 INTRODUCTION

In 2004, Philadelphia's homicide rate per 100,000 residents was the highest among the 10 largest cities in America, and many, including the city's Police Commissioner, characterize the pervasiveness of violence as fundamentally "a gun problem" (Moore, 2005). Pennsylvania has experienced a distinct increase in violent crimes since 2003, with an increase in violent incidents over 12%. Comparatively, the violent crime incidents nationwide have fallen 0.4% from 2002 to 2006. Moreover, property crimes in the state have increased slightly less than three percent over the same period, while the national trend has been a 4.5% drop.

In the context of national crime trends spanning several decades, the magnitude of Philadelphia's violence problem becomes evident. Figures B-1 through B-5 illustrate UCR violent crime from 1960-2004 in Philadelphia, Los Angeles, New York City, Chicago, and Miami, respectively. While other cities show steep declines in violence through the 1990s, Philadelphia's trend is predominately level with a modestly positive slope, indicating that violence there has not abated in step with other major urban centers and appears to be slightly increasing over time. These trends indicate that Philadelphia has, somewhat against the odds, increased both the incidence and the severity of its crime problem in recent years while similar rates have declined nationwide.

To address the concentration of illegal guns and the climbing rates of gun violence, Philadelphia instituted a specialized gun court program to process only non-violent firearms offenders. Essentially, individuals who were caught in possession of an unlicensed firearm but who did not stand accused of using that weapon in the commission of another, more serious crime were eligible for gun court. This distinction between a population of offenders considered to be at-risk for future violence (as compared to those known to be violent, evidenced by pending

charges for robbery, assault, or homicide) is critical: as originally conceived, the gun court model attempts to prevent firearm violence rather than simply to punish it. The purpose of this study is to describe the foundational elements of the Philadelphia Gun Court, examine potential theoretical mechanisms for its efficacy, and finally to gauge the relative impact of the Gun Court on aggregate rates of gun violence in Philadelphia.

Philadelphia's Gun Court

The Philadelphia Court opened to some publicity and to lofty expectations in January 2005. Local and national media covered the debut, which seemed to accompany mixed feelings of optimism, cynicism, and desperation on the part of local officials. A quotation by Philadelphia Police Commissioner Sylvester M. Johnson in the *Philadelphia Inquirer* was typical: “If the gun court takes the issue of guns seriously, I don’t see how it can’t help. Eighty percent of our homicides are by handguns. Anything we do will help, because nothing else has” (Clark, 2005a). Philadelphia District Attorney Lynne Abraham, meanwhile, underscored the program’s prevention message in a feature for the *Associated Press*: “We are trying to prevent them from ever offending again. By focusing on intense tracking and tracing and supervision, we might dissuade this person from thinking it is okay to carry a gun” (Caruso, 2005a, 2005b). In retrospect, the expectations for the program may have been somewhat disjointed from the reality of the gun violence problem in the Philadelphia area. True, the various provisions of the program seemed to orient the Court correctly in light of the success of other specialized court models, including drug courts and mental health courts (see Berman & Gulick, 2003; Goldkamp et al., 2001). However, what the program was attempting in 2005 had never before been attempted with adult offenders in a city with such a pervasive gun violence problem. A comprehensive approach was necessary.

The Philadelphia Gun Court program involves directly reducing the number of illegal guns in the city (supply-side intervention) while simultaneously addressing gun safety, education, and violence prevention (demand-side intervention). Both of these approaches are premised on a theoretical model that attacks the problem in several different ways, including a strong emphasis on both general and specific deterrence. The resulting program attempts to be simultaneously oriented toward rehabilitation and incapacitation. This dissertation reviews the extant literature on gun courts, discusses the three-phase Philadelphia system, and provides a preliminary analysis of the trends for key violent and non-violent crimes involving firearms during its first two years of operation.

Philadelphia's Gun Court has some program features that mirror gun courts in other jurisdictions. Chief among these features is the objective and intent of the program itself: a reduction in gun violence. On the Philadelphia Adult Probation and Parole Department website, a Gun Court fact sheet (2005) reads:

The Philadelphia Gun Court (Gun Court) is constituted in response to the increasing number of weapons offenses being committed in Philadelphia and the inherent danger to the community when weapons are possessed on the streets illegally. Gun Court will focus on educating the defendant about gun safety and provide the infrastructure for direct and immediate response to defendants who violate Court Orders and who are recidivists.

By consolidating all gun cases where the most serious charge is a Violation of Uniform Firearms Act (VUFA) onto one Common Pleas Court docket, the assets needed for a prompt adjudication of these types of offenses will be consolidated and the coordination of the efforts by numerous agencies and non-profit organizations in reducing the number of illegal guns on the streets of Philadelphia will be improved.

Thus, the Gun Court program should be evaluated with respect to these conditional parameters: first, the degree to which it educates defendants about gun safety; second, the degree to which it provides infrastructure to punish Court Order violators and recidivists; third, the degree to which prompt adjudication facilitates illegal gun seizures. Theoretically, if Gun Court accomplishes its stated mission, then the observed rate of the outcome of interest, namely the overall levels of gun

crime in Philadelphia, should show a statistically significant decline after the introduction of the intervention.

In important legal process-oriented ways, Gun Court is different from Philadelphia's Court of Common Pleas. Among the most salient differences is the time to disposition. Under the traditional system, defendants processed through the Court of Common Pleas are required to participate in a separate scheduling conference after the initial pre-trial conference in order to have a trial type and court date set. In Gun Court, the trial type and court date are decided at the pre-trial conference, eliminating one step and several weeks from the trial life-cycle. Consequently, Gun Court has an estimated 120 days from arraignment to disposition, compared to 180 days for Common Pleas (Philadelphia Adult Probation and Parole Department, 2005). The reduced processing time is considered one of the measures for "fast tracking" defendants. In addition to saving system costs overall, the reduction in time from arrest to trial indicates greater celerity in the legal process.

Gun Court also differs from Philadelphia's Court of Common Pleas in terms of the conditions for bail, probation, and parole. First, case manager contacts for Gun Court defendants are increased to a weekly schedule at minimum. This exceeds the requirement for Common Pleas defendants. Second, Gun Court defendants are required to complete a gun education program, which may include signing a firearm surrender agreement before the Gun Court judge, submitting to increased drug surveillance, and being subjected to electronic monitoring. For Gun Court offenders sentenced to probation or released on parole, the conditions and requirements exceed those of the Court of Common Pleas. In addition to all CP conditions, Gun Court defendants must (a) maintain weekly contact with their probation/parole officer, (b) be subject to home visits through target patrol in cooperation with the Philadelphia Police Department, (c)

continue their mandatory firearms violence education program, (d) submit to increased random drug detection, (e) complete conflict resolution/anger management counseling, (f) complete 20-50 hours of community service, and (g) attend status hearings before their sentencing judge to review compliance with all mandatory conditions (Philadelphia Adult Probation and Parole Department, 2005). In effect, the conditions of probation/parole for Gun Court offenders represent an intensive supervision program (ISP), which has implications for measuring recidivism success rates in the post-conviction period (Clear & Hardyman, 1990; Petersilia & Turner, 1990; Petersilia & Turner, 1993). The intention here is for Gun Court to improve upon standard probation/parole conditions by more consistently addressing several conditions that could precipitate involvement in gun violence, including substance abuse and unemployment.

Though not explicitly stated by local officials, the underlying theory and mechanisms associated with the Philadelphia Gun Court provide important lessons about criminal justice interventions and anti-gun programs specifically. As more communities push to develop specialized gun courts of their own, the relative merits and costs of these interventions requires careful consideration. This study addresses a sizable gap in the empirical literature in several ways. First, the critical elements of criminological theory affecting the development and efficacy of gun court models are outlined. This review includes elements of deterrence theory as well as a discussion of the educative effects of courts and the legal system in general. Second, it characterizes various approaches in criminal justice interventions related to gun violence, identifying “what works” with respect to guns. It also elaborates on the development of specialized courts that focus on a variety of social issues, ranging from substance abuse to domestic violence, and draws attention to the distinctive features of several gun court models in existence in the United States and abroad. Third, it introduces qualitative data from judges and

court staff regarding the context and implementation of the Court's introduction in 2005.

Finally, it presents quantitative analysis demonstrating the nature and magnitude of impact that the Court had on gun violence in the Philadelphia area during its first two years of operation.

CHAPTER 2 CRIMINOLOGICAL THEORY

Though not an explicit test of criminological theory, this study is set against a theoretical backdrop that involves the principle of deterrence. Deterrence, defined as the use of negative consequences to discourage criminal behavior, can be operationalized and measured at both the individual and the aggregate unit of analysis. At the individual level, deterrence represents the choice to avoid crime altogether or to desist from crime after being caught and punished. In the aggregate, deterrence may be inferred from decreased rates of crime over time that correspond to identified changes in legislation, policy, or enforcement.

Like most anti-crime interventions, Philadelphia's Gun Court program operates theoretically through both general and specific deterrence. To the extent that Gun Court is positioned as a "get tough" measure aimed at illegal guns and gun violence, it promotes general deterrence by promising harsher sentences and fewer offenders slipping through the cracks. Additionally, it supports the principle of specific deterrence by punishing offenders considered to be most at-risk for involvement in gun-related crime. In addition to the deterrence value, both general and specific, of the program, there may be ancillary benefits from offender rehabilitation (related to the "treatment" components) and incapacitation (of both the offenders' illegally possessed firearms and of offenders themselves). Each of these principles of justice and punishment is supported by a vast collection of literature dating back more than 200 years.

Classical Punishment and the Criminal Justice System

The most influential theoretical perspectives underpinning the American system of criminal justice is that of deterrence. Ever since the Nixon era, Americans (and American politicians) have had a persistent desire to be ever tougher on crime and on criminals, and this perspective has been especially evident in policies intended to curb violent crime. Legislative

initiatives such as “three strikes” laws are premised on the belief that criminals recognize the severity of punishment for a range of crimes, and are deterred generally by the belief that they will be caught, convicted, and sentenced for their transgressions. Also, deterrence posits that individuals who are punished recognize the consequences of their past criminal activities and will be dissuaded from repeating their offenses in the future.

The origins of deterrence theory stretch back for hundreds of years to classical conceptions about philosophy and the nature of law. Some of the foundational writings on deterrence came from classical philosophers. Thomas Hobbes (1588-1679), John Locke (1632-1704), and Jean-Jacques Rousseau (1712-1778) took various perspectives on the nature of mankind and his role in society, stating respectively that man was bad and fundamentally selfish, man was a blank slate and the product of his environment, and that man and society existed due to the logic of reason. Bentham (1789) stated that society itself is an expression of man’s free will, while sociologists like Durkheim (1893) commented on the role of law and punishment in society. Each perspective has distinctive implications for the role of government, and more specifically, law and justice, within societies. Depending on which perspective dominated public thinking and discourse of the time, society either did or did not possess the authority to punish; it did or did not possess the moral obligation to do so; and that authority did or did not pose a risk for potential abuses.

The evolution of modern systems of justice is shaped to a large degree by these fundamental perspectives. However, challenges related to the creation, application, and enforcement of law appeared along with the realization that models of justice required uniformity and relative consistency between jurisdictions. The dominant thinking eventually adapted to support the government’s position of centralized custodial authority and responsibility

in maintaining the rule of law in society. Beccaria (1764) outlined principles of deterrence in one of the most instrumental early writings, *On Crimes and Punishments*. In it, he stated that punishment should be proportional to crime, it should be codified in law, and it should have appropriate certainty, severity, and celerity. Thus was born the most influential perspective on the principle of deterrence, one that has survived, largely intact and rarely challenged in public forums.

Evolution of Deterrence

Empirical research exploring the nature and persistence of deterrence and its relationship to particular types of crime has enjoyed a long history in criminology and sociology. In an early work, Tittle (1969) describes a strong and consistent negative association between certainty of punishment and crime rates, while a negative association between severity of punishment and crime is observed only for homicide. Chiricos & Waldo (1970) similarly use UCR data to demonstrate that the relationship between rates of crime and certainty and severity of punishment are variable over time and among offenses. These examples suggest that deterrence is not a constant, and that considerable variability exists in the relationships between crime types and the certainty, celerity, and severity of punishment.

A major focus of deterrence research in criminology has been the role of perception, given that deterrence may be more or less tangible under different circumstances, even though it is theoretically omnipresent. Using self-reported crime data, Erickson et al. (1977) show a close inverse relationship between perceived certainty of punishment and rates of self-reported acts. However, the authors also note that perceived certainty of punishment and the severity of self-reported acts are highly collinear, making differentiation of effects impossible. This finding is explicated later by Paternoster et al. (1983), who attack the use of correlational data in deterrence research, suggesting that it confuses causal ordering and fails to account for spurious factors.

They conclude that correlational associations show experiential effects, or those effects related to offenders' prior behavior, rather than deterrent effects. They also state that the effect of perceived sanctions on crime is minimal once informal social factors (moral commitment, informal sanction) are controlled. Paternoster (1987) follows his original critique of the empirical investigation of deterrence with a review of knowledge on the role of perceived certainty and severity of punishment in deterring crime. He shows support for perceptual deterrence with correlations, but again notes that it is probably manifesting experiential effects rather than deterrent effects. Further, the author states that fully specified panel designs that successfully account for time order demonstrate that the effects for certainty and severity disappear.

Evidence supporting deterrence as a function of the criminal justice system is ample but somewhat qualified. Smith & Gartin (1989), for example, track arrests for a male cohort through age 25 to address whether arrest amplifies or deters future criminality, and whether the timing of the arrest matters for future rate, duration, and desistance for crime. Their analysis finds support for specific deterrence, but they conclude that the principle works differently for novice (e.g., arrest results in desistance) vs. experienced offenders (e.g., arrest results in reduced rates of future offending). Simpson & Koper (1992) examine deterrence for corporate crime by studying companies with antitrust violations. Evidence from their examination supports deterrent effects for civil, criminal, and administrative penalties while controlling for changes in antitrust law as well as economic conditions for the firm, industry, and economy. However, they conclude that the effect size for industry characteristics is stronger than formal sanction risk or consequence in determining future illegality, suggesting that deterrence may not be the most critical principle influencing the decision to violate the law. Indeed, Burkett & Ward (1993) argue that moral

condemnation conditions deterrent effects that come from perceived risk of legal punishment, implicating the relationship of the individual to his or her peers, family, community, and society in shaping the impact of deterrence on criminal decision-making.

In one of the most widely cited works pertaining to deterrence, Nagin (1998) describes consistent support for deterrent effects from the criminal justice system, but laments gaps in knowledge and research that make it possible to link deterrence to policy. Specifically, he argues that (1) research does not account for both short-term and long-term effects of policy; (2) there is little knowledge about sanction risk perception and policy; (3) data is based largely on governmental unit, not place and time; and (4) links between intended and actual policy is limited. Each of these criticisms can be taken at the macro level, describing the state of the field, or at the micro level, as a guide for shaping future deterrence/policy research. Nagin seems to be arguing for empirical investigation that highlights process evaluation (e.g., does a policy do what it is intended to do, is any observable effect persistent over time, and is policy impact measured for a “true” and accurate unit of analysis rather than for a convenient but arbitrary one).

Despite the attention given to deterrence in the empirical literature, disagreement about the role of deterrence in specific types of criminal justice interventions remains. Perhaps nowhere is this disagreement more zealously undertaken than in the gun policy arena, where consensus about a great many issues is lacking. In the context of public opinion, gun violence is as prevalent as it has ever been, despite what objective evidence from crime trends shows. This environment has served as a catalyst for innumerable new anti-gun policies, most grounded firmly in principles of deterrence, both general and specific. Generally speaking, to the extent that perceptual deterrence remains high (Chiricos & Waldo, 1970; Erickson et al., 1977) and moral condemnation conditions deterrence (Burkett & Ward, 1993), community interventions

and criminal justice initiatives may be successful, but those effects will likely vary as a function of offenders' experience (Paternoster, 1987; Smith & Gartin, 1989), and it still may not be the most important factor predicting criminal deviance (Simpson & Koper, 1992). For anti-gun interventions specifically, the deterrent value of a given program depends on public perception, both related to the severity of the gun problem (when this wanes, it becomes "someone else's problem" and deterrence may decrease) and the certainty, severity, and celerity of punishment.

Educative Functions of the Courts

Though the deterrence doctrine is the most direct route through which the legal apparatus exerts its control on human behavior, there are alternative explanations for the establishment and maintenance of order. These alternatives, it seems, are less likely to be touted by policymakers who are eager to embrace a retributive perspective on crime, especially violent crime. Their potential benefits, however, are important in considering the potential value of a specialized court designed to address guns on the streets.

The simplest possibility is that the courts and the legal system generally fulfill a role as educators in a direct sense (e.g., through court-ordered training or other means intended primarily to make offenders aware of the law and the consequences of breaking it). When considering a specialized court designed around a social problem such as domestic violence or illegal guns, that instruction necessarily includes clarification on the letter of the law as well as its underlying logic. For example, an otherwise law-abiding first time offender arrested for illegal gun possession and processed through a gun court may have in fact legally possessed his firearm while inside his home or vehicle, but when he carried it in public in a concealed fashion, he violated the law. In this case, the court may fulfill an educative role by mandating court-ordered firearms safety training and sentencing the offender to time served. If the court's educative function is fully realized, the offender should (1) gain a complete understanding of the

nuances of the law; (2) be made aware of the potential risks involved in illegally carrying a firearm in public, specifically related to violence escalation and the dangers of gun-carrying; and (3) be prevented from reoffending in the future. The process by which future compliance is ensured is not deterrence per se, because the offender is not engaging in a process of rational calculus about the potential benefits and penalties for illegal firearm possession; in fact, it is possible that deterrence in the classical sense has not been achieved at all because the individual is not fearful of being punished, though the objective of the court has been reached because the individual is unlikely to reoffend.

Not all courts seek to incorporate a direct instructional component into the sentencing process, perhaps because it would be perceived as lending credence to some defendants' claims that they are only guilty insofar as they were ignorant of the law. On a more basic level, the legal system can influence attitudes and behaviors with an implied moralistic component. Tappan (1960) wrote of the "educative-moralizing function" of the law, which he suggested transcended the effects of rational or direct instruction and extended to influence attitudes. This concept is also summarized by Andenaes (1971), who ties the educative functions of the legal system to the inherent limitations of general deterrence, namely that it appears to work well sometimes and not well at other times, because of individual-level, group-level, and even societal variation in how people react to the threat of punishment. The author posits that "general deterrence" is conceptually limited, and contends that "general prevention" that incorporates a moralistic component is of greater value because it functions even in the absence of perceived punishment.

Andenaes (1971) suggests that the educative function of the law includes several direct and indirect effects. In a direct fashion, these effects include (a) respect for the law; (b) seeing

criminal law as a moral “eye opener;” (c) understanding that punishment is an authoritative statement of badness; and (d) acknowledging that imprisonment carries a moral stigma. Each of these effects speaks to the larger interrelationship between the individual and the legal system, and collectively they represent a process of negotiation that influences our attitudes about the relative “legitimate authority” (p. 25) of the legal apparatus. Further, Andanaes describes indirect educative effects of the law, including (1) punishment as neutralizing the bad example; and (2) criminal law shapes the framework for moral education. These aspects specifically address observed and vicarious experiences with law violation as well as the extra-legal context in which individuals learn the fundamental distinctions between right and wrong. In sum, the legal system educates by changing associations of right and wrong to be consistent with societal consensus and by conveying opinions of legitimacy and authority for the rule of law.

An alternative view posits that controlling structures, such as the government or the legal system, achieve and maintain power through procedural fairness, which results in legitimacy (Tyler, 2006). In this sense, the relationship between the individual (offender) and society (the legal system) has little to do with instrumental deterrence or education per se, but rather is a representation of respect and deference for the larger rule of law. This respect translates into an investment in the legal system and behavioral compliance for most offenders. To the extent that the public maintains a largely consistent view of the court as a fair and legitimate authority, its power will persist and crime will be largely prevented. Relatedly, Sherman (1993) explains that this procedural justice and legitimacy phenomenon is central to acknowledging shame in the process of punishment. Individuals who perceive that they are not treated fairly in the legal system are likely to be defiant and are unlikely to be deterred from future crime.

Yet another possibility is that the legal system reinforces and validates widely held normative expectations of right and wrong. The function of the legal system as a process of “normative validation” has its roots in the work of Durkheim (1960), who wrote extensively about the nature of the “collective conscience” and the various implications of its violation. To Durkheim, justice evolved within societies because it was the will of the people that their consensus expectations with regard to moral conduct be observed and upheld. Following this line of reasoning, the court system acts as a validation for collective conscience as codified in the law.

Erickson et al. (1984) provide a basic test of the normative validation hypothesis with juveniles’ self-reported assessments of the seriousness of legal sanctions after being processed through a “hands off” juvenile court. Their analysis revealed that adolescents who had been caught and processed in such a court had lower perceived severity of sanctions than those who were never caught or punished. The authors concluded that this finding supported the notion of normative erosion, which occurs when delinquent or criminal behavior is observed (firsthand, in this case) but not punished. Thus, the court experience teaches and conditions delinquent youth in a particular way: when the court adopts a more lenient position, the defendants may come to recognize that they can successfully violate the law without fear of reproach. The authors also speculate that the normative erosion may spread beyond the individuals processed through the court, creating a “general” normative erosion effect for friends and acquaintances. It is important to note that the normative erosion hypothesis is not a direct analogue to specific deterrence. Though the machinery may be similar in that both processes involve learning and reinforcement, the key distinction lies with the differences between norms and laws. Deterrence is based on a straightforward principle of cause (violation) and effect (punishment), while norms are more

abstract and based on a larger conception of free will and societal expectations. To the extent that the courts have some influence over normative erosion, they may be implicated in an ongoing process of normative development, erosion, and reformation.

A final possibility is that the legal system serves educative functions not by conveying simple knowledge of the law or shaping attitudes consistent with society's views of right and wrong, but by making offenders realize that they are hurting the community to which they belong. The major mechanism for this process is a circular process of shaming and reintegration. Garfinkel (1956) described trials and other aspects of the criminal justice system as "status degradation ceremonies," intended to shame offenders and subject them to the humiliation of public disgrace in addition to their more material punishments. Schur (1971) applied labeling theory to the criminal justice system to characterize how offenders "negotiate" a deviant label in the trial process, resulting in role engulfment with the newly applied deviant master status. Each of these perspectives suggests a more cynical educative role, one in which the "education" involves the message that offenders are unwanted and unequal to the moral majority.

Reintegration offers a more hopeful outlook on the shaming process. Work by Braithwaite (1989) describes reintegration as a process of making the offender, the victim, and the community whole again through the trial and punishment phases. In contrast to a disintegrative process that involves persistent stigmatization, resulting in denial of routes to pro-social adaptation and increases recidivism likelihood, reintegration establishes wrongfulness, attempts to restore the offender to pre-crime status, and theoretically reduces recidivism likelihood. Disintegrative shaming, therefore, is similar in some ways to other theoretical frameworks involving procedural justice in that it emphasizes retribution rather than fairness and equality. In the context of the educative role of the courts, the message to offenders is markedly different:

instead of conveying that offenders are unworthy and unwanted, it holds promise that people can recapture their better nature and return to a point of respect and productivity in their community. At least one empirical test suggests that, compared to disintegrative shaming processes, the reintegration approach results in a stronger positive effect on future compliance (Makkai & Braithwaite, 1994).

CHAPTER 3 LITERATURE REVIEW

The variety and breadth of gun violence interventions in the United States is staggering. Programs ranging from the massive, federally-funded Project Safe Neighborhoods to virtually unfunded community mobilization efforts all take aim at reducing gun violence through supply-side restrictions, demand-side interventions, or some combination of the two. These interventions take diverse forms, including legislative (adopting new laws, such as shall-issue carry permit legislation), policing (such as targeting guns through directed enforcement and eliminating illegal gun markets), and judicial (revising sentencing guidelines to “get tough” on convicted gun offenders).

A thorough review of extant literature on all types of gun violence reveals a lack of consensus on the presence, nature, and magnitude of observable change in gun violence as a result of various types of interventions. One reason for this lack of consensus is that empirical support, where it exists, is decidedly mixed. When evidence on gun-violence initiatives is subjected to careful tests of scientific rigor, the available information is extremely limited: some programs are believed to be promising, while other programs are believed to have no effect whatsoever (Sherman, 2001a). Results from directed police patrol targeting illegal guns, for example, fall into the former category (Sherman & Rogan, 1995; McGarrell et al., 2001; Ludwig, 2005), while gun buyback programs in American cities occupy the latter (Rosenfeld, 1995; Callahan et. al, 1995), though buybacks may function as hypothesized outside of the United States (Ozanne-Smith et al., 2004). The relative dearth of systematic, multi-faceted empirical investigation into program efficacy complicates policy decisions, especially in light of shrinking public funds for interventions that are increasingly devoted to anti-terrorism and public safety readiness.

What Works and What Doesn't Work in Gun Interventions

In a commentary and update of earlier reviews of “what works” in gun violence reduction research (Sherman, 2001b), Piquero (2006) states that gun policy research shows many interventions have no effect on violence levels. Exceptions include directed police enforcement, interventions that increase certainty of punishment, and the disruption of certain supply-side factors (e.g., gun markets). Also, he argues that interventions that enjoy community support and cooperation are more likely to be successfully implemented and to have the desired effect on crime levels. In terms of applying principles of deterrence, these statements make perfect sense: directed police patrols and other measures that increase certainty raise general and specific deterrence, while community interventions address moral condemnation indirectly through informal means of social control.

Targeted policing patrols focused on searches and seizures of illegal guns have potential, based on studies in at least two locations. In Kansas City, Sherman & Rogan (1995) reported narrowly focused patrols intended to detect and confiscate illegally carried guns resulted in a 65% increase in firearms seizures and a 49% reduction in gun crimes, with no evidence for crime displacement into neighboring areas. A replication in Indianapolis found support for targeted patrol as well, and concluded that a general deterrence strategy employing more frequent traffic stops in the same area showed no effect (McGarrell et al., 2001). Essentially, disrupting the supply-side of the illegal gun equation appears to result in a direct effect on gun crime, at least in the short-term.

Not all supply-side interventions have found support in subsequent evaluations. In a review of epidemiological and experimental research on reducing gun violence, Sherman (2001) concludes that at least one type of intervention, the gun buyback program, does not work to reduce gun violence levels. He comments that buyback programs are extremely expensive and

generally not focused on areas prone to especially high gun violence before the intervention, suggesting that the intent of the program, while honorable, is either misguided or perhaps poorly executed. Even in communities afflicted by higher-than-normal gun violence rates, there is little evidence to support an effect from gun buybacks. Rosenfeld (1995) examined two gun buyback programs in St. Louis in 1991 and 1994, together netting nearly 9,000 guns removed from circulation. He concludes that rates of gun homicide and assault were not affected by the buyback intervention relative to pre-buyback rates. An evaluation of a similar gun buyback program in Seattle shows a slight *increase* in gun crime rates over pre-intervention levels (Callahan et al., 1995).

Like the fundamental premise of the criminal justice system itself, most anti-gun interventions judged to be successful in affecting violent crime rates rely on one or more aspects of deterrence. The Boston Gun Project's Operation Ceasefire dealt with gun violence as part of a problem-oriented policing (POP) strategy. The POP approach involves identifying a problem requiring police attention and addressing it in a variety of ways, including innovative approaches, in order to measure, quantify, analyze, and adjust policing efforts (Goldstein, 1979). Specifically, the Operation Ceasefire intervention incorporated a new focus on youth violence with guns, and included a variety of enforcement tactics related to gun trafficking. By identifying sources of intrastate and interstate gun suppliers and restoring serial numbers for altered and later confiscated firearms, police and the Bureau of Alcohol, Tobacco and Firearms were able to paint a more complete picture of the supply-side logistics of moving and selling illegal guns. Also, they targeted local gangs in Boston known to engage in the highest levels of gun violence, sending the message through formal meetings as well as informal contacts that gun violence would not be tolerated. When violence did occur, Ceasefire units worked quickly to

crack down on it. They were not, however, concerned with disrupting other aspects of the gang's criminal enterprise. Thus, in addition to acquiring a greater degree of criminal intelligence about the sources and destinations for illegal guns moving in and out of Boston, Ceasefire officials were relying on a message of heightened deterrence, tied specifically to gun violence (Kennedy et al., 1996). Evaluations of Operation Ceasefire have demonstrated some support in the literature. At least two studies, co-authored by the program's directors, show reductions in levels of violent crime compared to other similarly-sized American cities (Braga et al., 2001; Piehl et al., 2000).

Elsewhere, other anti-gun programs relied even more heavily in a systematic and concentrated message of deterrence. Richmond's Project Exile combined enhanced sentencing for gun offenders with a targeted (yet massive) public advertising campaign intended to drive home the message that gun crime results in severe criminal justice repercussions. Although Project Exile's theoretical value is tied to the general and specific deterrent effects from the combined tougher sentences and mass-marketing, an evaluation of the program's effects found little support for these assumptions. Raphael & Ludwig (2003) examine the effects of Exile on homicide rates in Richmond after the intervention, and conclude that although homicide rates did fall in the intervention period, it was more likely the result of a return to baseline crime levels after a decade of higher-than-average rates.

Some studies have attempted to compare effects across several different anti-gun interventions. A comprehensive review of the impact of Operation Ceasefire, Compstat, and Project Exile on homicides concluded with only limited support for Ceasefire and Exile, though that support was tempered by relatively few overall incidents, suggesting that the results require replication to fully establish intervention effect magnitude (Rosenfeld et al., 2005). In sum,

although there appears to be an effect on violence coincident with two of three different gun-related interventions, the effects the interventions exert may be too small to measure or too small to impact violence rates in a systematic fashion.

Specialized Courts

Specialized courts tailored to particular judicial or social challenges are by no means a modern contrivance. Goldkamp (2000) notes that more than a hundred years of opinion underlies the specialized court practice, but solid evaluations of these programs have only been around perhaps twenty years¹. Berman & Feinblatt (2001) observe that the beginnings of the specialized court movement coincided with several notable issues in justice administration generally, including the inability of other governmental efforts to curb rising social problems, the nation's upward-trending incarceration rate, and renewed attention toward public accountability for justice agencies. Further, Fagan & Malkin (2003) comment that the specialized court movement can be theorized as an outgrowth of the movement toward greater community justice, which emphasizes greater external scrutiny, vested partnerships between the community and the court, and a shared interest in the application of restorative justice. The combination of these factors not only impacts outcomes in terms of recidivism or treatment efficacy, but also strengthens the mechanisms of justice by building the strength and legitimacy of the court with an interactive, grassroots approach.

However, not all experts concur about the benefits of the specialized court model. Some scholars, for example, point to an overly hasty jump to specialize every social ill, possibly at the expense of reasonable doubts as to program effectiveness (McCoy, 2003). Some suggest that

¹ For the purposes of this review, ordinary juvenile courts are excluded from scrutiny, as they possess a lengthy history and an entirely separate apparatus within the criminal justice system. For early commentary on juvenile court, see Mack (1909).

specialized courts, in their collective attempt to aggressively combat unique social problems while simultaneously decrease system costs, may be stuck in a conflict of interest (Mirchandani, 2005). Still others report that the actors in specialized courts are concerned about compromising their role as legal advocates for their clients, and that “classical” justice is being replaced by speedy and efficient case dispositions (Davis, 2003; Lane, 2003). While the relative cost vs. benefit of any given specialized court program is a murky and complex question to address, a central concern for all such programs is whether these elements combine to produce a net benefit for the communities in which they are implemented. The development of a growing body of literature on specialized court programs owes to the recent trend in popularity for a variety of specialized courts, beginning in the early 1990s. Since then, a variety of specialized courts have been described and evaluated in increasingly rigorous ways, including adult drug courts, juvenile drug courts, mental health courts, and domestic violence courts, with most evaluations concluding that the specialized court has one or more pro-social effects in terms of individual recidivism or aggregate crime reduction. A review of several different types of problem-solving court interventions by Berman & Gulick (2003) indicates considerable promise for the concept, as demonstrated by several preliminary evaluations that show generally positive but not dramatic results. The authors conclude that these preliminary results have largely driven the proliferation of these courts in the past two decades.

A fundamental question in any evaluation of a specialized court program is exactly what definition of “specialized court” is to be used. Berman & Feinblatt (2001) describe five basic elements common to specialized court programs, regardless of the specific problem that is being addressed. First, all courts are concerned with case outcomes. Outcomes may be operationalized in a variety of ways, including recidivism rates, completion of treatment, or

community-level reductions in crime. Second, all specialized courts feature some level of system change. This involves changing the basic approach to the social problem, usually from a primarily retributive viewpoint to one that incorporates overlapping goals of treatment and rehabilitation. Third, specialized courts feature enhanced judicial monitoring. The assumption here is that a single judge can better supervise all cases in all phases of the judicial/correctional process under the specialized court compared to a system where many judges share oversight or where judges turn over administrative responsibility to another agency, such as a probation department. Fourth, specialized courts are collaborative in a way rarely achieved in standard practice. In addition to judges and attorneys that are better informed on key issues, this collaboration incorporates community outreach to better assist with issues such as intelligence gathering, treatment program development, and post-release reentry planning. Finally, specialized courts (and the actors within) frequently take on non-traditional roles in pursuit of their objectives. These roles vary according to the objectives of the court, the jurisdiction, and host of other factors, but may involve suspending the adversarial process or using the judge as a mediator to negotiate a course of treatment. In total, these features result in a markedly different type of justice that attempts to work “outside the box” to address complex and pervasive problems.

The beginning of the movement toward specialized courts is generally recognized as the development of Miami’s drug court in the early 1989. The central concept of drug courts involves a movement away from more punitive traditional courts to a model that emphasizes treatment, rehabilitation, and reinvestment in the will of the individual to reform. This orientation is remarkable considering general trends in criminal justice and the courts from the mid-to-late 1970s, when the pendulum began to swing away from rehabilitation and toward

retribution. Further, that drugs specifically were regarded as a “treatment” issue is surprising, since major urban centers like Miami were in the midst of dealing with the crack cocaine epidemic, widely associated with guns and gangland homicide. Nevertheless, the Miami model has since been adopted and adapted by hundreds of other jurisdictions nationwide. An evaluation of drug courts in Portland, OR and Las Vegas has demonstrated potential in terms of crime reduction effects, with appearance before the judge, treatment participation, and sanctions significantly affecting offender behavior (Goldkamp et al., 2001).

Several peer-reviewed studies have examined the effects of drug courts on recidivism. Perhaps one of the best examples of the efficacy of drug courts is described by Gottfredson et al. (2003), who employ an experimental design in which drug-addicted offenders in Baltimore were randomly assigned to drug treatment court or processed as usual. In a two-year follow-up period, drug court offenders who received treatment showed significantly lower recidivism than either drug court offenders who did not receive treatment or control subjects. The authors conclude that drug court is effective at reducing crime when treatment fidelity is maintained. However, they also find that drug court offenders are incarcerated for approximately the same amount of time as non-drug court offenders, thus the implementation of the courts should not be expected to significantly reduce system costs in the short-term. These substantive conclusions are supported by other research. In a quasi-experimental study evaluating a juvenile drug court in Arizona, Rodriguez & Webb (2004) report that juveniles showed no difference in rates of marijuana use but drug court participants had significantly lower cocaine use in a three-year follow-up. Moreover, the authors state that family stability, academic performance, and certain legal factors were significantly associated with successful program completion. Similarly, Peters & Murrin (2000) report that drug court graduates from two Florida counties were significantly

less likely to recidivate in a 30-month follow-up period compared to drug court non-graduates and a matched (non-drug court) comparison group. Finally, a review of 37 non-peer reviewed drug court reports by Belenko (2001) indicates that most programs show consistently positive effects. The author notes that four of the six reviewed reports that included a measure of post-program recidivism indicate lower rates for drug court participants compared to non-participants, and that per-offender costs are lower for drug courts compared to standard courts, primarily due to the costs associated with incarceration.

Other specialized courts have followed the general model established by the Miami drug court, in particular with emphasis on holistic and therapeutic jurisprudence. Winick (2003) states that this emphasis has ramifications for the psychological well-being of participants, and is both a result of and a driving force behind interdisciplinary research on behavioral science. In response to a preponderance of substance abuse cases featuring mental health problems for the defendant, specialized mental health courts have become an important outgrowth of the drug court phenomenon. Most experts attribute Broward County, Florida's Mental Health Court as the first of its kind in the nation, with a dozen other jurisdictions following suit and federal authorization for more than 125 additional mental health court programs (Nolan, 2003). The premise of the mental health court is similar in many ways to the drug court model in terms of emphasizing treatment efficacy and better case management. In contrast to the processing of drug offenders, Lurigio et al. (2001) notes that there is a general absence of dialogue between the mental health and criminal justice systems that serves to impede the treatment of offenders with mental illness. This issue may frustrate and complicate justice administration for offenders and practitioners alike, who often have very different perceptions of situational details, offenders' states of mind, and a host of other factors conditioned by the understanding of mental conditions.

As a result, the allocation of resources to this population of offenders may be inadequate and thus their treatment or rehabilitative needs may go unmet. Preliminary evaluations of the Broward court indicate that the court is largely successful at incorporating treatment in the jurisprudence process, and that treatment is targeted to individualistic needs compared to a matched control group from another jurisdiction (Boothroyd et al., 2003; Petrila, 2002).

Another outgrowth of the specialized court movement is the establishment of specialized domestic violence courts. Beginning with Brooklyn, New York's domestic violence court in 1996, more than 300 jurisdictions have implemented these courts to improve case monitoring, ensure treatment compliance, and attempt restorative justice for families, which often involve "creative" sentencing options that go well beyond protective orders and incarceration (Karan et al., 1999; Nolan, 2003). Like other specialized courts, there are no standards for the functioning of domestic violence courts and thus the precise implementation varies across jurisdictions (Weber, 2000). Despite different approaches, Clark et al. (1996) find that domestic violence court provides greater sentencing consistency and enhanced support for both victims and witnesses compared with that of other, non-specialized courts. Additionally, Walsh (2001) notes that victims may be more likely to report domestic violence as a result of the rehabilitative mindset embraced by most specialized courts. However, Uekert (2003) suggests that coordinated responses such as specialized domestic violence courts are difficult to implement because of local politics and agency non-cooperation, resulting in inconsistencies in implementation and effectiveness across jurisdictions.

Evaluations of domestic violence courts show a generally positive effect across several domains. In their evaluation of the Lexington County, SC domestic violence court, Gover et al. (2003) report that arrests for domestic violence increased overall, and that individual offender

recidivism rates were significantly lower after the implementation of the court. The authors conclude that the specialized court was successful at increasing enforcement and improving victim safety in the jurisdiction. These findings are consistent with a similar evaluation from a domestic violence court in Miami, which reported lower rates of case dismissal, greater offender compliance with substance abuse treatment programs, and a lower rate of recidivism (6%) compared to a control group of offenders (14%) (Karan et al., 1999). As a result of these encouraging findings, Eley (2005) notes that domestic violence courts have been readily adopted in the United Kingdom, Australia, and Canada, where she argues that collaboration is the most crucial of the court's features in terms of streamlining the process of negotiation between key stakeholders, including prosecutors, defense attorneys, and victims.

Gun Court

Gun court programs occupy a place in the anti-violence intervention pantheon somewhere between judicial gun control measures (e.g., sentencing guidelines) and specialized problem-solving courts. Clearly, the development of the gun court model for faster processing of offenders coupled with more rigorous court-imposed conditions for those awaiting trial or sentencing and those released on probation or parole follows trends in specialized courts for different types of criminal justice system issues. The application of similar principles of treatment and deterrence, demonstrated as successful in drug and domestic violence courts, is postulated to function in a similar fashion for gun offenders.

Despite substantial interest from jurisdictions with persistent gun violence issues, systematic and peer-reviewed evaluations of modern gun court programs are absent from the criminological literature. Only a few peer-reviewed journal articles address “gun court” phenomena directly (Calathes, 1990a; Calathes, 1990b). However, gun court in these studies has a very different operational definition and parameters. Even then, these analyses rely on

anecdotal accounts from another country (Jamaica, in this case) rather than experimental design and quantitative analysis to reach conclusions about gun court's relationship to crime patterns. As Wellford et al. (2005: p. 221) note, "Little research has been conducted on the operations and crime prevention effectiveness of gun courts." This deficit in evaluation research suggests that gun courts are being adopted without significant scholarly thought devoted to which problems need to be addressed, much less the best way in which to address them.

Given the paucity of peer-reviewed work on gun courts in addition to the level of specialization and variability between programs, a systematic review or meta-analysis of the gun court model is impossible. However, to date, several gun court programs have been identified as potentially successful anti-gun interventions, especially where juvenile offenders are concerned. These gun courts (and related programs) have been established in diverse locations including Birmingham, AL; Boston; Detroit; Indianapolis; Minneapolis; New York; Providence, RI; Seattle; and St. Louis, MO. Each intervention differs in its programming, emphasis, and the degree to which it has been evaluated with respect to its long-term effects. Philadelphia's Gun Court represents a hybrid of several of these early examples, borrowing elements of deterrence, sentence enhancement, education, and rehabilitation from other implementations.

Providence, RI Gun Court – 1994

Generally credited as the first modern gun court program in the nation in September 1994, Providence is a model for other adult gun courts. As originally conceived, the Providence Court established a separate docket for trials that involved a gun charge, and made referral to the Gun Court an administrative routine rather than requiring a judicial hearing. These features of the program benefit the system by streamlining processing and saving resources.

The Providence program set interesting precedents with endorsements from both the National Rifle Association and various gun-control groups, resulting in bipartisan support among

Rhode Island's elected representatives and a near-unanimous approval of the court's enabling legislation. Rhode Island officials presented the program to the public as a reaffirmation of the statement, "If you use a gun, you go to jail." According to a summary report on the Providence Gun Court, the NRA funded supplemental bulletin boards stating "Gun Court is now in session." This strongly deterrence-oriented mechanism has been consistently appealing to other jurisdictions developing programs based on the Providence model, particularly for jurisdictions that emphasize adult offenders rather than juveniles.

An internal evaluation of the Providence Court from 1994 to 1998 found that the celerity and certainty of punishment for gun charges was increased by virtue of shortened time to disposition and a higher number of charges ending in sentences (Sheppard, 1999: 144). These findings support the implicit message of deterrence, but their utility is uncertain. Unfortunately, no objective evaluation of the impact of the court on gun crimes or arrests in Providence has ever been conducted, suggesting that the outcomes associated with the program are largely speculative.

Jefferson County (Birmingham), AL Juvenile Gun Court – 1995

Jefferson County, AL, whose county seat is Birmingham, was among the first jurisdictions in the nation to develop a specialized gun court specifically targeted at juvenile offenders. Although Jefferson County followed Providence in implementing its gun court, their approach was arguably more comprehensive and thus more likely to achieve the desired result. Specifically, the Jefferson County Court added a 28-day boot camp, a parental education component, ongoing assistance for substance abuse, a community service component, and an intensive follow-up supervision program. This "mixed" model attempted to simultaneously address many aspects common to the target population, including family trouble, exposure to drugs and alcohol, and an overall lack of appropriate supervision.

Some theoretical and practical elements of the Jefferson County model were borrowed from other courts, including the targeting of first-time offenders without other, more serious charges pending. However, the Jefferson County model differed in important ways from the “standard” Providence Gun Court example, notably in the ways in which it attempted to address rehabilitation and education over punitive punishment and deterrence. For example, the Jefferson County Court was premised on early intervention and referral. The fundamental idea was that adolescents who were at-risk for future violence could be screened out and processed in order to maximize their exposure to program elements. By contrast, the Providence Court was developed to facilitate the application of enhanced penalties for illegal gun carrying. Also, the Jefferson County Court was oriented toward education about the causes and consequences of illegal gun carrying. Therefore, the Court adopted a role that extended beyond adjudication for at-risk juveniles. Finally, Jefferson County actively included community members as role players in the delivery of its anti-gun message and relied on a number of different agencies to provide support for its objectives. In comparison, the Providence Gun Court was not explicitly concerned with either the educational role or the active participation of the community, beyond a basic and general support for reducing overall levels of gun violence.

The more comprehensive approach to gun court has potential for ancillary benefits as well. Perhaps because of the initiative on the part of the Jefferson County Court to involve multiple public agencies and community organizations, this model may result in potentially important changes in police practice:

“Before the gun court was implemented, police officers usually did not arrest youth for gun possession; they released the youth to a parent without filing any charges. Now that the court is in place, however, police arrest youth for all gun-related offenses. First-time, nonviolent gun offenders age 17 and younger are eligible to participate in the program.” (Sheppard & Kelly, 2002: p. 8)

Although increasing police surveillance is not the primary interest in the gun court model, in some cases providing an outlet for judicial and/or correctional intervention could be associated with a natural shift in police roles after the introduction of the court.

The Alabama Center for Law and Civic Education and the Criminal Justice Science Department at the University of Alabama-Birmingham conducted an evaluation of the Jefferson County Court's outcomes during its first four years of operation. Sheppard and Kelly (2002) reported in an OJJDP research brief that individuals processed through the Court and sentenced to the intensive supervision group spent less time on probation overall, showed significantly greater participation in educational programs, and displayed significantly lower rates of recidivism than non-intensive supervision or control groups. A separate, unpublished evaluation found consistent results when comparing recidivism of the intensive group to that of the non-intensive group (Sloan et al., 2000). Taken together, these findings strongly suggest that the gun court model generally benefits from intensive supervision for parolees compared to other models. However, despite this generalization, the relative impact of intensive supervision associated with gun court for adult offenders is unclear.

Detroit, MI Handgun Intervention Program – 1993

Although not explicitly a “gun court,” Detroit’s Handgun Intervention Program (HIP) is a court-related anti-gun intervention that has shaped the development of other gun courts, including the program presently operating in Philadelphia. The premise for the HIP is to subject offenders to court-ordered gun education that emphasizes the consequences of gun carrying and presents alternatives to violence. The program is designed for young male offenders, especially African Americans, who are charged with gun-carrying offenses and have no other pending charges that are more serious. The core elements of the program have also been adapted as a

curriculum feature for Detroit-area middle and high school students. OJJDP reports that more than 5,000 individuals participated from 1993 to 1999 (Sheppard, 1999: 154).

Detroit's Handgun Intervention Program was the subject of an evaluation funded by the National Institute of Justice. Though the evaluation was only preliminary in nature, it did find some evidence of positive change. In particular, participants showed improvements in 19 of 21 attitudinal measures related to situational decision-making, ethics, status perceptions, and related measures. However, the author notes that although participants generally held the program in high regard and demonstrated improvement on attitudinal measures, the majority remained skeptical about the program overall and reported no anticipated change in behavior due to the persistent necessity to defend oneself on the street (Roth, 1998). Thus, the linkage between attitudinal improvement and behavior modification is tenuous at best. To date, no evaluation has assessed the impact of the HIP on rates of gun crimes or arrests in Detroit.

Hennepin County (Minneapolis), MN Juvenile Gun Program – 1995

Similar in many respects to the programs in Jefferson County and Detroit, the Hennepin County (Minneapolis) Juvenile Gun Program focuses on rehabilitation and education for juvenile offenders considered to be at high risk for future violence. Like the Jefferson County program, Hennepin County integrates a multi-faceted approach to treatment and rehabilitation, with “aggressive” monitoring and referrals for substance abuse. Hennepin County also involves public agencies and community organizations in their education efforts and incorporates mandatory community service. Further, like the Detroit program, Hennepin County directly addresses interpersonal skills, respect, ethics, and civic responsibility in counseling participants on alternatives to gun violence. Unlike either of these two programs, adolescents participating in the Juvenile Gun Program receive out-of-home placements and referral to a work program in an attempt to comprehensively address factors that may influence future violent crime.

As a matter of scale, the Hennepin County program lags behind most of the other gun court offerings, serving only about 300 individuals in its first three years of operation. However, preliminary comparisons between groups of adolescents who complete the program and those who enroll but do not complete it indicate some potential. The “completer” group differed only slightly from the “non-completer” group for the number of charges filed in a 7-month initial follow-up, but the majority of completers who were charged received misdemeanors or status offenses rather than felonies (88 percent vs. 12 percent) compared to the opposite trend for non-completers (35 percent misdemeanors or status offenses, 65 percent felonies) (Sheppard, 1999: 163).

Indianapolis, IN Project LIFE – 1991

Indianapolis’ Project LIFE (Lasting Intense Firearms Education) is a mandatory gun education program directed at adolescents who are on probation for committing a weapon-related crime. The program is designed to combat apathetic attitudes toward commonplace or normative gun possession on the street. Participants are subjected to graphic media showing details of gun homicides in an effort to instill respect for the impact of illegal gun use. Interestingly, Project LIFE also attempts some degree of reintegrative shaming, by encouraging adolescents to speak openly about their crimes, accept responsibility for them, and talk about alternative strategies that could prevent violence. As with other court-related anti-gun interventions, Project LIFE aspires to involve parents and community role models in discussions about the relative danger and costs of guns. Although more than 500 adolescents completed Project LIFE from 1991 to 1998, with nearly 80% of participants reporting that the program helped them to set better goals and refrain from illegal gun use, the program has never been formally evaluated with respect to either individual or community-level impact (Sheppard, 1999: 165).

Seattle, WA Juvenile Firearms Prosecution – 1996

Seattle’s Juvenile Firearms Prosecution program incorporates several components of other “traditional” gun court models. The central premise is that juveniles arrested for a weapons-related charge are processed in a centralized fashion that improves key aspects of the adjudication process, including (1) the speed with which charge filing, any required hearings, and trial occurs; (2) the expertise on the part of the prosecutor in handling these types of cases, including rules of evidence for gun possession; (3) the cooperation between agencies, including the prosecutor’s office and the local police. A “vertical prosecution process,” in which a single Deputy Prosecuting Attorney was responsible for managing every aspect of all juvenile gun cases, also offered the benefit of acquainting a single individual with the most chronic and/or serious offenders in Seattle’s jurisdiction. Thus, while the Seattle court structure itself was unchanged, special emphasis and reorganization within the prosecutor’s office resulted in many innovations that mimicked the case management features of other gun courts.

The Juvenile Firearms Prosecution program was not subjected to formal evaluation during or after its two years of existence. However, summary statistics show that the program achieved some success: the average number of days to file firearms cases dropped from 53 to 17, and the conviction rate increased from 65.4 percent to 78.4 percent as a result of the program. The King’s County Prosecutor’s Office claims that the initiative resulted in improved communication and efficiency for all involved agencies with minimal expenditure (Scales & Baker, 2000).

Brooklyn, NY Gun Court – 2003

Brooklyn’s program most closely resembles the Providence model in that it is concerned with adult offenders primarily and lacks a rehabilitative or educational component. According to New York Mayor Michael Bloomberg, the Gun Court is centered on core principles of deterrence: “People who carry illegal guns are a menace to the public, and it is important that we

send these criminals a clear message that they will be met with swift and certain justice,” a message echoed by Queens County District Attorney Richard A. Brown: “When criminals are afraid to carry guns, the level of violence drops significantly” (New York City Office of the Mayor, 2003). In January 2004, the Brooklyn Court expanded into neighboring boroughs of the Bronx and Queens, extending coverage from 5 to 35 precincts. In many ways, New York’s Gun Court orientation follows closely from the “zero tolerance” policy shift in the late 1980s and early 1990s dealing with drugs, guns, and violence, which has persistently but perhaps erroneously been credited with a downward trend in homicide (Fagan et al., 1998).

A pilot evaluation of Brooklyn’s Gun Court provides interesting and mixed results. First, the author notes that arrestee and arrest characteristics in the pre-Court and post-Court periods were very similar, as were the distributions of arraignment charges in both periods. Second, the author states that, contrary to expectations, the post-Court period showed a larger percentage of case dismissals, a phenomenon attributed to strict evidentiary rules in weapons cases. Finally, true to the stated objectives of the Court, the evaluation finds substantial increases in sentence length and in the number of sentences involving imprisonment (Solomon, 2005). Although this pilot evaluation provides useful preliminary insights into the characteristics of the Brooklyn Gun Court, it lacks sophistication, including subjecting any of the relevant hypotheses to significance testing, much less multivariate modeling. Further, although it attempts to address process issues by comparing Court defendants to pre-Court defendants, it fails to address any aspect of the relative drop in gun-related crime as a function of the program itself.

Boston, MA Firearm Prosecution Disposition Sessions – 2006

Boston, the most recent major city to implement a gun court program, followed examples from sites such as Providence and Philadelphia in developing their intervention. The Court was conceived to increase processing efficiency for cases involving gun charges in Boston.

According to numbers provided by the Suffolk County District Attorney's Office, Boston's Gun Court was responsible for clearing a three-year backlog in cases pending trial and reduced average time-to-trial to approximately six months (Suffolk County District Attorney's Office, 2007).

In addition to the value of increasing system efficiency overall, officials were also quick to capitalize on the "get tough" message aimed at gun offenders. Boston District Attorney Daniel F. Conley trumpets the program in this way: "Gun Court has met or exceeded every goal we set for it. Its effectiveness as a punishment and deterrent for those who would use guns in our city is indisputable," and "Gun court has been successful not only in taking guns off the street but in keeping gun offenders from returning to criminal activity. I have no doubt that the significant reduction in homicides by firearm last year is due in part to Gun Court's effectiveness" (Suffolk County District Attorney's Office, 2007). Despite the apparent enthusiasm, these claims have not yet been subjected to external empirical review.

International Perspectives

Few nations in the world can rival the number of firearms or the magnitude of firearms violence experienced by the United States. Because this discrepancy confounds empirical testing and experimental designs, studying gun control measures in other countries becomes problematic. Nevertheless, there are potentially valuable lessons that inform both the gun court concept and the broader issue of firearms violence.

Jamaica is ground zero for gun court history. On April 2, 1974, Jamaica's parliament passed the Gun Court Act, which authorized the creation of a specialized court specifically to prosecute cases involving the illegal possession or use of firearms or ammunition. Ostensibly, the Court was designed to provide a means to control a boom in gun violence stemming, in part, from deep political unrest and poor economic conditions (Calathes, 1990). However, in practice,

the Gun Court was part court and part prison, and critics quickly objected to its procedural injustices. Among the common provisions of the Gun Court were categorical denial of bail, indeterminate sentences of incarceration up to life imprisonment upon conviction, and trials for defendants as young as 14. Summary trials without legal representation were commonplace, rumors about corruption were persistent, and executions were not unheard of. A 1975 challenge on the basis of constitutionality was denied, with the Privy Council in London ruling that the Court itself was not unconstitutional. However, the Council did rule that mandatory sentences of indefinite detention with hard labor could no longer be imposed. The Gun Court continues to operate to this day, amended in part by appeal in 1983.

Clearly, the linkage between Jamaica's Gun Court and those in modern-day America is distant at best. Many Jamaican practices would never be tolerated in American jurisprudence, and presumably there would not be the same issues with persistent corruption and social unrest. But, those questions aside, did the Jamaican Gun Court achieve a reduction in gun crime? At least one study (Gendreau & Surrige, 1978: p. 57) observes that Jamaica "appears to have enacted the strictest penalties for gun crimes," speaking to the relative severity of penalties in Jamaica compared to other nations. The authors also note that the penalties under the Gun Court Act increase celerity of punishment, and conclude that the Gun Court intervention was associated with a demonstrably lower rate of several gun crimes, including murder with a firearm. Thus, despite some (potentially serious) misgivings about the ways in which Jamaica's gun control reforms were enacted, this example indicates that a "crackdown" approach can result in lower gun crime overall.

Other international examples lack sufficient definition to be included in any discussion, theoretical or otherwise, of gun court models. Interest in creating specialized gun courts in other

nations persists, however. One such initiative in New South Wales, Australia was abandoned in May 2004 after a report by a retired Supreme Court Justice found that the rates of firearms violence were too low proportionally to justify the expenditure (Samuels, 2004). Although Australia's gun laws are regarded as highly restrictive compared to the United States, the proposition of creating a new gun court in New South Wales nevertheless resulted in controversy because the court program was viewed as not punitive enough according to Australian anti-gun groups ("NSW: Drop gun court," 2003).

A similar proposal in Toronto incorporated enhanced (and in many cases, more punitive) penalties for gun crimes and was premised largely on principles of general deterrence, according to the Ontario Attorney General (Brennan, 2003). Further, consistent with many domestic examples, the Toronto court followed the creation of a specialized domestic violence court in that jurisdiction in 1997, suggesting that the articulation between specialized community courts and anti-gun initiatives is not limited to American jurisprudence. Ultimately, the Toronto proposal resulted in a broader "Major Crimes Court" that will handle gang and violent offenses, including cases where guns are involved; the requisite resources or political will for a separate, narrowly-focused gun court were apparently lacking. Thus, evidence from both New South Wales and Toronto indicates that few nations can justify the intense focus on firearms required for the creation of gun courts in many U.S. jurisdictions.

Conclusions

In sum, gun court programs vary by jurisdiction and emphasis, with some courts emphasizing a rehabilitative or educational focus and some courts attempting to apply gun laws in a more consistent (and often more punitive) fashion. The degree to which various gun court models have been empirically evaluated is inconsistent at best. Some courts, including the Jefferson County, AL example, have shown some promise in dealing with particular groups of

offenders through particular types of programming. Preliminary studies on Jefferson County, Seattle, and Brooklyn suggest that the gun court model could be effective, but each example incorporates very different theoretical mechanisms and operationalizes different definitions of efficacy. Additionally, measurement of treatment effects in each of these cases has been problematic, with few studies employing control/comparison groups and none to date vetted in the peer-review process.

Despite the diversity and proliferation of gun courts in the United States, as Wellford et al. (2005) state, the absence of peer-reviewed literature to date on this topic indicates a clear need: none of the gun court models has been tested with respect to the effects of the program on aggregate levels of gun crime for the affected areas. Therefore, a logical next step in attempting to reach a conclusion on the efficacy of Philadelphia's Gun Court, as well as to begin to infer broader implications about gun courts generally, is to use time series analysis to determine whether Philadelphia's Court had such an effect. The present study contributes both a qualitative and quantitative perspective on the implementation as well as the impact of a state-of-the-art gun court model, with an eye toward the ultimate goal of reducing aggregate gun crime rates in the Philadelphia area.

CHAPTER 4 QUALITATIVE ANALYSIS

Many of the nuances and intricacies of the day-to-day functioning of Philadelphia's Gun Court can be best expressed by the individuals who oversaw its development and functioned as stewards for the primary mission established for the Court, namely, to reduce the volume of illegal guns on the streets. This portion of the study is based on semi-structured, in-depth interviews with three of the four judges who have presided over Gun Court since its inception in 2005. The judges were recruited for their participation in this research with the assistance of Adult Probation and Parole Department staff in March 2008.

Each of the judges rotated to serve a one-year term in Gun Court before accepting various other assignments within the First Judicial District. Collectively, they have heard an estimated 3,500 cases in Gun Court alone, in addition to their experiences on the bench of other criminal courts and serving as attorneys in the Philadelphia system. All have substantial experience hearing cases involving cases featuring violence and firearms. Each of these factors make these individuals uniquely qualified to comment on the nature of violence in Philadelphia, the environment in which the Gun Court program was conceived and implemented, and what effects, if any, Gun Court may be having.

Program Objectives

Each of the participants was asked to relate their opinion on the original purpose of the Philadelphia Gun Court. Unsurprisingly, all of them referenced the soaring violence and the emphasis on innovative anti-gun policies. As one judge indicated, the purpose was reasonably simple: "Gun Court was established in Philadelphia County mainly because of the influx of gun-related crimes in Philadelphia... I think Gun Court's primary purpose was targeting people who had guns, find out who had the guns, and get them off the street." One judge's comments were

typical of the pragmatic attitude toward the program, stating, “Essentially we established the Gun Court to deal with the gun problem that was perceived to exist in Philadelphia and to try to bring some kind of uniformity to addressing those issues.” Another judge explained the distinctions between Gun Court and other models for adjudicating gun possession cases:

I think it was just to have one court handle the gun cases and to put more of a focus just on the gun violations. And they were able through the computer to segregate out cases, in other words, Gun Court didn’t handle cases where the gun was used in a shooting, or in narcotics dealings except for some marijuana or something on a smaller level, or cases used in a robbery or a rape. It was gun possession only that was the focus and to treat it more seriously. To have one judge focus in on it and to see if that could have some impact on people who might slip through and who might have a gun possession charge, so we could catch these folks early when they first start possessing a gun before they get into narcotics.

Target Population

One of the central concerns about a specialized court for gun offenders is the nature of the offenders themselves. Because the gun court model excludes cases involving overt violence by definition, one possible consequence is that the court is missing the offender population most directly implicated in violent street crime. Specifically, a “typical” gun court defendant has no criminal record and may not be at heightened risk for violent recidivism. However, despite the lack of habitual offenders, proscribed penalties in Gun Court were relatively harsh. One judge clarified: “Most of those cases involved individuals who had no prior record so those cases would be heard in Gun Court and the [sentencing] guidelines, which are set forth by the Legislature, the sentence would be not be mandatory, but the guidelines are 1-2 years for just possession of a gun.” It is unclear whether the threat of harsher-than-usual penalties deterred specific offenders after Gun Court, or whether the population may be biased in an important way. One judge summed up this group thusly:

You have people who are carrying guns through a bad neighborhood, you've got businessmen carrying guns because they have cash, and you have people who—that's just their lifestyle, to carry a gun, and they never bothered to get a permit. Well, they are in violation of the law. So at least a portion of that group, the first-time offenders, you're not going to see them back anyway.

Another judge concurred:

Most of these guys aren't real bad guys -- most of them. Again, they are first-time offenders, they stepped into the criminal system by possession of a gun, and oftentimes what I would hear is that this gun is for protection more than anything else. [They would say] 'I didn't pull it out, I didn't threaten anybody, but in my neighborhood you gotta have a gun.' And while I don't condone that, I guess through some eyes that may be a reason or explanation as to why you have the gun, although it's not acceptable.

The apparent emphasis on harsher-than-normal sentences for those convicted in Gun Court is directed at offenders who are viewed as at-risk and may exhibit escalation in offending patterns that culminated in personal crimes. These individuals fit nicely into a developmental trajectory for anti-social and criminal behavior beginning early in the life-course. One judge recalled:

The trend would be a graduation of crimes. In looking a pre-sentence reports, it would start off mainly with truancy, and then your petty crimes, your drugs, and then it would escalate into guns and then as I see it now, after guns they become more violent with robberies and aggravated assault.

Another judge commented that while many possession cases were less serious in that guns were rarely drawn or fired, the circumstances under which guns were found were sometimes illuminating and helped to shape judicial decision-making:

I just remember some of the cases—most of the time it was a possession that was in a car, or somebody is in the street and they stand up with a gun. Every once in a while you'd get a car that would have the guns and would have bulletproof vests, and would have ski masks, then you knew something else was going on. Even for first-time offenders, those are the people I usually put in [jail or prison] initially.

Therefore, although it may be difficult to detect systematic differences in terms of the legal factors involved, it seems reasonable that there may be a functional dichotomy of Gun Court defendants: first, those who are unlucky enough to be caught with an unlicensed firearm but who

do not otherwise represent a risk for violence or recidivism; and second, those who may have been apprehended before they were able to complete a violent felony, but who were tracked into Gun Court due to the lack of evidence to support a more serious charge. This second hypothetical group represents the real target population for Gun Court's programming and intensive supervision.

Context and Implementation

Participants were queried about the issues surrounding the implementation of Gun Court. When asked about the nature of violence in Philadelphia prior to the Court, one judge responded succinctly, "Well basically it was the same as what's going on now." Another judge elaborated on aspects of the violent subcultures in Philadelphia:

We had gang killings [in the past] but it was like one gun for the gang. Now it's just like a right of passage and in some neighborhoods you have to have a gun. If you don't have a gun, you're a sort of outcast or you're a punk. Now all I'm doing are homicides and I see these absolutely senseless killings by 19 year old kids who were responding to anger. Sometimes a good portion are drug related. But it's not all drug related... a lot of killings in Philly are anger killings in response to some slight that is perceived or some money that is owed something reasonably trivial that would have passed or maybe resulted in a fist-fight years ago, now results in a killing.

These properties suggest an articulation to criminological theory, specifically theories on criminal or deviant subcultures. Seminal works by Miller (1958), Wolfgang (1958), and Wolfgang & Ferracuti (1967) support the conceptualization of a subculture in which perceived respect is paramount and in which relatively minor insults to the honor of its members demand retaliation. What may distinguish Philadelphia's subcultures from those theorized by Miller and Wolfgang is the apparent preponderance of readily accessible firearms and the willingness to employ them to lethal effect. In fact, recent research conducted by the International Small Arms Survey on the marginalization of young, urban minority males (see Bevan & Florquin, 2006) reaffirms many classical statements on the relationship between respect, violence, and firearms.

Participants were further queried on the political climate during the implementation of Gun Court. All three judges agreed that there was a strong mandate to address the wave of violence in an affirmative fashion. One judge illustrated by citing typical caseloads in the Court:

[The political climate was] mainly reactionary. There were so many guns on the streets and there still are, that on any given day there would be, I'd say, on the average of 10 cases listed in Gun Court, five days a week, so that's 50 cases a week. On the average, when I was in Gun Court, I would dispose of about 5 cases a day, either by trials or by guilty pleas. So that's 25 cases a week—some days would be more, some days would be less, but nonetheless, those are cases of guns taken off the street by way of the arrest, and usually I would order that the gun be destroyed after the trial was over. After 30 days pending an appeal, the gun would be disposed.

In addition to acknowledging the supply-side gun problem in the Philadelphia area, these comments show direct support for one of the key tenets of Gun Court, namely that illegal guns must be removed from circulation. There were few problems mentioned in terms of implementation, given that the development of Gun Court was primarily an internal reorganization effort. However, the requisite relationships between Gun Court, probation services, and various rehabilitation and reintegration programs required coordination and planning. One judge explains:

Well the funding is always a problem. The funding of Gun Court and for it to be effective, the trial, and afterwards, the probation department, for it to be really effective, I think they need more probation officers to implement it. And some of the cases, once they are in probation, if there could be a more effective step-down. Some of these guys don't need the intense probation supervision. Other guys do, and from what I understand, there is a step-down program, or you may want to call it a step-up program, where these individuals between the ages of say 18 and 26, during what I call the "stupid" age, where they just think they are invincible and they do things that take a lot of risks, and they do things that not only put themselves in harms way, but other people in harms way. I know there is a component now that they have where there is more intense supervision of these individuals so that their lives can be governed, and protect them not only from themselves, but protect them from getting shot by someone else.

Each of the three judges was also asked about the degree to which Gun Court received publicity or coverage in the form of advertising or news stories. No advertising campaign supporting the program was planned or funded, so the task of disseminating information about

Gun Court fell to media, especially local media, who had been characterizing the violence problem in Philadelphia for years. Responses varied on this subject, but the judges seemed to agree that there was considerable interest in Gun Court at the outset, but that interest has waned over the years. One judge recalls, “My first day in Gun Court, I came out, it was packed as it would be for the rest of that year, and the news media was all over it. The print media is pretty good about following a story.” Another judge, when asked about his recollection when on the bench, seemed more dubious about the media interest, believing that there was coverage initially, “Just to announce it—you know, it was something new. I did not talk to one reporter during my entire tenure. And I’m not aware of any ever being in the courtroom.” The inconsistency in media attention was also expressed this way:

It’s been sporadic. It was [covered] up front, at first it was a fair amount... but sporadically someone will do it like in the city paper, the Philadelphia Weekly. The Inquirer was just in and they wanted to talk about it—I have a feeling they are doing a large article on overall justice system so that was just one piece. And the State Legislatures have been through and they are coming through and they want an update on it. It’s quieter now—just once in a while somebody will do a piece.

The relative lack of publicity presents problems for the hypothesis that Gun Court may be exerting a general deterrent effect on potential gun-carriers. Because there is no consistent message being broadcast, and because the caseload in Gun Court is relatively small compared to the number of potential offenders in the Philadelphia area, it is plausible that many individuals are not aware of the Court’s existence.

Probation and Gun Court

The “enforcement” arm of Gun Court is provided by Philadelphia’s Adult Probation and Parole Department (APPD), which assigns case officers to supervise offenders convicted or pleading guilty in Gun Court. Gun Court probation is ostensibly an intensive supervision program, featuring provisions for more frequent drug testing, home visitation, and electronic

monitoring. Probationers also sign a pledge before the judge to possess no guns as one of the terms of their probation, attend anger management training, and complete community service, all of which are supervised by APPD officers. The intensity and time required to achieve these objectives is balanced by a lighter-than-normal caseload of approximately 75 probationers per officer, about one-half of a typical Philadelphia supervision caseload.

All of the judges were quick to emphasize the interplay between Gun Court and this enhanced probation, which is one of the favored sentences for at-risk offenders. One judge said succinctly, “Their [probation enforcement] role is the most important function of Gun Court.” Another judge added that the tight coordination between Gun Court and probation paid dividends in terms of communication:

These cases tend to get lost in the system when they were with a number of judges, and there is a lot crime, of course, that comes before a judge where there is physical violence or threat of violence. Gun cases would tend not to be lost, but they also weren’t given [any] individualized attention. As a judge just hearing gun cases, you realize it sort of brought it home, how prevalent the problem is, and you see it on a daily basis. You also have one [probation] unit that does nothing but the Gun Court violators. So you develop somewhat of a relationship with them, and see the same probation officers. I attended their meetings, so there was more communication. So in that sense, it was good because it focused the judge on the gun problem, it would allow the judge once focused on the gun problem to be in contact with the probation services.

Presumably, these benefits combined to make the relationship between Gun Court judges and APPD officers supervising Gun Court offenders stronger. In addition to greater understanding of programming requirements and progress for individual offenders, this relationship also facilitates the punishment of offenders who violate their probation. Still, the possibility exists that some net-widening may occur, given the intensity of surveillance for this population.

When asked whether the goals or objectives of Gun Court have changed since the program’s inception, none of the judges responded that they had, and all believed that the future was promising given Philadelphia’s crime problem. One judge explained:

[Have the program's objectives changed?] Not really—I don't think so. If anything, they've probably become more intense in terms of seeing what can be done and how to manage offenders, what to do down the line in terms of the drug treatment, the alcohol treatment, the ability to curtail them from further crime and involvement. Other than that, I mean I think we've learned a lot since the conception or implementation of Gun Court, but I don't think that things have changed to the extent that there is any negative side of it that we should stop doing Gun Court. At one point, I think we were even considering having two Gun Courts because the inventory in Gun Court is, I forget what the numbers are now, but it is a huge number of cases and growing.

Program Benefits

A central feature of the Gun Court is the emphasis on deterring future gun crimes, and one way in which deterrence is emphasized is through more serious penalties for gun possession.

The debut of Gun Court in Philadelphia coincided with a decision on the part of the Pennsylvania legislature to elevate illegal gun possession from a misdemeanor to a third-degree felony. One judge commented on the change while also hinting at the issue of perceived deterrence: "I know it was just decided that the penalties would be increased, which I guess the thought of that would lead to curtailing possession, if you had an idea that it was a more serious offense than just a misdemeanor which sometimes people tend to shrug off." Other judges were supportive of the notion that there is some deterrent effect associated with the Court, but also acknowledge the potential problems in identifying the target population:

[Was there a deterrent effect?] Oh yeah, absolutely yeah. And then too, I think that most of the people that come through are first-time offenders. They either carry for protection, or so they thought, or weren't aware that because they could purchase it, that they couldn't carry it, and so they are not people who have had previous criminal involvement so they are not as likely to re-offend.

One possibility is that Gun Court offers advantages in terms of specific deterrence effects, but falls short of its goal of general deterrence. Additionally, the educative effects of Gun Court may be manifested here in the form of a greater understanding of the law for many defendants who are processed through Gun Court but do not necessarily represent the target population. One judge commented:

[The] only benefit, and I think it was probably anticipated, has been that there has been less, given the volume of cases, less recidivism for the same offense. Those people that re-offend typically don't come back for a gun related offense, which is unlike a lot of other, you know, drug cases and things like that, they come back for those kind of cases. But due to the intensive supervision, and also just the awareness of the seriousness of a gun offense, people don't get in court for that.

Another potential benefit of the Court is improving consistency of judgments in gun possession cases. One judge agreed, saying, "The type of cases [is] consolidated in one courtroom which makes for more uniform disposition." Another judge characterized efficiency gains from judicial specialization:

There was a tremendous number of motions filed, motions suppressed, because in a gun possession case, the evidence is really the case... clearly when you are having that number of suppression motions and different issues, you are becoming more efficient as a judge as far as allowing the cases that have no constitutional violations to go through and the ones that are constitutional violations take them out.

Generally, cost savings might be assumed since concentrating all cases of this type in a single courtroom frees resources for other purposes. However, one judge believed that cost savings were not as high on the priority list of Gun Court goals as were other objectives:

In terms of savings, well, I'm not so sure that was necessarily a goal. But I think efficiency in dealing with the problem, in that regard, I think it's been efficient. And like I say, you get the consistency and you know, the judge sitting in that program gets very versed in the applicable law. So in that regard, I guess there's an efficiency to be gained if the judge is more versed because you're not going from one case to the next—it's the same thing you're doing day in and day out. Same thing with probation—system-wide within the judiciary, there's no additional impact other than that the other judges don't have to deal with those cases. So you have an efficiency dealing with one particular problem. And same thing with probation—you have specialized Gun Court probation officers so they deal with those problems and like anything, if you do it over and over again, and you don't get sloppy, you do a good job.

All of the judges interviewed about Gun Court pointed out that there are intangible benefits, both to the system and to the offenders themselves, associated with the Court's enhanced programming. In some ways, Philadelphia has synthesized the most promising elements from other gun court models, resulting in a layered approach that attempts to address

underlying problems and social issues rather than simply incarcerate the maximum number of gun offenders. One judge explained the long-term strategies associated with conviction and correctional supervision:

Most of the individuals that were convicted by me or if they plead guilty, they would have to complete 20 hours of community service, and I would leave that up to the probation department. They would have to get a GED if they didn't and I would give them usually a time-certain during their probationary period or depending on how far they went in school, I would leave it up to the probation department, because some guys, I mean they got the smarts to get a GED—some would take a year, some would do it in 6 months—so I would leave it up to the probation department to establish the time that they would have to get the GED or the diploma. And they would have to get a job—I would usually give them 60 days to secure employment. If they did it during the term of incarceration, I'd give them 60 days after they were released from incarceration to get a job and that job would have to be something where taxes were taken out of their check as well as social security, so it could not be an under the table job, it would have to be a job above-board.

Another judge expounded on the role of community service, anger management, and the rehabilitative functions:

We also established that they would do a certain amount of community service, between 20-30 hours. I have people say why not 100, and I asked that question actually, why is there only 20 hours of community service? And the experts in that field, the people who had been involved in community service and groups that monitor the community service, and their feeling was that you were handling a large number of people through this Gun Court, and even as a rule, they felt that community service is effective if it can be accomplished. And 20 hours is sort of a pain in that it puts somebody to the task, but it's accomplished. You got 1,000 hours of community service, they're never going to accomplish it. Even 100 hours would never be accomplished, so it sets a sense of accomplishment. We also mandated that they go to anger management because we have a lot of young males between 18 and 24 who are on the cusp of going onto not bigger and better things, but bigger and worse things, or more violent things. So a lot of that has to do with the anger management or anger control. So they had to complete those and I would give them those conditions at the time of sentencing.

From these comments, it is evident that the Gun Court judges believe that the program has achieved some level of success, even if that success is measured in terms of individual-level deterrence and reform rather than in aggregate crime rates. Also, some of these benefits may be incalculable in that offender trajectories are largely unknown for first-time arrestees.

Assessing Outcomes

There are many outcomes of interest related to Gun Court, including intermediate ones, such as the number of cases processed or the change in conviction rates, and long-term ones, such as a drop in gun crime rates in the Philadelphia area. When confronted with the question of whether Gun Court had accomplished its goal thus far, reactions were generally positive but varied in detail. One judge believed that the enhanced penalties and the holistic approach was a wake-up call for those headed in the wrong direction:

For the most part, yeah. I think that it's well on the way. There are a lot of benefits that have come out of Gun Court in terms of getting individuals who [had] no prior record, and steering them away from crime. Guys who come in and fess up, plead guilty, and don't come back. Yeah, they see that there are other ways and for the most part, they do right and become productive citizens.

Another judge concurred with this assessment, but added that harsher penalties and sentencing guidelines also supported the educative function of the Court:

After three years I think there is awareness that the gun issue in Philadelphia is being taken seriously and is being addressed, and also I think that is a product of having increased the penalty because it previously was a misdemeanor and then raised to a felony with a minimum in the standard range of at least one year in incarceration. So, I think it's probably had some impact in terms of awareness. I think that those who have been through the system view it as an educational component, and as most things in society, information and knowledge is key to changing any type of culture or perception about things criminal, or perceived to be criminal.

Gun Court's impact in terms of incapacitating illegal firearms has been substantial as well.

Although precise numbers were not available, one judge estimated the effects this way:

Over 3,000 guns have been destroyed, so by just pure numbers, that has to have had some kind of effect if you figure 5% of those were guns possessed by bad guys, you're talking probably 150 guns that could have been involved potentially in a crime... If you say 3,000 or more, well that's a lot of guns.

Therefore, in the opinion of at least one judge, the effect of facilitating firearm seizures and ultimately destruction may not influence base rates of violence, but it stands to benefit victims by reducing risk in some way.

Despite the perception of positive effects, the judges remain realistic about Gun Court's overall impact. No specialized court program can expect to address all of the social, environmental, and other factors predisposing individuals to seek out guns for various reasons.

One judge summarized his perspective:

It's a very small step in a very large problem, which is not just the Gun Court problem, but hard pockets of poverty, a school system that is desperately in need of funds, we almost need a marshal plan for some parts of the city. It is a positive step... but it's only a drop in the bucket. But I think it focuses people on the problem in a sense that you have to have a Gun Court. We seized something like 1,200 guns [one] year in Gun Court. I think I got rid of almost 1,000 cases.

Impact of Gun Court

Although Gun Court may have some positive benefits, the question of whether the program has impacted gun violence rates is entirely different. Perspectives on this issue ranged from optimistic to cynical, but all of the judges remained realistic about the potential for reform. Gun Court is clearly not a panacea, but in the opinion of the judges, it can occupy a role in the pantheon of anti-violence initiatives. Some of the disagreement about impact may be due to the way in which the question of impact is framed. Qualitatively, while some offenders may be diverted from reoffending because of key programming elements, there is still much work to be undertaken. One judge expressed his sentiments this way:

[Does Gun Court have any impact?] I think as a deterrent, yeah. Then there are other individuals who just don't give a damn, they continue to get in trouble and get locked up... and a lot of that is spurred by the economics, lack of a job, and that's spurred by lack of education. In the end the drugs involved in it, the alcohol, family problems, so it's a whole pool of things that sort of feed into one when they get these guns and do the things they do.

Although the Pennsylvania legislature has been supportive of anti-violence initiatives, there appears to be little support for measures that might have a greater impact on the supply-side dynamics of Philadelphia's gun problem. One judge articulated some doubt about the impact

Gun Court can have on crime rates because of the difficulty associated with reducing violence when there is a ready supply of illegal guns always available on the streets of Philadelphia:

[Does Gun Court have any impact?] Not at this point, I don't think, just because the volume, there's just too many guns out there. You can't arrest your way out of the problem, you can't confiscate your way out of the problem. There's nothing we can do as far as limiting the number of guns. The legislature would not read a bill out of committee, wouldn't even get it to a vote, I don't even know if they have had hearings on it, [for] limiting the purchase to one gun a month. So that was the initial small step they wanted—one gun a month... I think if we got some regulations, or if there was some way to control the flow of guns coming in, I think it would be an even more effective tool in the judiciary because you may then see some more effect.

Despite the progress and the challenges, all of the judges echoed the persistent need for Gun Court in light of overwhelming violence. One judge lamented the steady flow of cases involving gun violence and death, noting that by late March 2008 he had already seen a dozen homicide cases:

[I have judged] 12 homicides already—I'll do probably 40 this year, maybe 50, so it's volume here, and that's what Gun Court is, that's why we need to focus too, and that's why the city needs to have that number and why we have the death-by-handgun problem that Philadelphia has. It's a small step, but we have to take that step.

CHAPTER 5 QUANTITATIVE ANALYSIS

Data

Data for this analysis were collected from the Pennsylvania Uniform Crime Reporting System. The Metropolitan Service Area (MSA) was used as the unit of analysis, because it offers several advantages over the incorporated city limits. Specifically, the MSA offers a more accurate picture of social realities in Philadelphia, because: (1) the real boundaries of the city extend beyond the “official” city limits; (2) there may be reason to believe that crime is diffused in ways other than according to arbitrary political boundaries (e.g., according to social networks, transit routes, or other means); (3) people from the surrounding areas arrested in Philadelphia are tried in Philadelphia’s First Judicial Circuit, and therefore receive the Gun Court treatment under study; and (4) generally speaking, there may be reason to believe that the treatment effects, if any, are unlikely to be diffused in ways that follow arbitrary political boundaries (e.g., social networks implicated in more guns confiscated, more offenders deterred or rehabilitated, etc.).

The outcomes of interest include monthly crime incident counts in several different categories. One group of categories includes gun-related crimes (murder with a firearm, robbery with a firearm, assault with a firearm, and “weapons charge,” typically defined as illegal possession or carrying of a handgun), while the other category includes non-gun property crimes (larceny, motor vehicle theft) in order to provide some comparison for a general crime baseline. The non-gun crime categories also provide a check on the observed effects, because hypothetically there should be no effect on these levels after the intervention is introduced. Additionally, tracking non-gun crime rates offers an opportunity to monitor potential substitution effects as offenders are deterred or otherwise dissuaded from more violent crimes involving weapons.

For the purposes of standardizing values in the analysis, monthly crime counts were converted to rates per 100,000 people by dividing the monthly count by the population and multiplying by 100,000. The population values were taken from the PA UCR, and fluctuate yearly. For the period under study, population in Philadelphia's MSA has increased consistently from 2003 through 2006, though this increase in overall population is taken into account when reporting trends in the crime categories of interest.

Plan of Analysis

The effects of Philadelphia's Gun Court program on aggregate levels of gun-related crime at the MSA level necessitate a time series analysis that compares crime rates before the intervention to the same crime rates after the intervention took effect. Though a simple t-test can determine mean differences, a more sophisticated approach reveals critical details, including month-to-month variation, the rate of increase or decrease after the intervention, and the degree to which the series is affected by patterns of seasonality. The proper methodological technique for controlling these factors involves examining the series for potential confounds and correcting them statistically. The former can be accomplished with sequence plots and autocorrelation functions. The later involves Auto Regressive Integrated Moving Average (ARIMA), a method for estimating models for time series data. ARIMA analysis features an autoregressive term to account for temporal autocorrelation, and ARIMA generalizations are available to specifically address seasonality in the data (e.g., seasonal ARIMA, or SARIMA).

The evaluation of Gun Court's three stated goals, specifically (1) educating defendants about gun safety, (2) providing infrastructure to punish Court Order violators and recidivists, and (3) providing prompt adjudication in order to facilitate illegal gun seizures, is a necessary prerequisite to any analysis of the ultimate impact the program has on aggregate-level violence in Philadelphia. These goals, if satisfied, should have three basic implications for the outcome

evaluation. First, gun safety education will increase following the introduction of the Gun Court program, because this treatment was not a condition of punishment before Gun Court. Second, the number of defendants on probation and parole who are re-arrested and punished for violations of Court Orders and probation/parole conditions will increase following the introduction of the Gun Court program, because intensive supervision is emphasized as a means to control at-risk gun offenders. Third, time to disposition will be significantly reduced for Gun Court defendants compared to non-Gun Court defendants as a result of “fast tracking” these offenders on the specialized docket.

A preliminary analysis of Gun Court’s first year of operation conducted by the Philadelphia Adult Probation and Parole Department (Kurtz et al., 2007) shows that Gun Court defendants are pleading guilty (78%) and are being convicted (65%) at higher rates than non-Gun Court defendants with similar charges (65% and 57%, respectively) from a retrospective sample. Gun Court defendants also were sentenced to county prison² at a higher rate (vs. probation sentences), up from 34% to 47%, in the program’s first 18 months of operation compared to the previous year. These preliminary numbers indicate that Gun Court is exerting some deterrent effect in terms of guilty pleas, conviction rates, and severity of sentences overall. Importantly, although the Gun Court may be exerting an objective deterrent effect, the degree to which past and potential future offenders perceive that effect is unknown. Furthermore, Gun Court defendants appear to be completing their community service and court-ordered anger management programs at a higher rate than non-Gun Court offenders, suggesting that the program may be meeting its objective of greater surveillance.

² In addition to dozens of state-run prisons, Pennsylvania features county-level correctional facilities that are termed “prisons,” though in actuality their function is similar to traditional jails in that they primarily house low-level offenders serving short-term sentences (up to two years) in addition to those awaiting trial and transfer to higher-level facilities. As of 2008, there were six such county-level prison facilities in operation in Philadelphia County.

The evaluation of the impact that these objectives have on observable outcomes (and overriding concern), namely the reduction of gun crime rates in Philadelphia after the intervention's introduction, is the objective of this study. Three basic elements are required in order to measure such a change. First, the Gun Court program must be effectively implemented (e.g., the three stated goals are met); second, there must be sufficient causal linkage between these three goals and the outcome of interest; and third, the dosage of the treatment must be adequate. Under those three conditions, there should theoretically be a corresponding drop in gun crime rates in the Philadelphia MSA in comparison to an alternative site that did not receive the intervention in the period under study. Alternatively, if there was a drop in gun crime rates in the Philadelphia MSA, it is possible that there could be an observable displacement effect to surrounding areas, such as parts of New Jersey, Delaware, and Maryland.

Methodology

Determining the relationships between measures in time series data requires several overlapping techniques for univariate, bivariate, and multivariate analysis. First, descriptive statistics provide basic information about data dispersion and central tendency. Second, bivariate analyses such as Pearson's correlations and Student's t-test provide some indication about the nature and magnitude of relationships between measures. Finally, multivariate analyses occur in several steps, as model estimation becomes progressively more refined, accounting for systematic trends and non-stochastic variation in the models, beginning with OLS regression and moving to ARIMA. Finally, time series data plots illustrate trends in each of the dependent variables with a clear demarcation for the Court intervention.

Multivariate analysis using OLS regression offers a convenient comparison for assessing the relative improvement ARIMA model specification to fit the existing time series data. Although the OLS comparison models are presumed to be less efficient generally and may in

some instances be in violation of traditional assumptions (as time series data are, by nature, serially autocorrelated), they offer both a convenient metric for the improvement in parameter estimation when transitioning to more advanced techniques and an opportunity to test underlying assumptions of homoskedasticity, which is defined as constant variance in a sequence of variables.

Time series analysis also provides a correction for observed serial autocorrelation, defined as the degree of association for a given variable with time-lagged versions of itself. Serial autocorrelation is critical because significant autocorrelation violates the OLS assumption of independence of error terms. Data that show evidence of serial autocorrelation and other time-related violations of traditional OLS assumptions require more sophisticated techniques. Estimation of regression models to illustrate trends in time series data requires careful accounting to avoid underfitting (e.g., a failure to properly correct for systematic variation caused by an identifiable pattern, such as seasonality) or overfitting (e.g., misinterpreting randomly occurring “noise” in the data as systematic variation). In all cases, ARIMA models must be estimated after specifying three critical components: the autoregressive (p), integrated (d), and moving average (q) components. Thus, ARIMA models are sometimes referred to casually as “p, q, d models” because correct specification requires relies on the proper values for each of the three terms.

Autoregressives in ARIMA specification range in practice from zero to n , though typically models exhibit values from zero to two. The value $p = 0$ indicates that data are raw and do not show evidence of autocorrelation. The more common value $p = 1$ indicates that data are autocorrelated at lag = 1; lags may represent whatever time period is used to divide observations (e.g., days, weeks, months). A model estimated at $p = 2$ indicates that data value (x_t) is

independently correlated with values at lag 1 (x_{t-1}) and lag 2 (x_{t-2}), and so forth. Evidence for autocorrelation in raw data can be obtained from the Durbin-Watson statistic (Durbin & Watson, 1950, 1951), which uses the residual term to calculate the test statistic. Values of the Durbin-Watson statistic range from 0 to 4; values around 2 indicate no autocorrelation, while values smaller than 1 indicate the presence of autocorrelation.

The moving average component in ARIMA modeling addresses random error, or “shocks,” that affect the predictability of the series over time. By specifying a value for the moving average component, the ARIMA model corrects for the correlation in error terms for adjacent data occurring because of the presence of these shocks. Identification of the moving average depends upon the interpretation of autocorrelation functions (ACFs) and partial autocorrelation functions (PACFs). More specifically, trends in the ACF suggest values for the ARIMA component q ; when the ACF reaches an abrupt cut-point at lag “ x ” rather than experiencing a gradual decline, the value of $q = x$.

Finally, the integrated component in ARIMA modeling permits correction for non-stationarity in the raw data. Stationarity refers to observations as being stochastic in nature, with unchanging mean and variance. Assuring stationarity is critical when modeling time series data because of inferences about probability distribution. Specification of common values $d = 1$ or $d = 2$ in ARIMA models is referred to as “differencing,” or removing linear or quadratic trends, respectively. Raw data stationarity is tested using one of a number of criteria, the most robust of which is the Augmented Dickey-Fuller test. This diagnostic functions by removing inherent structural effects (serial autocorrelation) in the time series and then tests for the presence of a unit root, defined as non-stationarity in the differencing process of the data (Dickey & Fuller, 1979; Said & Dickey, 1984).

Results

Univariate analysis illustrates basic properties of the data. Unsurprisingly, the rate for larceny in Philadelphia is the highest among all of the rates in the analysis (158 per 100,000 people), while murder with a firearm in Pittsburgh is the lowest (nearly 0.9 per 100,000 people). Motor vehicle theft, robbery with a firearm, assault with a firearm, and weapons charges in Philadelphia range from a high mean of nearly 32 vehicle thefts per 100,000 people to a low of nearly 6 weapons violations per 100,000 people. In Pittsburgh, the ranges for these same rates vary from a high mean of almost 15 motor vehicle thefts per 100,000 people, or about half the average number of thefts as Philadelphia over the same period, to comparatively low means of about 4 gun robberies, assaults, and weapons charges per 100,000 people. Descriptive statistics are presented in Table A-1. Further, simple bivariate correlations indicate relationships between variables used in the analysis. A matrix presenting Pearson's correlations for the crime rates for Philadelphia and Pittsburgh is presented in Table A-2. These correlations indicate only a weak association between most of the crime rates, although several rates in both cities appear to be correlated with larceny at or above 0.500 (including murder with a firearm, robbery with a firearm, and motor vehicle theft in Philadelphia). Most bivariate correlations are positive in direction, but there are a few exceptions (e.g., between the murder with a firearm rate and the weapons violations rate in Philadelphia). The highest bivariate correlation was between larceny and assault with a firearm in Philadelphia (0.701).

Although greater sophistication is usually required when analyzing time series data, a simple t-test can provide some suggestion about the relative impact of the intervention (introduction of Philadelphia's Gun Court) on the dependent variables under examination (population-standardized crime rates). T-tests were performed, with the dependent variables (crime rates) separated into pre-intervention and post-intervention groups. Results indicate some

significant differences: the rates of murder with a firearm and robbery with a firearm are significantly different when comparing pre-intervention to post-intervention observations; interestingly, the means for the post-intervention observations are actually higher than that of the pre-intervention observations, indicating that the rates increased in the period after the introduction of the Court. This result may be due to escalating trends in violent crime generally during the period under study. The rates for assault with a firearm and weapons charges are non-significant. The first of the two “control” rates (larceny) is similarly non-significant. Finally, the second control rate (motor vehicle theft) shows a significantly lower mean in the post-intervention period.

Multivariate Models

Two sets of multivariate regressions are estimated in order to assess the effect of the gun court intervention on various rates of crime. The unit of observation was monthly counts of firearm-related crimes known to the police. Baseline OLS models for each of the dependent variables of interest (crime rates) were estimated but not included, as the more robust ARIMA models provide greater reliability for interpreting results. Each model was specified identically, with no autoregressive term and only a single independent variable, a dichotomous measure representing the intervention effect. Results show that, prior to ARIMA model specification, the independent variable representing the implementation of the Court program is statistically significant in several of the models. In particular, the coefficient for the Court is positive and significant for the dependent variables murder with a firearm rate ($p < 0.01$), robbery with a firearm rate ($p < 0.01$), and motor vehicle theft rate ($p < 0.001$). The coefficient for the Court term was positive but non-significant at the $p < .05$ level for the remaining dependent variables, assault with a firearm rate, weapons violation rate, and larceny rate.

The second set of multivariate regressions go beyond the baseline OLS models to correct for autocorrelation, random shocks, and other potentially confounding issues in the series. Results are presented in Tables A-3 through A-14 (each pair of tables represents models from Philadelphia and Pittsburgh, with odd-numbered tables corresponding to Philadelphia and even-numbered tables corresponding to Pittsburgh). Estimation of the ARIMA models indicates that the coefficient for the intervention term in each of the Philadelphia models, representing the date that the Philadelphia Gun Court was established, was non-significant at $\alpha = 0.05$ in all cases except one. In that case, when the dependent variable was the Philadelphia murder with a firearm rate per 100,000 people, the coefficient was significant ($p < 0.05$); however, the sign of the coefficient indicates that the introduction of the Court is positively associated with the murder with a firearm rate, contrary to expectations. Critically, the introduction of the Court does not affect the rate of weapons violations, presumably the most representative measure available for gauging the impact of the Court on the central problem of illegal weapons in the Philadelphia area.

Results from Pittsburgh, similar to Philadelphia, indicate no effect for the timing of the intervention in all but one model. The single exception indicates that Pittsburgh experienced a statistically significant increase in weapons charges following the implementation of Philadelphia's Gun Court. Because there is no compelling reason to believe that the Philadelphia program should have produced such an effect in Pittsburgh after its implementation in 2005, this result is considered anomalous, though one potential explanation is that there were concurrent anti-gun policies introduced at the comparison site whose timing and explicit effects cannot be disambiguated.

Time Series Plots

Results from time series line plots of violent crime show interesting contrasts. First, Figures B-1 through B-5 offer a comparison of violent crime trends in five major U.S. cities (Philadelphia, Los Angeles, New York City, Chicago, and Miami, respectively). There is an obvious discrepancy between the general trend for Philadelphia compared to the other cities; specifically, while the other cities experience steep declines in violent crime from the 1990s through 2004, Philadelphia's violent crime trend appears relatively stable with a slightly positive slope, indicating an increase in violent crime. These general trends help to establish the unusually pervasive nature of violent crime in Philadelphia compared with other large American cities.

Figure B-1 shows the line plot of the murder with a firearm rate for Philadelphia and Pittsburgh from 2003 through 2006. Generally, the trend in murder with a firearm rate appears to be linear and positive, indicating an increase over time. The slope of the trend line for the pre-intervention period appears more flat than the post-intervention period, suggesting an increase in murders with a firearm in the post-intervention period. Finally, there appears to be a localized drop in murder with a firearm rate in the months immediately adjacent to the interruption, but its effect is not permanent, as the rate sharply increases in the three periods following the intervention. The comparison rates in murder with a firearm from Pittsburgh shows a flat trend before the intervention and a slight increase afterwards, similar to Philadelphia.

Figure B-2 shows the line plot of the rate for robberies with a firearm for Philadelphia and Pittsburgh from 2003 through 2006. The features are similar in some ways to the plot for murder with a firearm rate, in that there is generally a positive and linear trend in the data, and that there may be a slightly greater slope for the trend line in the post-intervention period. There is also a steep but localized decrease in the robbery with a firearm rate surrounding the intervention,

followed by a sharp increase in the subsequent months. The comparison from Pittsburgh shows a flat trend before and after the intervention, suggesting (as expected) that the Pittsburgh rate is unaffected by this intervention.

Figure B-3 depicts the line plot for assault with firearm for Philadelphia and Pittsburgh from 2003 through 2006. Unlike the plots for trends in murder with a firearm rate and robbery with a firearm rate, the assault with a firearm rate trend is reasonably flat, exhibiting only a slightly positive increase over time. The slopes in the pre-intervention and post-intervention time periods seem approximately equivalent. Also, unlike the previous two plots, assault with a firearm rate experienced a sharp decline in the months preceding the intervention and remained fairly stable for several months before sharply increasing in month 32 (August 2005). The comparison trend from Pittsburgh shows similarities, with peaks in assault with firearm crimes in summer months for both sites.

Figure B-4 shows the line plot for weapons violation rate for Philadelphia and Pittsburgh from 2003 through 2006. This plot shows considerably more month-to-month variation than previous rates, exemplified by a sharp spike at month 15 (March 2004). The trend line for pre-intervention and post-intervention periods appears reasonably mild, with a slight positive trajectory overall. In contrasting the two periods, the post-intervention trend appears flatter than the pre-intervention trend, which suggests that the rate of increase may have been affected somewhat by the introduction of the Court. The comparison trend from Pittsburgh shows additional variability between the two sites. In the pre-intervention period, Pittsburgh has a reasonably flat trend, while the post-intervention trend is increasing.

Figures B-5 and B-6 show line plots for the two comparison rates (larceny and motor vehicle theft, respectively) for Philadelphia and Pittsburgh from 2003 through 2006. Compared

to the other crime categories under study, these two trends should be reasonably unaffected by the implementation of an anti-gun intervention program, although post-intervention variation could be accountable to changes in offender specialization or substitution effects. Thus, an anticipated positive and significant effect of the Philadelphia Gun Court should result in a decrease in observed rates of gun-related crimes (murder with a firearm, robbery with a firearm, assault with a firearm, and weapons charges) while the non-gun crime rates are relatively stable in the post-intervention period.

Larceny trends show great variability and exhibit marked seasonality, with peaks in offending rates occurring in the summer months with low points in January and February. These patterns are repeated for each of the four years under study. Motor vehicle theft rates differ in that peaks in offending appear to occur during the fall months, although low points can be observed in February and March, similar to larceny. In both of these cases, there appears to be a short-term decrease in crime rates after the implementation of the Court, but it corresponds to seasonal troughs observed in previous and subsequent years of study, thus it seems likely that any observed effects would not be accountable to the Court intervention itself.

Trend lines for the same crime categories measured in the Pittsburgh MSA comparison site also illustrate several general trends. First, in each of the crime categories, the crime rates in Philadelphia are visibly higher than in Pittsburgh. This discrepancy is greater for some categories (e.g., robbery with a firearm) than for others (e.g., weapons charges). Second, most crime types appear to possess similar trends with respect to seasonality across locations, resulting in trend lines that look symmetrical. This insight is serendipitous but beneficial, as it provides guidance on maintaining consistency across multivariate models in addition to identifying potential effects from the intervention. In particular, a positive and significant effect from the

Philadelphia Gun Court would result in a marked drop in crime rates for the treatment site but not for the comparison site. Ultimately, however, the rate trends do not indicate this type of effect as a result of the Court intervention. Coupled with the finding of relatively little effect of the intervention on the non-gun crime types of larceny and motor vehicle theft, it appears that crime rates are largely unaffected by the Gun Court.

CHAPTER 6 DISCUSSION AND CONCLUSION

Discussion

The purpose of this project was to assess the impact of Philadelphia's Gun Court on rates of gun-related crimes in the Philadelphia area. Results from the bivariate, multivariate, and time series plot analyses indicate that there is no statistically significant reduction in gun-related violent crime rates in the two-year period following the introduction of the Court program. Importantly, the Court program itself does not appear to be associated with a decline in the number of actual incidents of illegal weapons carrying, the best available indicator of the presence of illegal guns on the street.

As previously outlined, three basic elements are required in order to establish an observable change in gun crime as the result of the Gun Court program. First, the program must be effectively implemented (e.g., the three stated goals of gun safety education, increased surveillance for probationers, and more illegal gun seizures are met); on this point, there seems to be general agreement based on the Philadelphia Adult Probation and Parole Department evaluation (Kurtz et al., 2007) as well as the opinions of three of the four judges who have presided over Gun Court. Second, there must be sufficient causal linkage between these three goals and the outcome of interest. This point also subsumes the theoretical framework under which the Court is hypothesized to work. On this count, there seems to be some ambiguity. Third and finally, the dosage of the treatment must be adequate. Most sources, including both the qualitative and quantitative analyses presented in this study, appear to favor the position that the treatment dosage in terms of the Court program is not adequate to stem the tide of gun violence or the flow of weapons in the Philadelphia metropolitan area. The dosage issue can be conceptualized as the quantity of gun offenders processed through the Gun Court compared to

Philadelphia's overall illegal gun problem. Although the treatment (the Court program) may be effective at some level, it must also be sizeable enough in relation to the number of illegal guns and/or illegal gun carriers in the Philadelphia area in order to produce a detectable aggregate effect on crime rates.

At first glance, these results suggest that the Philadelphia Court has failed to meet its stated objectives. However, a lack of significance in the time series analysis does not necessarily indicate that the Court itself is ineffective. Several possible explanations exist. First, and most likely, the program may be effective on a scale that is too small to affect the overall levels of violence in the Philadelphia area. This amounts to a problem with the level of the treatment dosage, in which this program, perhaps like most available anti-gun interventions, are a relative "drop in the bucket" compared to the torrent of street-level violence. The evidence in support of this explanation includes qualitative assessments of the Court's treatment efficacy and media coverage of the violence problem in Philadelphia.

Other possible explanations exist for the relative non-finding with respect to the Court. One such possibility is that an effect on aggregate-level crime rates, through whatever theoretical or practical mechanism, has simply not been observed yet. Addressing the root causes of gun carrying behaviors, as well as the difficult issue of supply and demand for guns on the street, may require years or even decades of efficacious programming in order to detect a statistically significant drop. The primary problem with this hypothesis is that any long-term effect that will be eventually detected may be inexorably confounded with other possible explanations. Another possibility explaining the non-finding is that the gun court model generally may pay dividends in terms of increased systems efficiency and cost savings associated with cleared dockets and minimized time from arrest to disposition, while failing to impact street-level crime rates. The

critical articulation between the implementation strategy and measurable outcomes, however, is missing – it seems that Philadelphia’s Court was created with a single purpose (to reduce gun violence), and the mechanisms for fulfilling this purpose were supposed to be largely organic in nature rather than carefully deterministic. This is a limitation, both of the program itself (since implementation fidelity and milestones cannot be accurately assessed) and of any evaluation based on the program.

An interesting discrepancy exists between the qualitative assessments of the Gun Court’s efficacy and the quantitative evidence pertaining to its impact in the aggregate. Although ARIMA regression models indicate no statistically significant effect for the Gun Court on rates of gun-related violent crime in Philadelphia, virtually all of the individuals interviewed about the impact of the Gun Court report a strong belief about the positive virtues of the program, both in terms of individual and community-level effects. These findings are not necessarily in contradiction, however. Anecdotally, it seems reasonable to expect that the various educative and legal functions of a specialized court program should better service the needs of particular types of defendants. In this case, it may be possible that the rehabilitative components designed to address the “cause and effect” relationship between illegal gun carrying behaviors and street-level violence could actually save the lives of some of the offenders processed through Gun Court. It may also be that the Philadelphia Gun Court could have a positive and statistically significant effect on gun crime recidivism at the individual level, which unfortunately cannot be captured in the present analysis. Further inquiry into the nature and magnitude of these effects, if any, will require different data sources and multiple levels of analysis in order to fully address whether Philadelphia’s program is impacting gun crime over time.

The relative success of Philadelphia's Gun Court is premised on three stated goals: first, the degree to which it educates defendants about gun safety; second, the degree to which it provides infrastructure to punish Court Order violators and recidivists; third, the degree to which prompt adjudication facilitates illegal gun seizures. According to an internal evaluation conducted by Philadelphia's Adult Probation and Parole Department (Kurtz et al., 2007), these objectives have been satisfactorily met. One possible rejoinder to this finding is that organizations and programs should not rely on internal evaluations alone, as objectivity and fidelity may be compromised, at least in appearance if not in fact. Another possibility that could explain the null finding of this outcome evaluation is that the program was not faithfully implemented. Certain process-related elements of Gun Court require greater attendance to implementation than others; for example, careful oversight to ensure that probation violations are effectively detected and punished. However, it appears that not only was there no formal process evaluation undertaken, but that the implementation strategy itself was only semi-structured. Although Gun Court may be responsible for an increase in illegal weapons confiscated or even in total prosecutions for non-violent gun felonies since the program was introduced, it is difficult to illustrate precise logic for the change.

Implications for Theory and Practice

Although there are several underlying theoretical mechanisms related to the functioning of the Gun Court, including educative effects and multiple types of deterrence, they seem to be poorly developed overall and only indirectly observable. In most cases these effects may be indistinguishable because they are not assessed at the individual level in a pre- vs. post-test research design. Nevertheless, the lack of measurement does not preclude the possibility that one or more of these principles may be in effect. Principles of deterrence, for instance, play a substantial theoretical part in the Philadelphia model, although it appears that there has been little

attention paid to funding or implementing initiatives that would address deterrence directly. Advertising the program is one example; media involvement is another. However, formal widespread advertising was apparently never funded for the Philadelphia Court, and media interest began relatively high as the Court debuted in early 2005 (Clark, 2005b; Caruso, 2005a, 2005b) but appeared to drop off sharply later in the year, with only occasional “check up” coverage of the program (Gregory, 2005). In both cases, it seems that these public visibility aspects were largely neglected, making the implications for theory more difficult to determine. Ancillary mechanisms like anti-gun education appear to have value for certain populations in evaluations of other sites, but apparently no effort was made to test offenders’ perceptions of these programs in Philadelphia or to improve them in a systematic way. Thus, the only theoretical implications that can be offered here are general ones based on inference and from qualitative data.

One such inferential implication is that the deterrent effects underlying the Gun Court may be distributed through informal social networks. As gun possession and acquisition is related in many instances to social associations through gangs, street gun markets, and other peer groups, a strong deterrent message targeted at gun carriers predisposed to violence could achieve the desired effect of increasing awareness and discouraging gun ownership. However, it is unclear whether Philadelphia’s program emphasizes the diffusion of deterrence into primary and secondary informal networks. Moreover, there is no process in place to measure and test this hypothesis, hence it is largely speculative. Nevertheless, several sources support the existence of a deterrent effect of some kind, but the precise magnitude and nature of that effect remains unknown. This presents an opportunity for future research and potentially also theory-building related to the empirical effects of specialized courts. Additionally, this is an opportunity to

recommend that future programs and evaluations in Philadelphia consider a greater up-front investment in explicitly defining the mechanisms for creating change and the theoretical basis for those mechanisms.

The findings from this study present certain implications for practice as well. First, it may be useful to regard the gun court model generally in terms of other anti-gun policies and interventions. According to Piquero (2006), a great many anti-gun interventions are known to be ineffective at reducing levels of gun crime. Exceptions to this rule include directed police patrol, programs that increase the certainty of punishment, and some supply-side interventions (e.g., targeting gun markets); further, programs that enjoy community support are likely to be more effective than those that do not. In light of these observations, where does the gun court model fall in relation to other anti-gun interventions known to be successful? First, there is no evidence to date that gun courts influence police patrol in any meaningful way. Arguably, Philadelphia police practices do not require modification since offenders are being apprehended, charged, and processed through Gun Court in record numbers. However, in Philadelphia the Gun Court appears to have modified the intensity of post-conviction supervision and patterns of contact with correctional officers, which are factors associated with increased certainty of punishment. Further, the facilitation of illegal gun seizures (and ultimately, destruction of illegal guns) has been achieved by the Philadelphia Court, although the magnitude of this achievement is as-yet untested. Finally, the Philadelphia program has always been and will continue to be popular among community residents and policymakers alike. Therefore, the Philadelphia Gun Court model appears to possess several elements common to successful anti-gun initiatives.

The answer to the larger question of whether or not the gun court model works is more complex than a simple yes or no. Philadelphia's Gun Court does work in terms of increasing the

number of convictions and enhancing sentences under the law compared to a sample of non-Gun Court offenders. The Court also seems to have improved the likelihood of offender desistance for some individuals, at least qualitatively, as indicated in this study. Thus, gun courts generally seem to be a popular and potentially valuable asset to jurisdictions intending to improve the processing of non-violent gun offenders and the consistency with which punishment is delivered. There may also be gains in overall system efficiency as a result of streamlining the processing of gun possession cases. However, in light of all available evidence related to the program, it seems unreasonable at present to expect a substantial decline in gun crime rates as a function of the court itself.

Limitations

This study is not without limitations. First, the measures used to approximate gun crime are imperfect. Although counts for crimes committed with guns are a reasonable proxy, there may be many undetected or unreported crimes that are not represented in UCR figures (the so-called “dark figure of crime”). This limitation is especially noteworthy for UCR counts of weapons charges, which arguably may not be representative of the true number of individuals illegally carrying weapons in Philadelphia. However, this limitation also plagues virtually all research on illegal guns and gun carrying behavior; problems persist in estimating even the objective number of legal guns in private ownership in the United States (Cook & Ludwig, 1996), much less the prevalence of illegal gun carrying. An idealistic measure of the impact of the Philadelphia Gun Court would be the number of illegal guns confiscated or destroyed by the program compared to the total number of illegal guns on Philadelphia streets, which is unknowable. Similarly, the number of illegal gun carriers processed through the program compared to the total number of illegal carriers is an unknown quantity.

From a methodological standpoint, some researchers have suggested that interrupted time series analysis is inappropriate for evaluating the impact of policy interventions. Specifically, the objections focus on three key areas: (1) the selection of a control series; (2) specification of the intervention model; and (3) specification of the time series (Britt et al., 1996). Britt and colleagues' first objection refers to the absence of a suitable comparison site in the majority of policy evaluation studies, which is addressed here by comparing the MSA for the largest city in Pennsylvania (Philadelphia) against the MSA for the second-largest city, Pittsburgh, which is the closest possible analog while holding variations in state law constant. They also note that comparing different crime series, such as violent crime vs. property crime, may lead to inconsistent results. Thus, in addition to having an appropriate comparison site, these analyses are presented with comparison series of various types from the same site in order to provide appropriate baselines for crime trends generally.

Britt et al.'s (1996) second objection refers to the nature of the "interruption" in an interrupted time series analysis, which, in the case of a legislative change, can be assumed alternatively to be the date that a law is passed by the legislature, the law's effective date, the date of the first offender arrest or conviction, and so on. For an intervention that is not tied to an explicit change in the law, however, the proper specification may be disambiguated. In the case of Philadelphia's Gun Court program, which was not tied in an explicit way to legislative changes but instead follows from an administrative mandate, the intervention date may be assumed to occur when the program took effect (that is, when the first offenders began to be processed, disposed, and sentenced). In effect, this intervention date coincides with the publicity push surrounding Gun Court's debut; an Associated Press story on January 15, 2005 was carried nationally, including in local papers and on CNN. However, the positioning of the intervention

may still involve potential confounds, including changes to Pennsylvania statutes or county and local ordinances attempting to restrict firearms. Even other anti-gun programs attempting to disrupt long-term supply and demand in a cumulative way (for example, by increasing the number of gun buybacks over time) could potentially exhibit a lagged effect on the gun-related crime rates of interest.

In the sense that the program focuses on supply-side gun confiscation, the intervention may yield an effect in more than one way. First, as the result of pro-active policing initiatives tied to Gun Court, gun-related arrests may increase and thus gun confiscations will also increase. Second, offenders processed through Gun Court may testify against co-offenders, resulting in increased police surveillance and actionable criminal intelligence leading to arrests and gun seizures. To the extent that Gun Court operates on a demand-side phenomenon, the program is also operating in several distinctive ways. First and most importantly, it is (presumably) sending a message to gun offenders in Philadelphia: having, carrying, and using a gun will result in a harsher overall sentence. Gun Court judges have stated in media interviews that they are less willing to consider plea deals and more likely to impose sentences that exceed current guidelines. In addition, the projected efficiency gained through diversion to Gun Court is substantial (a stated reduction in time from arraignment to disposition from 180 days in Philadelphia's Court of Common Pleas vs. 120 days in Gun Court), which has implications in terms of celerity of punishment.

The selection of Pittsburgh as a comparison/control site for the time series analysis represents the best available analog to Philadelphia while maintaining consistency in the applicability of the Pennsylvania Uniform Firearms Act. In essence, both cities operate under the same legislative umbrella and define illegal gun possession in the same way, a critical issue

for evaluating potential differences due to the adjudication of narrowly-defined statutes. Additionally, both cities are similar in terms of the organization and emphasis of their district court and adult probation programs, with Pittsburgh featuring specialized courts for mental health and domestic violence. However, Pittsburgh, the second largest city in the state, also differs from Philadelphia in important ways. First, the two cities differ markedly in baseline rates of violent crime. Philadelphia consistently appears near the top of annual violent crime lists, while Pittsburgh is rarely mentioned; further, although Pittsburgh may report crime consistent with an urban inner-city, there is no evidence to suggest that the quantity of illegal firearms rivals Philadelphia. Implicit in this distinction are potential confounds in resource allocation for anti-violence initiatives and police practice. Secondly, Philadelphia and Pittsburgh differ in important compositional dimensions, including total population, as well as the proportion of residents below the poverty line and the racial and ethnic demographics for both locations. These distinctions are acknowledged as a limitation of the present study and a direction for improving future multi-site comparisons, but in light of the null finding from the quantitative analysis, the impact of the comparison site is relatively minimal.

Future Research

Future research on this topic should follow three critical research questions. First, a greater understanding of the theoretical mechanisms underpinning the gun court model would help to explain observations and also to shape the development of new initiatives. Most evidence to date suggests that Philadelphia's Gun Court was developed and implemented without a thorough understanding of the theoretical reasons for why the program should produce an effect on the rates of gun violence. However, several sources indicated support for the deterrence effects of gun court, including the qualitative discussions from Philadelphia's own court personnel. The preliminary analysis by Philadelphia's Adult Probation and Parole Department (Kurtz et al.,

2007) posits that Gun Court is successfully exerting some deterrent effect in terms of guilty pleas, conviction rates, and severity of sentences overall, compared to a historical sample of offenders with similar charges who were not processed through Gun Court. Critically, although the Gun Court may be exerting an objective deterrent effect that is observable in terms of aggregate rates, the degree to which past and potential future offenders *perceive* that deterrent effect is unknown.

Second, it will be necessary to examine individual-level data including baseline characteristics, legal factors, and individual offender motivations in order to get a more complete picture of the type of offender for whom gun court works. For example, although Philadelphia has adopted a very progressive vision that incorporates rehabilitative, punitive, educative, and other mechanisms in an effort to achieve maximum impact in response to swelling gun violence, it is possible that one or more of these mechanisms may be eliminated in order to streamline jurisprudence and enhance the factors that matter most to gun crime desistence. Thorough accounting for legal and extra-legal factors may also permit alternative individual-level analysis using techniques such as propensity score matching in order to model trajectories of gun crime offenders. Use of propensity scores may help to identify critical differences between Gun Court defendants and those who engage in violent crime. Drawing these contrasts could lead to potentially useful information related to transitions and turning points where gun carrying escalates to gun violence. Alternatively, this information could illustrate potential problems with selective “cherry picking” of persistently non-violent offenders who are processed through the Gun Court with an expectation that the program should eventually impact violent crime rates.

Third, although this study demonstrates no significant drop in gun crime rates corresponding to the introduction of the program, further investigation should be devoted to

multi-site study of the gun court phenomenon. In many ways, it seems that Philadelphia's overall gun violence problem represents an extreme case compared to many U.S. cities, and it is plausible to suggest that the Philadelphia model could result in reductions in gun crime rates elsewhere. Based on the lack of research concerning the impact of other gun courts on gun crime rates, this would seem to be a logical extension of the efforts to compare the efficacy of various gun court models. Not only would it be valuable to know whether any other site experienced a drop in violent gun crime as a result of this type of program, but multi-site evaluations could help to determine whether individuals experience more positive short- and long-term recidivism outcomes through different combinations of rehabilitative, educational, and supervisory conditions.

Conclusion

Seeking to improve American gun policy is a treacherous exercise replete with bad data, political hype, and baseless knee-jerk reactions. Without adequate information on which gun violence policies work, policy makers are at a serious disadvantage. Cynics may believe that the lack of guidance ultimately proves to be irrelevant and policy marches forward unhindered by such trivialities as accurate evaluation, but the reality is much less pejorative. Politicians must possess some awareness of program costs, at minimum, if they are to appear accountable to their constituency, even when program outcomes are exactly as expected. An ideal gun violence program synthesizes two objectives: first, to have some positive, net effect in reducing gun violence, and second, to offer some benefit to overall justice system efficiency. If the program cannot be shown to have an effect on crime rates, but can be shown to save administrative costs or streamline case processing, then at worst it will remain politically justifiable. One might envision a scenario in which the "perfect" gun violence intervention can be shown to drive down crime rates but costs too much; undoubtedly, there will be calls from watchdog groups and

citizens concerned about bloated bureaucracy to cut spending and perform better with fewer resources. This line of reasoning brings us to the suggestion that cost-conscious policymaking recommendations stemming from empirical policy evaluations may be more palatable to those in office. To the extent that criminology research is going to be relevant in policy discussions, it had better take into account costs in addition to outcomes. This is a persistent concern with research on crime and delinquency, as balancing these issues is a difficult but important objective.

In the present-day political and economic climate, gun courts generally seem popular and well-received by policymakers and by the general public. However, the long-term success of gun courts may hinge largely on consideration of the cost-benefit analysis attached to the programs. One of the best things that an evaluator can say about a program is that it is implemented with minimal cost, and that seems to be the case in Philadelphia as well as in other jurisdictions. Not only are gun courts relatively inexpensive to implement, but they may actually justify themselves financially by improving the efficiency with which cases involving guns are naturally processed and disposed. Further, at least in this example, there seems to be little up-front investment on the part of police to change strategies or practices where guns are concerned, another potential cost-savings measure. Most of the cost associated with running a gun court program seems to be invested on the back-end, where programming and enhanced probation await defendants who plead guilty or are convicted. Without exception, Philadelphia personnel believe that the additional investment has had a positive impact and has been worthwhile.

Discussing the relative benefits of gun court programs seems more difficult. The results from the present study indicate that Philadelphia's Court did not produce a significant drop in gun crime rates in the 24 months following the program's introduction; however, this may be

accountable to a problem with the dosage rather than the effect itself. Refining the understanding of any theoretical basis for the Court, investing in the further study of its individual-level effects while comparing outcomes to those of other sites, and continuing to develop initiatives consistent with successful programs elsewhere will allow Philadelphia to make the most of its Gun Court in the future. Although it will never be a “magic bullet” for ending gun violence, it may add to the tapestry of promising and innovative modern anti-crime measures.

APPENDIX
 DESCRIPTIVE STATISTICS AND PARAMETER ESTIMATES
 FOR ARIMA REGRESSION MODELS

Table A-1. Descriptive statistics for crime rates in Philadelphia and Pittsburgh, 2003-2006.

Crime Rate	N	Mean	Std. Dev.	Min	Max
Philadelphia					
Murder w/ firearm	48	0.898	0.177	0.466	1.336
Robbery w/ firearm	48	11.433	1.898	7.345	16.771
Assault w/ firearm	48	7.794	1.220	5.401	11.054
Weapons charges	48	5.922	1.118	3.931	8.437
Larceny	48	158.000	18.191	108.261	187.329
Motor vehicle theft	48	31.684	4.083	22.601	42.234
Pittsburgh					
Murder w/ firearm	48	0.371	0.162	0.123	0.790
Robbery w/ firearm	48	3.986	0.764	2.471	5.654
Assault w/ firearm	48	3.607	0.869	1.598	5.405
Weapons charges	48	3.969	0.738	2.606	6.325
Larceny	48	126.090	12.577	95.123	158.977
Motor vehicle theft	48	14.888	2.479	10.733	21.794

Table A-2. Pearson's correlation matrix for Philadelphia and Pittsburgh crime rates, 2003-2006.

Philadelphia						
	Murder w/ firearm	Robbery w/ firearm	Assault w/ firearm	Weapons charges	Larceny	MV theft
Murder w/ firearm	1.000					
Robbery w/ firearm	0.513	1.000				
Assault w/ firearm	0.495	0.291	1.000			
Weapons charges	-0.031	0.063	-0.227	1.000		
Larceny	0.588	0.518	0.701	-0.233	1.000	
Motor vehicle theft	0.186	0.210	0.249	-0.362	0.542	1.000
Pittsburgh						
	Murder w/ firearm	Robbery w/ firearm	Assault w/ firearm	Weapons charges	Larceny	Mv theft
Murder w/ firearm	1.000					
Robbery w/ firearm	0.321	1.000				
Assault w/ firearm	0.007	-0.015	1.000			
Weapons charges	0.147	0.047	0.163	1.000		
Larceny	0.148	0.072	0.617	0.097	1.000	
Motor vehicle theft	0.082	0.138	0.190	-0.233	0.573	1.000

Table A-3. Autoregressive Integrated Moving Average (ARIMA) (0,0,0) regression on rate of murder with firearm in Philadelphia, 2003-2006.

	Semi-robust coefficient	Std. err.	z	Sig.	95% conf. interval	
Gun Court Intervention	.1392623**	.0467721	2.98	0.003	.0475907	.230934
Constant	.8285883**	.0287485	28.82	0.000	.7722423	.8849343
Sigma	.1603267**	.016517	9.71	0.000	.1279541	.1926993
Log pseudolikelihood = 19.75695						
Durbin-Watson statistic = 2.136939						
Ljung-Box Portmanteau test (Q) statistic = 30.9561						
Prob > χ^2 (22) = 0.0970						

* - p < 0.05; ** - p < 0.01

Table A-4. Autoregressive Integrated Moving Average (ARIMA) (0,0,1) regression on rate of murder with firearm in Pittsburgh, 2003-2006.

	Semi-robust coefficient	Std. err.	z	Sig.	95% conf. interval	
Gun Court Intervention	.0363136	.0417119	0.87	0.384	-.0454402	.1180674
Constant	.3526311**	.0288172	12.24	0.000	.2961505	.4091117
MA(1)	-.1042205	.1235413	-0.84	0.399	-.3463571	.1379161
Sigma	.1579112**	.0145486	10.85	0.000	.1293965	.1864259
Log pseudolikelihood = 20.47916						
Durbin-Watson statistic = 1.976543						
Ljung-Box Portmanteau test (Q) statistic = 33.1680						
Prob > χ^2 (22) = 0.0595						

* - $p < 0.05$; ** - $p < 0.01$

Table A-5. Autoregressive Integrated Moving Average (ARIMA) (1,0,0) regression on rate of robbery with firearm in Philadelphia, 2003-2006.

	Semi-robust coefficient	Std. err.	z	Sig.	95% conf. interval	
Gun Court Intervention	.6388359	1.212429	0.53	0.598	-1.737481	3.015153
Constant	11.14801**	.625398	17.83	0.000	9.92225	12.37376
AR(1)	.5859808**	.1106126	5.30	0.000	.3691841	.8027775
Sigma	1.439649**	.2148121	6.70	0.000	1.018625	1.860673
Log pseudolikelihood = -85.81066						
Durbin-Watson statistic = 1.851249						
Ljung-Box Portmanteau test (Q) statistic = 24.2079						
Prob > χ^2 (22) = 0.3364						

* - $p < 0.05$; ** - $p < 0.01$

Table A-6. Autoregressive Integrated Moving Average (ARIMA) (1,0,0) regression on rate of robbery with firearm in Pittsburgh, 2003-2006.

	Semi-robust coefficient	Std. err.	z	Sig.	95% conf. interval	
Gun Court Intervention	-.1583845	.2626517	-0.60	0.546	-.6731724	.3564033
Constant	4.074434**	.1705628	23.89	0.000	3.740138	4.408731
AR(1)	.2171651	.1689105	1.29	0.199	-.1138934	.5482236
Sigma	.7338065**	.0703531	10.43	0.000	.595917	.871696
Log pseudolikelihood = -53.27674						
Durbin-Watson statistic = 1.963485						
Ljung-Box Portmanteau test (Q) statistic = 17.8815						
Prob > χ^2 (22) = 0.7130						

* - $p < 0.05$; ** - $p < 0.01$

Table A-7. Autoregressive Integrated Moving Average (ARIMA) (1,3,1) regression on rate of assault with firearm in Philadelphia, 2003-2006.

	Semi-robust coefficient	Std. err.	z	Sig.	95% conf. interval	
Gun Court Intervention (D3)	1.494869	1.14442	1.31	0.191	-0.7481534	3.737891
AR(1)	-.8227789**	.0787355	-10.45	0.000	-.9770976	-.6684601
MA(1)	-1**	4.25e-08	.	0.000	-1	-1
Sigma	1.515851**	.1303962	11.62	0.000	1.260279	1.771423
Log pseudolikelihood = -85.64106						
Durbin-Watson statistic = 1.932768						
Ljung-Box Portmanteau test (Q) statistic = 24.2063						
Prob > χ^2 (20) = 0.2335						

* - p < 0.05; ** - p < 0.01

Table A-8. Autoregressive Integrated Moving Average (ARIMA) (1,1,1) regression on rate of assault with firearm in Pittsburgh, 2003-2006.

	Semi-robust coefficient	Std. err.	z	Sig.	95% conf. interval	
Gun Court Intervention (D1)	.4310064	.4868028	0.89	0.376	-.5231096	1.385122
Constant	-.0022323	.0208893	-0.11	0.915	-.0431745	.0387099
AR(1)	.4966809**	.1233717	4.03	0.000	.2548767	.738485
MA(1)	-.999998**	1.76e-06	.	0.000	-1.000001	-.9999945
Sigma	.7747848**	.0800547	9.68	0.000	.6178805	.931689
Log pseudolikelihood = -56.10918						
Durbin-Watson statistic = 2.025247						
Ljung-Box Portmanteau test (Q) statistic = 26.3017						
Prob > χ^2 (21) = 0.1952						

* - p < 0.05; ** - p < 0.01

Table A-9. Autoregressive Integrated Moving Average (ARIMA) (1,0,0) regression on rate of weapons charges in Philadelphia, 2003-2006.

	Semi-robust coefficient	Std. err.	z	Sig.	95% conf. interval	
Gun Court Intervention	.3050543	.4218577	0.72	0.470	-.5217717	1.13188
Constant	5.780761**	.2975325	19.43	0.000	5.197608	6.363914
AR(1)	.3275148**	.1396091	2.35	0.019	.0538859	.6011437
Sigma	1.036466**	.0799005	12.97	0.000	.8798635	1.193068
Log pseudolikelihood = -69.88661						
Durbin-Watson statistic = 1.869342						
Ljung-Box Portmanteau test (Q) statistic = 30.7613						
Prob > χ^2 (22) = 0.1011						

* - $p < 0.05$; ** - $p < 0.01$

Table A-10. Autoregressive Integrated Moving Average (ARIMA) (2,1,1) regression on rate of weapons charges in Pittsburgh, 2003-2006.

	Semi-robust coefficient	Std. err.	z	Sig.	95% conf. interval	
Gun Court Intervention (D1)	.777423**	.3324179	2.34	0.019	.1258958	1.42895
Constant	.0045727	.0126232	0.36	0.717	-.0201683	.0293137
AR(1)	.3641352**	.1235584	2.95	0.003	.1219652	.6063053
AR(2)	-.2897068**	.1204541	-2.41	0.016	-.5257925	-.0536211
MA(1)	-1**	1.33e-07	.	0.000	-1	-.9999997
Sigma	.5434926**	.0717633	7.57	0.000	.402839	.6841462
Log pseudolikelihood = -40.01492						
Durbin-Watson statistic = 1.983317						
Ljung-Box Portmanteau test (Q) statistic = 19.0987						
Prob > χ^2 (21) = 0.5788						

* - p < 0.05; ** - p < 0.01

Table A-11. Autoregressive Integrated Moving Average (ARIMA) (1,3,1) regression on rate of larceny in Philadelphia, 2003-2006.

	Semi-robust coefficient	Std. err.	z	Sig.	95% conf. interval	
Gun Court Intervention (D3)	-24.57277	14.27097	-1.72	0.085	-52.54336	3.397815
AR(1)	-.7910688**	.1285108	-6.16	0.000	-1.042945	-.5391922
MA(1)	-.9999994**	1.60e-07	.	0.000	-.9999998	-.9999991
Sigma	15.62712**	1.805104	8.66	0.000	12.08918	19.16506
Log pseudolikelihood = -190.5365						
Durbin-Watson statistic = 1.220392						
Ljung-Box Portmanteau test (Q) statistic = 19.3552						
Prob > χ^2 (20) = 0.4989						

* - p < 0.05; ** - p < 0.01

Table A-12. Autoregressive Integrated Moving Average (ARIMA) (4,1,1) regression on rate of larceny in Pittsburgh, 2003-2006.

	Semi-robust coefficient	Std. err.	z	Sig.	95% conf. interval	
Gun Court Intervention (D1)	-.3697098	3.886097	-0.10	0.924	-7.98632	7.2469
AR(1)	.4532657**	.1137372	3.99	0.000	.2303449	.6761865
AR(2)	.2363295	.1490729	1.59	0.113	-.055848	.528507
AR(3)	-.0555443	.1858012	-0.30	0.765	-.4197079	.3086192
AR(4)	-.4022124**	.1396428	-2.88	0.004	-.6759072	-.1285175
MA(1)	-1.000041**	.0000232	.	0.000	-1.000087	-.9999961
Sigma	9.224559**	.8973754	10.28	0.000	7.465736	10.98338
Log pseudolikelihood = -173.4414						
Durbin-Watson statistic = 2.098796						
Ljung-Box Portmanteau test (Q) statistic = 32.6162						
Prob > χ^2 (21) = 0.0506						

* - p < 0.05; ** - p < 0.01

Table A-13. Autoregressive Integrated Moving Average (ARIMA) (1,3,0) regression on rate of motor vehicle theft in Philadelphia, 2003-2006.

	Semi-robust coefficient	Std. err.	z	Sig.	95% conf. interval	
Gun Court Intervention (D3)	-5.501824	3.521089	-1.56	0.118	-12.40303	1.399384
AR(1)	-.7719257**	.1465206	-5.27	0.000	-1.059101	-.4847506
Sigma	6.346821**	.6237289	10.18	0.000	5.124335	7.569307
Log pseudolikelihood = -147.4624						
Durbin-Watson statistic = 1.9882						
Ljung-Box Portmanteau test (Q) statistic = 28.9697						
Prob > χ^2 (20) = 0.0884						

* - p < 0.05; ** - p < 0.01

Table A-14. Autoregressive Integrated Moving Average (ARIMA) (2,1,1) regression on rate of motor vehicle theft in Pittsburgh, 2003-2006.

	Semi-robust coefficient	Std. err.	z	Sig.	95% conf. interval	
Gun Court Intervention (D1)	-2.085605	1.093759	-1.91	0.057	-4.229334	.0581228
AR(1)	.5327604**	.1466591	3.63	0.000	.2453139	.8202069
AR(2)	.0965896	.1420133	0.68	0.496	-.1817514	.3749306
MA(1)	-1**	3.52e-07	.	0.000	-1.000001	-.9999993
Sigma	1.955774**	.1709138	11.44	0.000	1.620789	2.290759
Log pseudolikelihood = -99.42135						
Durbin-Watson statistic = 1.817656						
Ljung-Box Portmanteau test (Q) statistic = 14.5548						
Prob > χ^2 (21) = 0.8446						

* - p < 0.05; ** - p < 0.01

APPENDIX B
FIGURES

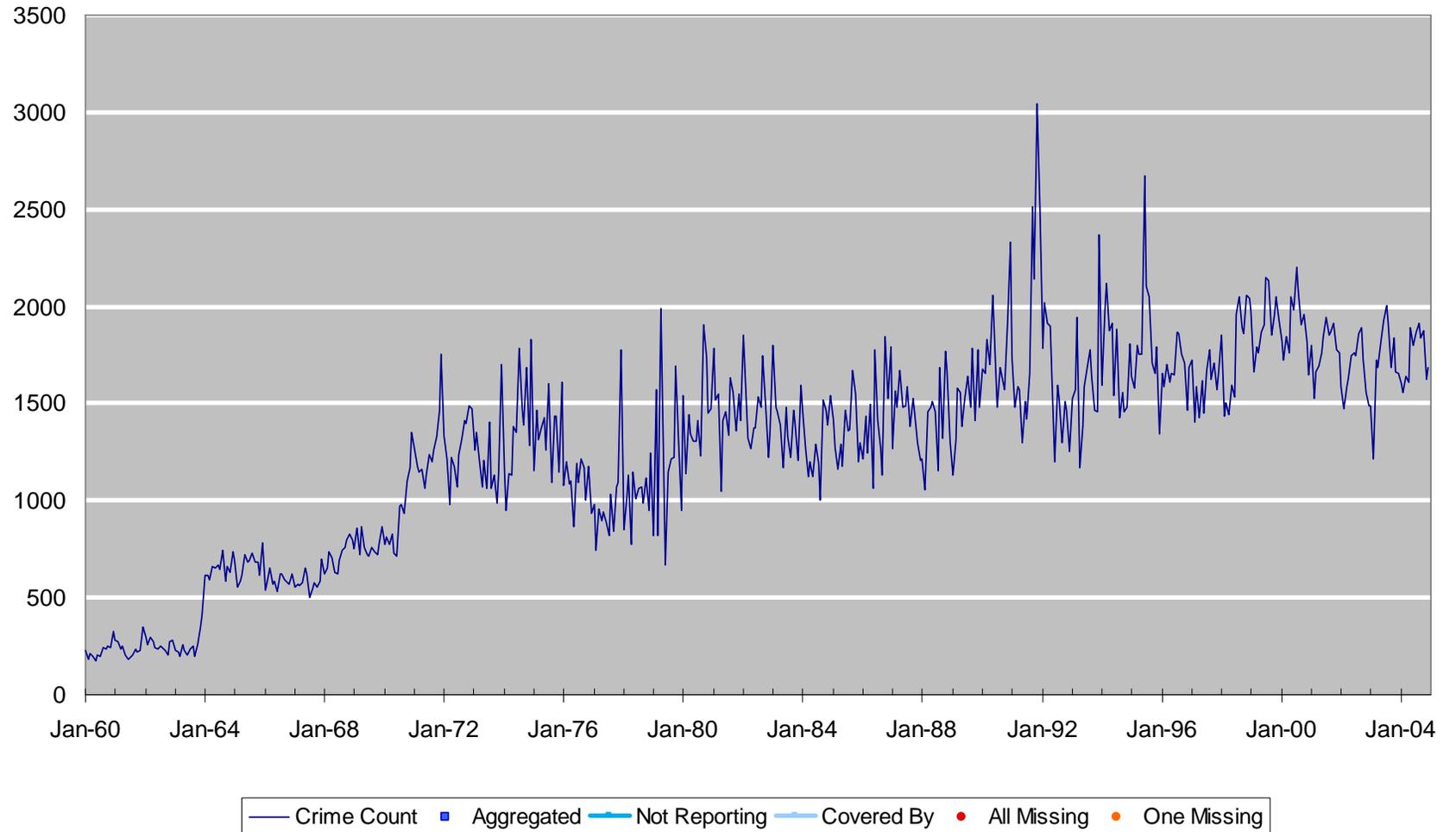


Figure B-1. Uniform Crime Report: violent crime in Philadelphia, 1960-2004.

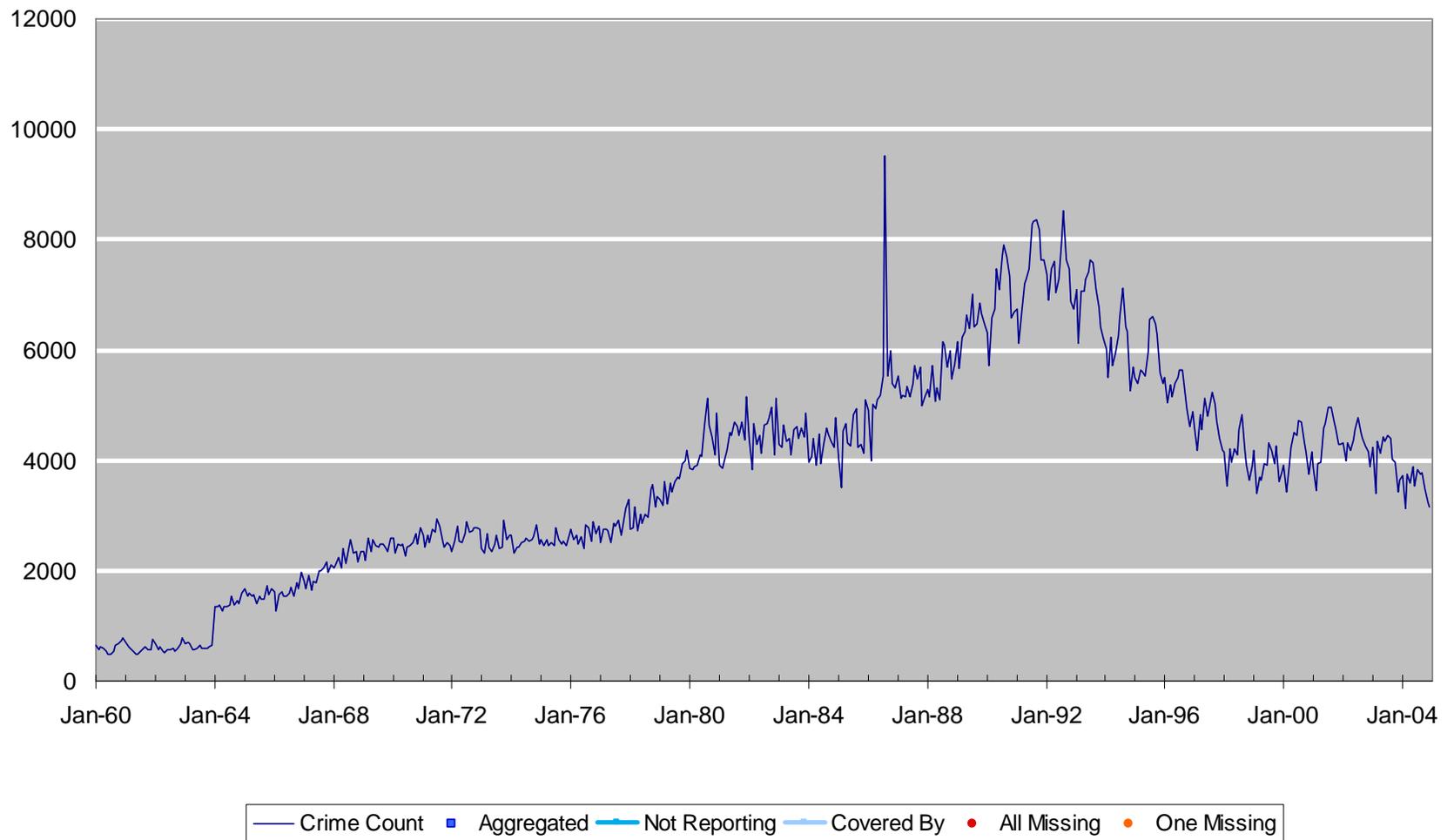


Figure B-2. Uniform Crime Report: violent crime in Los Angeles, 1960-2004.

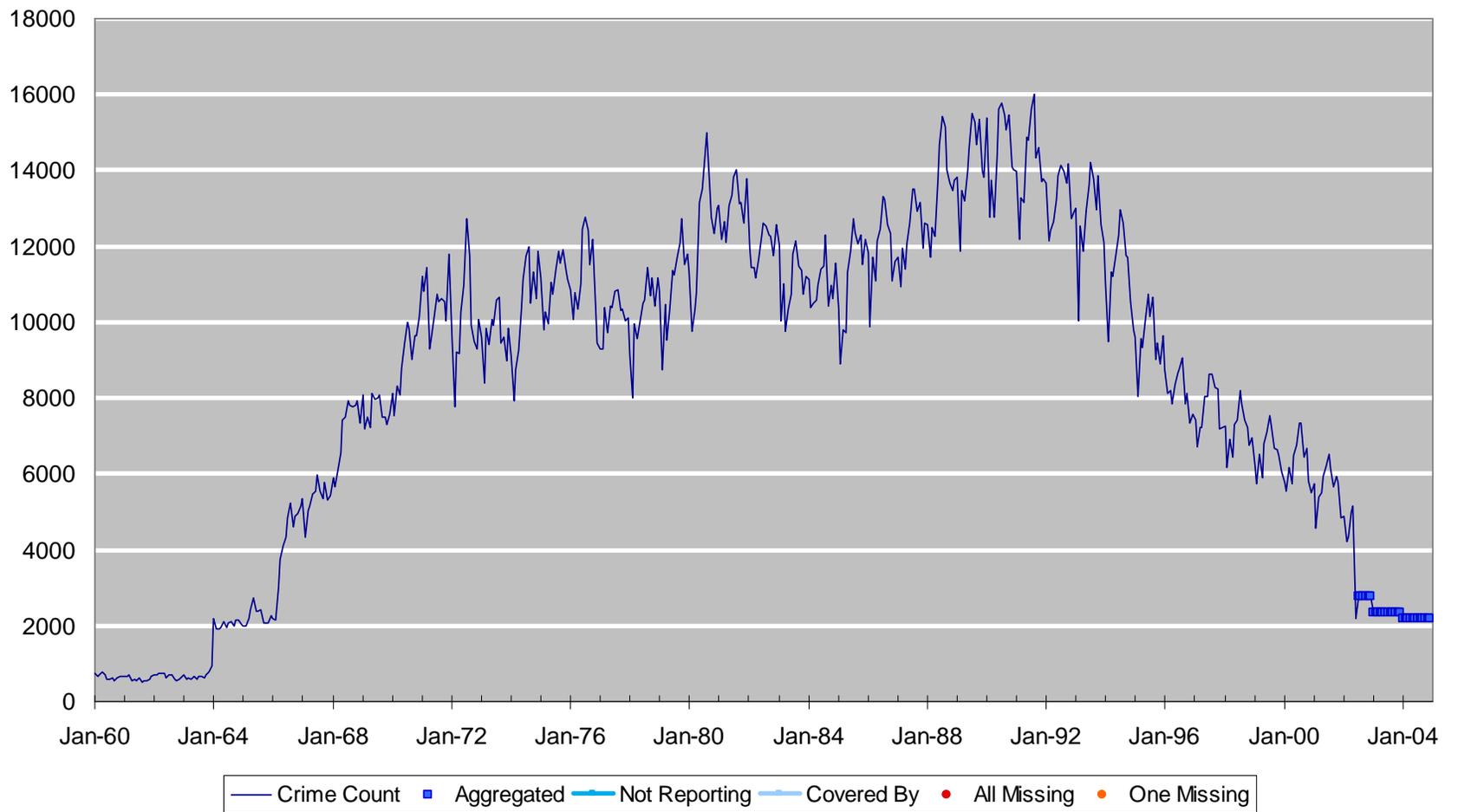


Figure B-3. Uniform Crime Report: violent crime in New York City, 1960-2004.

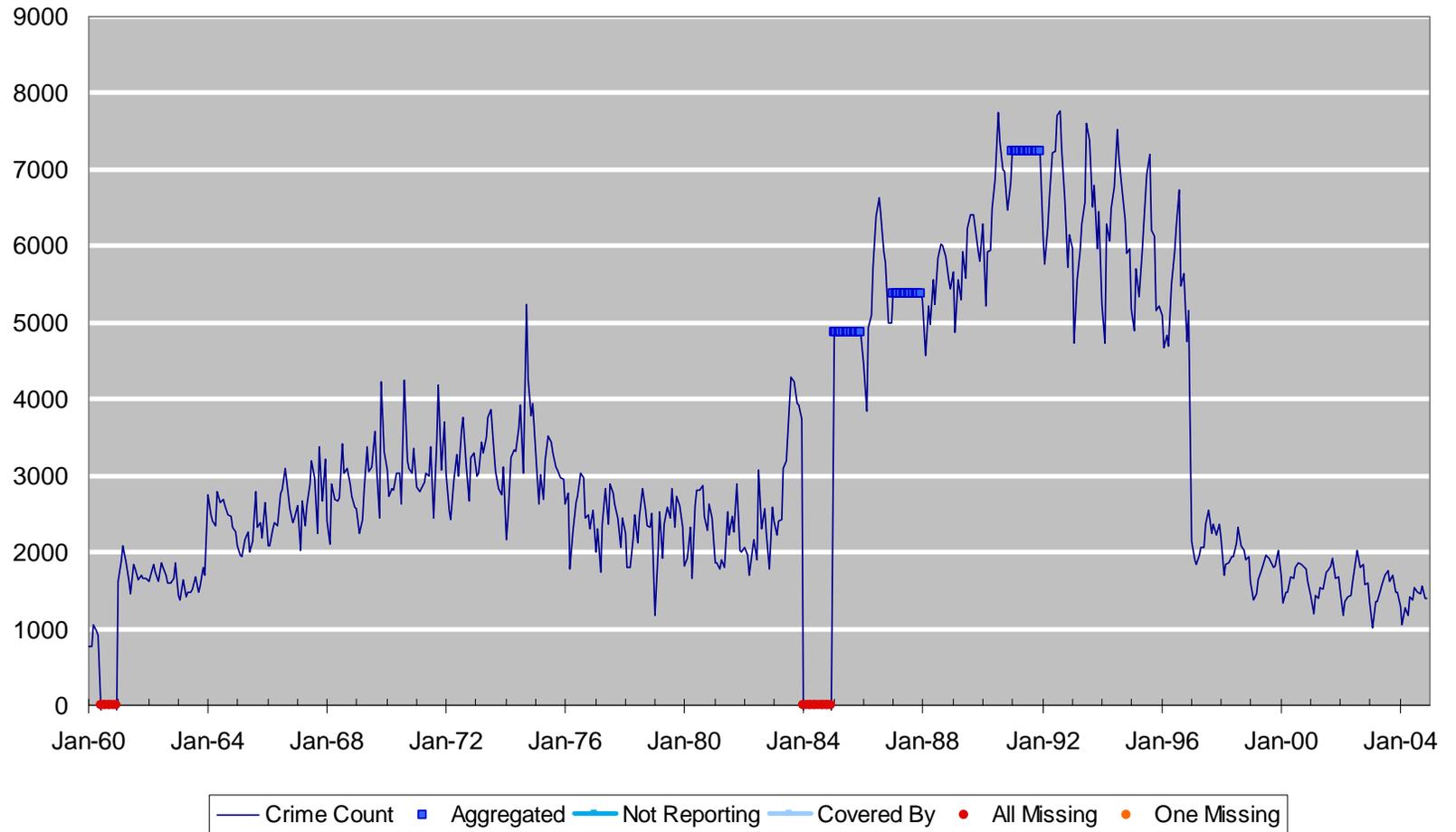


Figure B-4. Uniform Crime Report: violent crime in Chicago, 1960-2004.

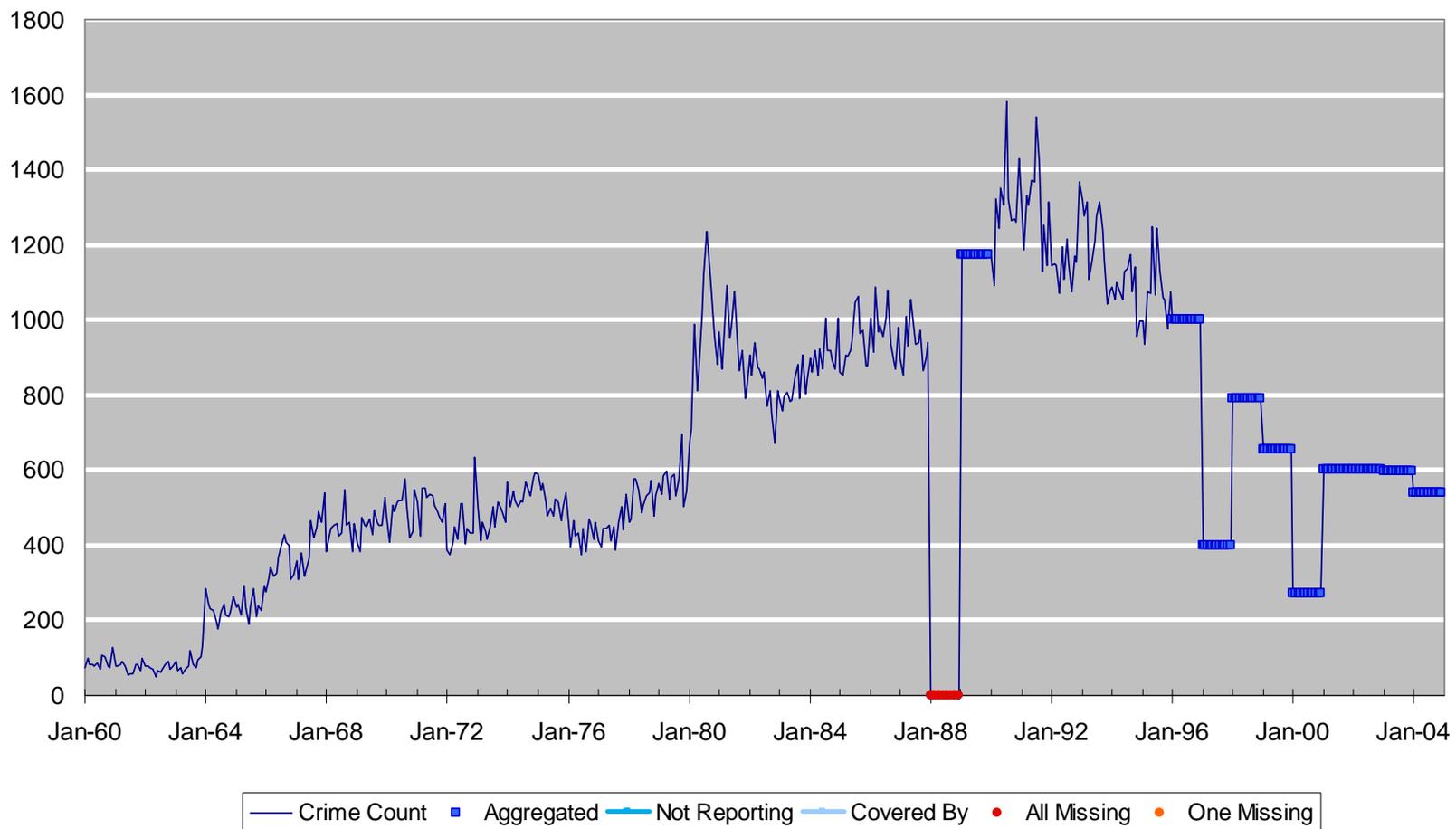


Figure B-5. Uniform Crime Report: violent crime in Miami, 1960-2004.

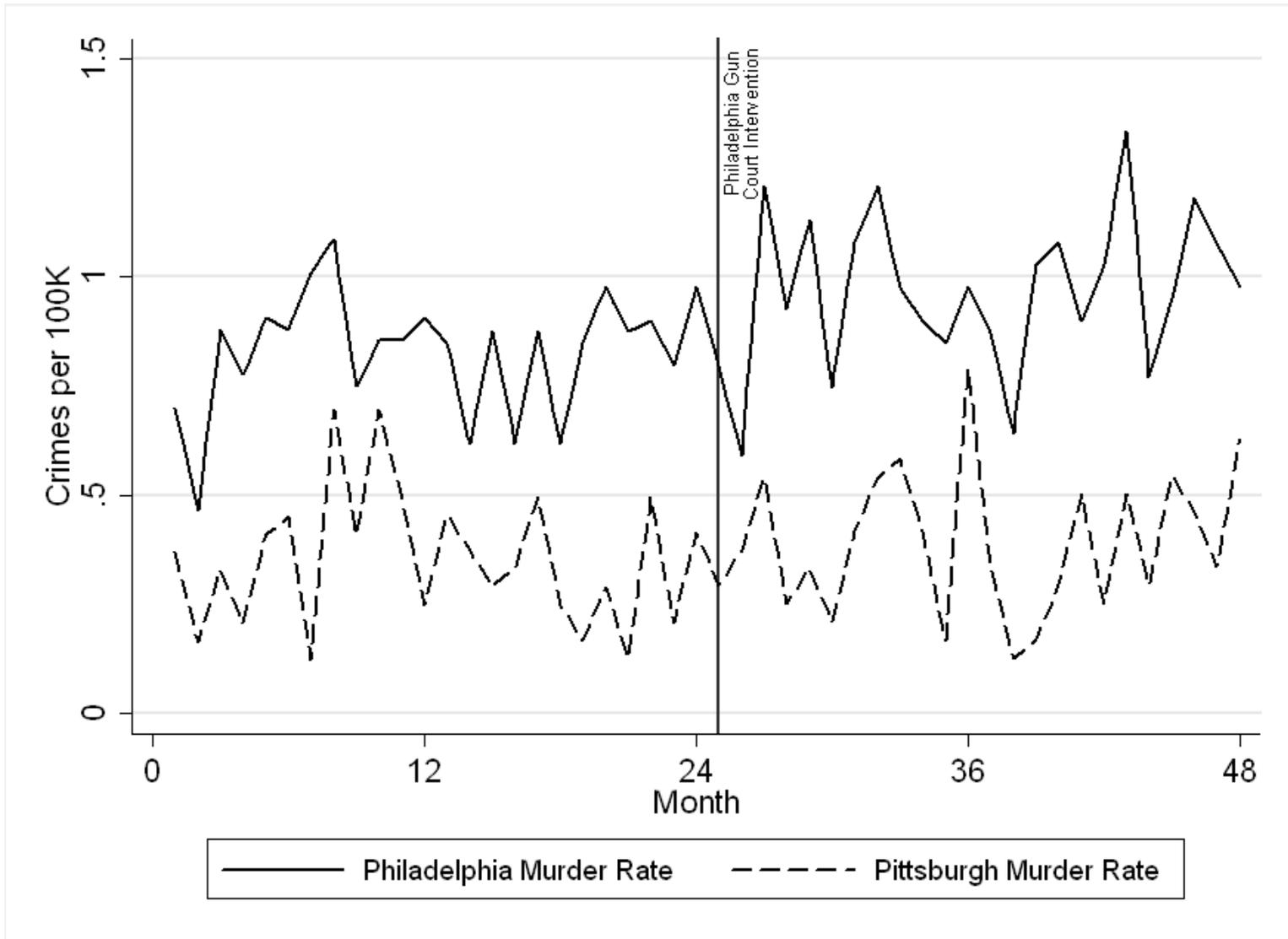


Figure B-6. Time series line plot: rate of murder with firearm in Philadelphia and Pittsburgh, 2003-2006.

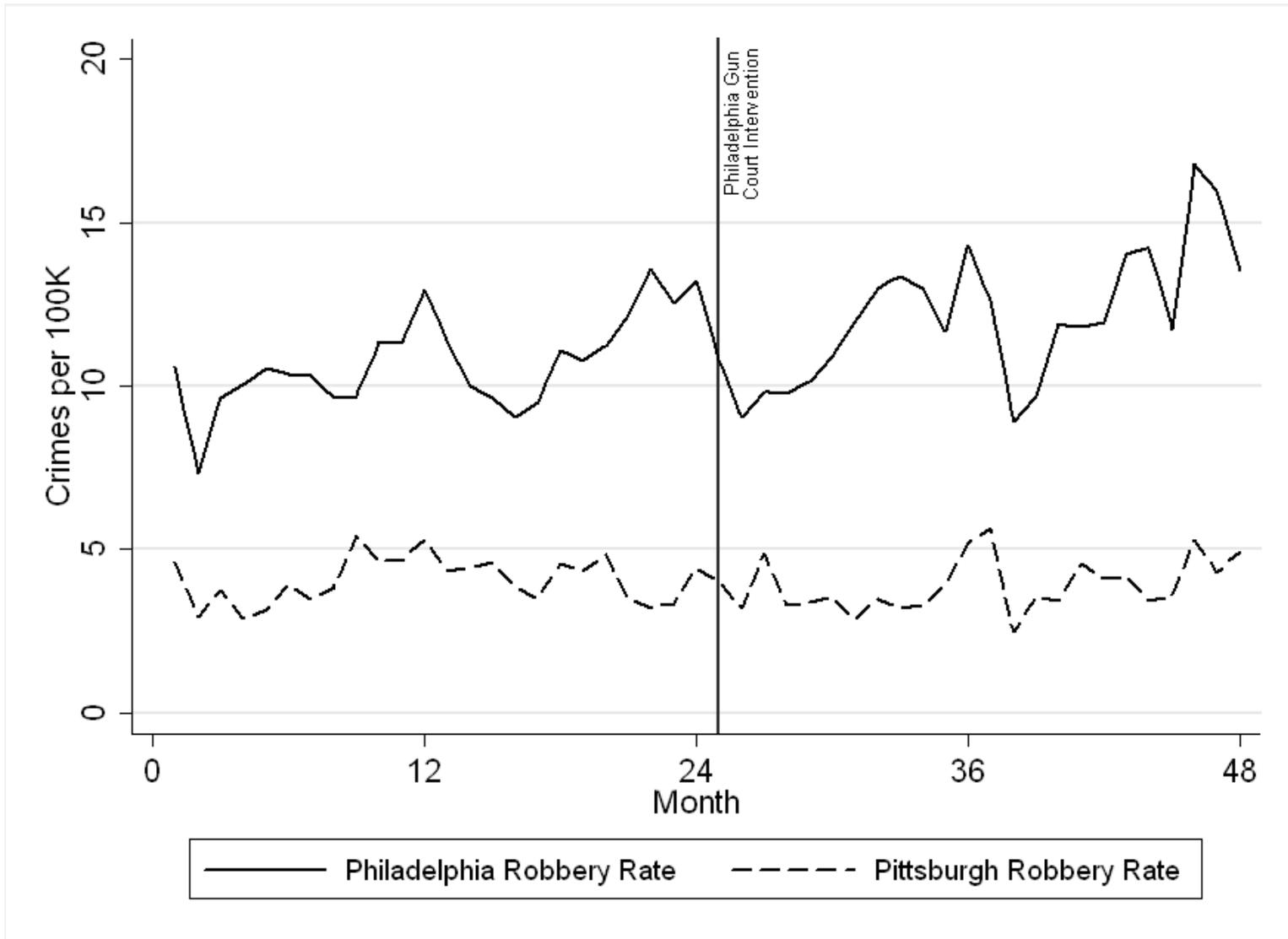


Figure B-7. Time series line plot: rate of robbery with firearm in Philadelphia and Pittsburgh, 2003-2006.

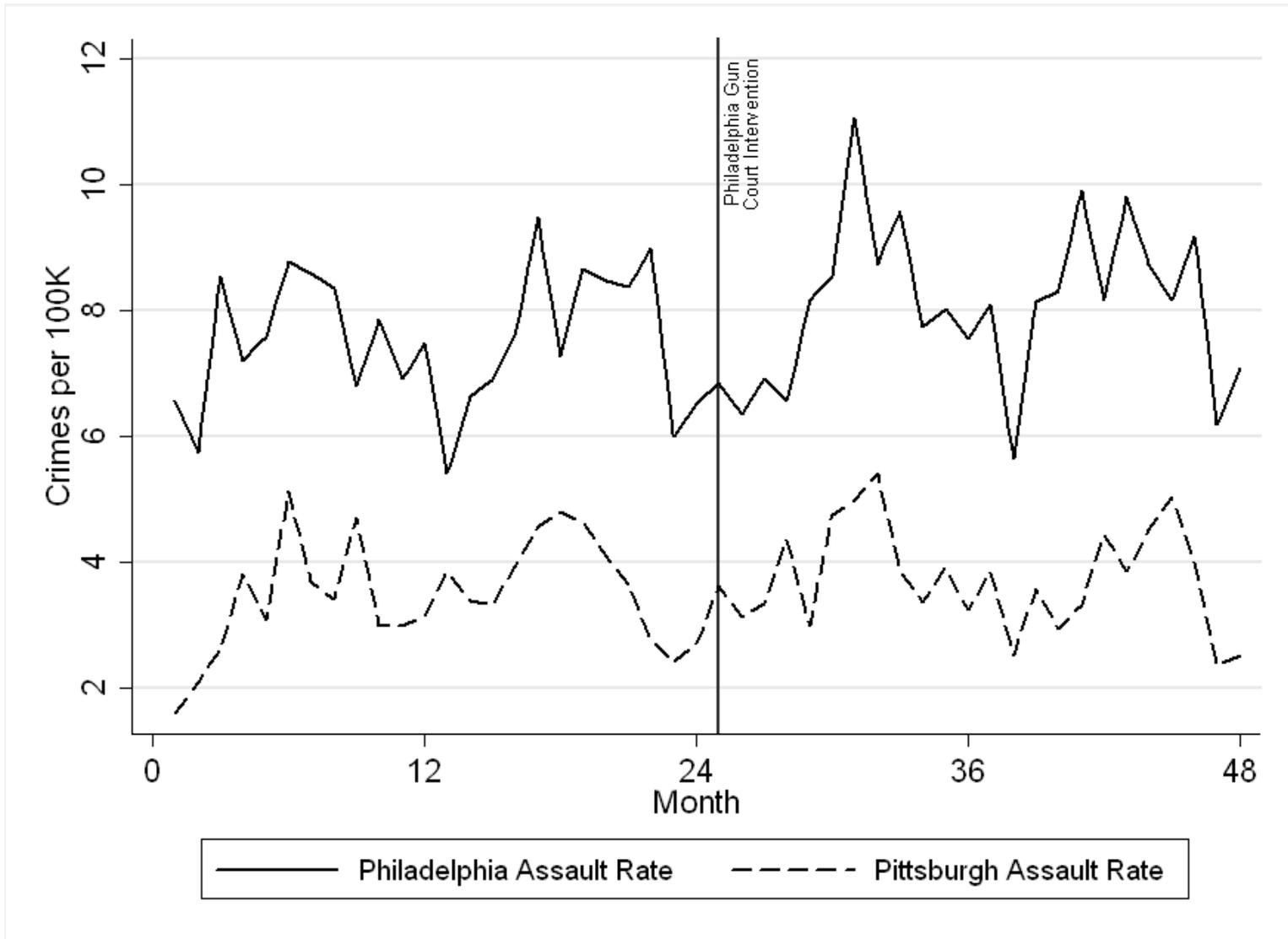


Figure B-8. Time series line plot: rate of assault with firearm in Philadelphia and Pittsburgh, 2003-2006.

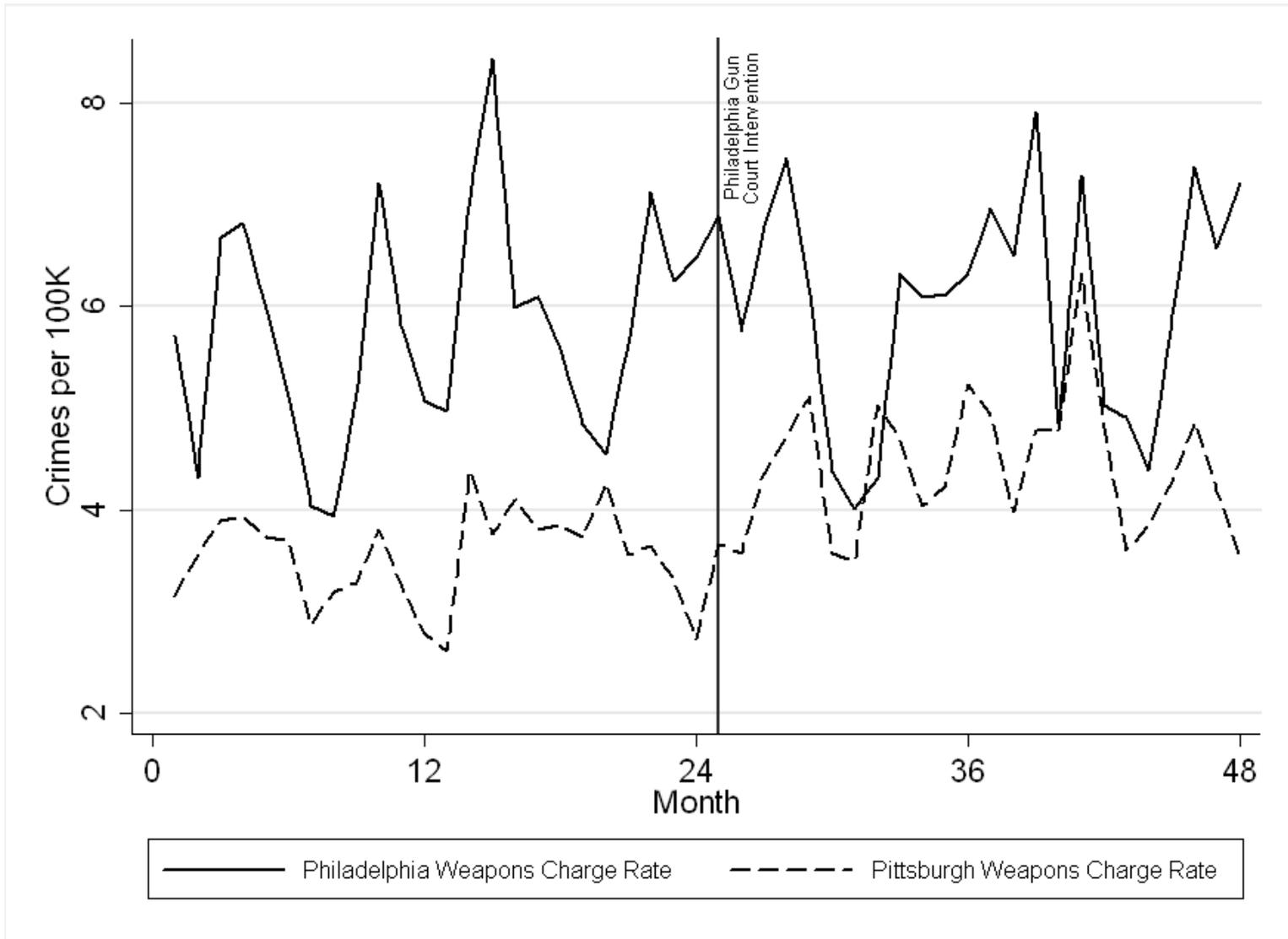


Figure B-9. Time series line plot: rate of weapons charges in Philadelphia and Pittsburgh, 2003-2006.

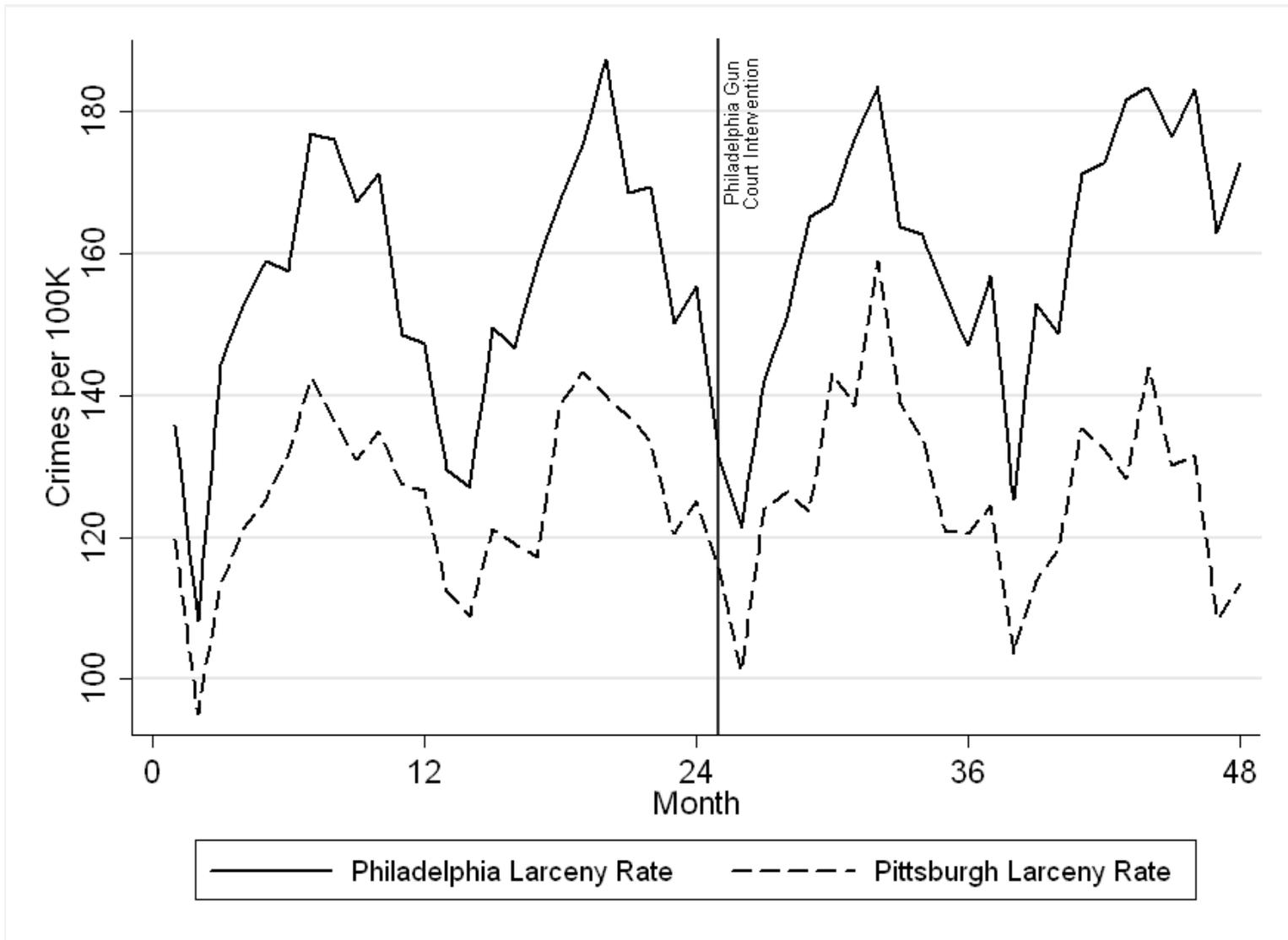


Figure B-10. Time series line plot: rate of larceny in Philadelphia and Pittsburgh, 2003-2006.

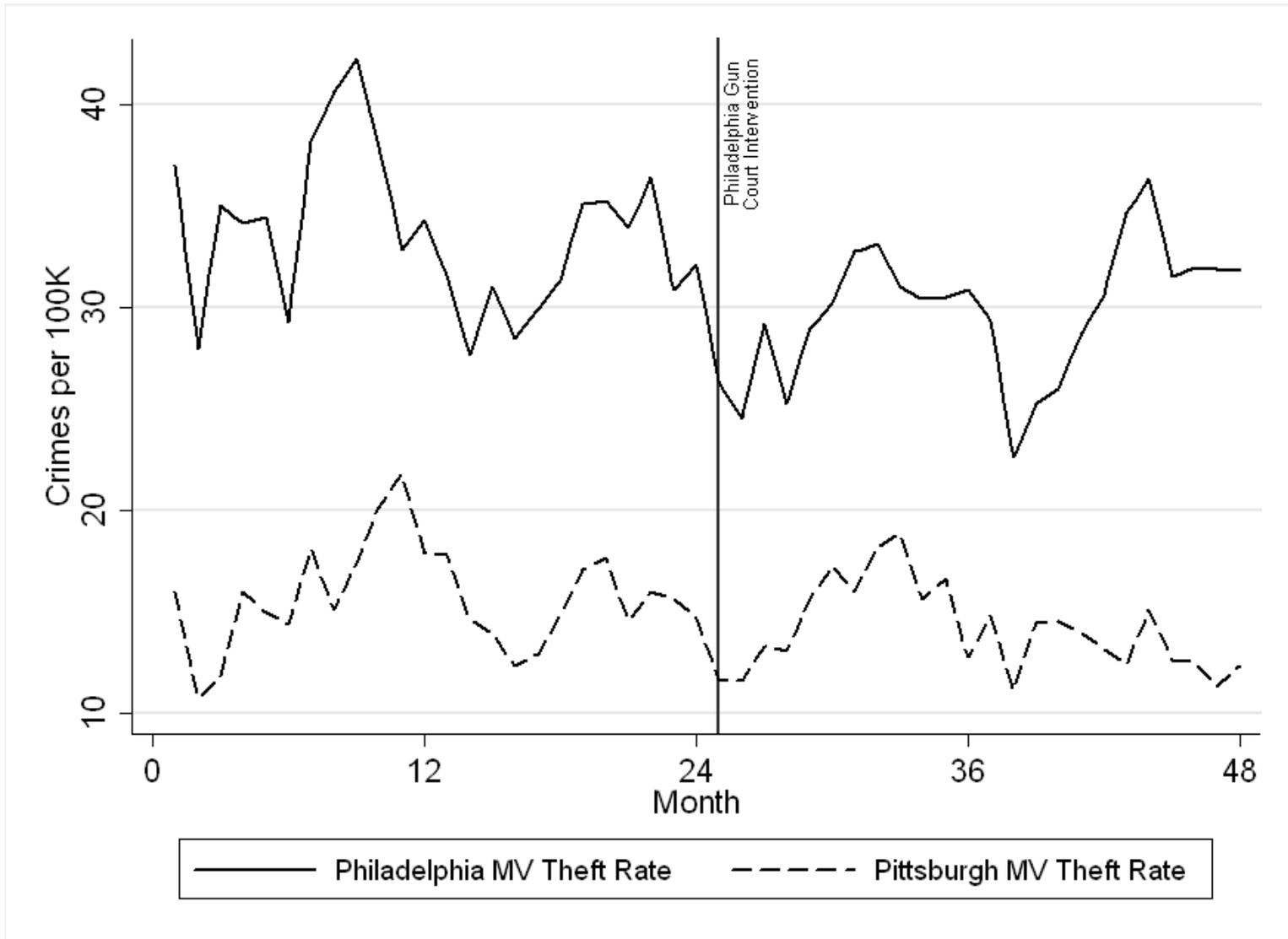


Figure B-11. Time series line plot: rate of motor vehicle theft in Philadelphia and Pittsburgh, 2003-2006.

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BIOGRAPHICAL SKETCH

Matt Nobles is a Gainesville native, graduating cum laude from Gainesville High School in 1997. He received a B.S. in psychology with dual minors in business administration and criminology from the University of Florida in 2001; followed by a B.A. in criminology in 2003; and was elected to the honor societies of Phi Kappa Phi and Delta Epsilon Iota. After a brief career in information technology, he returned to graduate school to complete an M.A. in criminology, law and society in 2005 and later worked as a research associate at John Jay College in New York City. Matt begins his career as a tenure-track Assistant Professor at Washington State University in fall 2008, but he will always be a Gator at heart.