

Chapter 6

Police Use of Dual Arrest in Intimate Assault Cases

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Introduction

In this chapter, we present exploratory findings on dual arrests for intimate partner assaults in the study city, which has a primary physical aggressor, presumptive arrest law in effect. Although we did not set out to examine the practice of dual arrests in the broader study of which this analysis is a part, our interest was peaked by local service providers who repeatedly expressed concern about this police action.

Intimate partner assault refers to violence between male and female couples that are married, formerly married, have a child in common, or cohabit. Dual arrest is the arrest of both members of the couple and is applied by police officers when they find probable cause to believe an assault occurred but are unable to identify a single primary aggressor, or judge both parties to be culpable. Similar to other studies that have used police data to identify case characteristics correlated with arrest, this study uses supplementary domestic violence reports filled out by police officers to identify case characteristics associated with dual arrest. As with any police data, the reports available for this analysis are only a portion of the incidents that come to the attention of the police, which are only a portion of actual intimate violence.

There are two components to this analysis. The first is a comparison between characteristics of intimate assault by three police actions: warrant, single arrest and dual arrest. We found that dual arrest is the least common police action occurring in about 7% of these cases. The demographic characteristics associated with dual arrest are more similar to those of arrest cases

than to those in which a warrant is issued. By several measures, dual arrest cases appear to be some degree less serious than those where a single arrest is made.

The second component uses logistic regression to determine what case and demographic characteristics are predictive of dual arrest in comparison to single arrest. Warrant cases were not considered for this analysis, in order to focus the analysis on the police decision to make a dual arrest instead of a single arrest. We found that the only significant variables were those pertaining to victim and offender substance use. In cases where the victim is suspected of having taken alcohol or drugs prior to the incident, dual arrest is over three times as likely. Two additional logistic regression models were tested to see whether dual arrest was predictive of officers obtaining emergency protective orders or collecting evidence. Dual arrest was not found to be predictive of these actions.

Intimate Violence And Dual Arrest

According to the book *Violence in Families*, “Arrest for domestic violence is perhaps the best-studied intervention for family violence” (Chalk & King, 1998: 174). *Violence in Families* discusses many studies on the effectiveness of arrest, beginning with the Minneapolis Domestic Violence Experiment (Sherman & Berk, 1984), and continuing through the “Spouse Abuse Replication Program (SARP)” studies that replicated it (Berk, Campbell, Klap, & Western, 1992; Dunford, Huizinga, & Elliott, 1990; Hirschel & Hutchinson, 1992; Pate & Hamilton, 1992; Sherman, Schmidt, Rogan, Smith, Gartin, Cohn, Collins, & Bacich, 1992). While the SARP studies, and others have examined whether and under what circumstances arrest is effective, they have produced contradictory and inconclusive results (Garner, Fagan, & Maxwell, 1995;

Melton, 1999; Chalk & King, 1998). Whether this inconclusiveness is due to non-uniformity in the applied treatments used in the experiments or because arrest is an effective deterrent for certain types of people and situations and not others remains unclear.

Despite inconclusiveness on the effectiveness of arrest, states have responded to the finding that arrest is the most effective deterrent to intimate violence by implementing mandatory arrest laws, and police department policies were changed accordingly. A 1997 national summary of domestic violence laws revealed that in 23 states arrest for domestic violence incidents is mandated in some or all circumstances, and that in an additional six states arrest is officially preferred (Institute for Law and Justice, 1997). At least one police department (Concord, NH) instituted a mandatory arrest policy independent of state laws (Holmes, 1993). As encouragement of police officers to make arrests in intimate violence situations continues, the desirability of mandatory arrest policies is being questioned, in part because their effectiveness is in doubt and in part because they are thought to effectuate dual arrests, which is considered by many to be a problematic outcome (Hamberger, 1997; Holmes, 1993; *Law Enforcement News*, 2000; Martin, 1997).

The underlying assumption of dual arrest is that assaults occur where there is probable cause to arrest both parties. On the surface, such a police response appears quite appropriate and useful, especially considering research from the 1980s using the Conflict Tactics Scale indicating women to have rates of relationship violence as high if not higher than men (Straus & Gelles, 1990). Yet some advocates argue that acts of violence should be considered in context, rather than at face value and believe dual arrest often revictimizes battered women. They claim that

many women arrested in dual arrest incidents are in fact battered women who participate in violence as self-defense or in response to an ongoing pattern of violence that they did not initiate. (Martin, 1997; Hamburger, 1997; *Law Enforcement News*, 2000). Further analysis of the Conflict Tactics Scale data supports the advocates' claim, showing that although men's and women's rates of violence are similar, women tend to suffer more frequent and serious injuries from intimate violence (Gelles & Cornell, 1990).

Additional justification for this view comes from a study by Hamberger (1997) who explored women's use of violence in intimate relationships, by studying the culpability of 52 female intimate violence arrestees. He found that (1) 51% of women reported that their partners had initiated the overall pattern of violence in their relationship, (2) 37% of women reported that their partner always initiated individual episodes of violence, (3) many of the women who acknowledged initiating violence more often than their partners noted that they had begun to use violence after many years of being victimized by their partners, and (4) 24 women in the sample reported self-defense/protection as a motivation for their violence. Hamberger concluded that 67% of the women in the sample do not appear to be husband beaters or mutual combatants. Rather, in many instances, they are, "battered women who are fighting to defend themselves from an assault by their partners" (Hamberger, 1997: 125).

While the intention of mandatory arrest policies is to protect victims by ensuring that police arrest perpetrators, detractors assert that in practice, officers have interpreted them to mean that they must arrest all parties who have engaged in any violence – even in self-defense. William

Holmes comments, “officers may find it easier to arrest both parties than to interpret poorly worded statutes or policies. On rare occasions, evidence may even show that the parties are mutual aggressors” (Holmes, 1993: 105). His implication is that dual arrest is not warranted in the majority of cases in which it is applied. It may also be the case that the laws are so broad that they do not allow officers discretion in considering the context of the case when making arrest decisions.

The question of how to handle the murkiness of an incident where both participants used violence, but perhaps unequally, is of concern to police agencies endeavoring to effectively and fairly address intimate violence. A December 2000 article in *Law Enforcement News* states:

Reconsidering strategies for reducing domestic violence was on the agenda in a number of police agencies last year, particularly with regard to the practice of dual arrest. Growing out of mandatory-arrest policies established in the 1980s and early 90s, dual arrests often result in the inadvertent arrest of a battered woman who was fighting back against her attacker, victim advocates claim – and law enforcement has begun to agree with that finding.

Another example is New Mexico’s Violence Against Women Task Force’s recommendation which comments, “Dual arrest trivializes the seriousness of the offense. It may increase the danger to the victim because the next time it happens, she may not call the police for fear of being arrested herself” (New Mexico, Office of the Attorney General, Violence Against Women Task Force, 8/17/2001). The federal government’s concern about dual arrest is evident in solicitations from the Office of Justice Programs for “Grants to Encourage Arrest Policies and Enforcement of Protection Orders” which define eligible recipients as government entities that “demonstrate that their laws, policies, or practices and their training programs discourage dual arrest of the offender and the victim” (OJP, 2001).

While concern about dual arrests is frequently expressed, very few efforts have been made to compare the characteristics of cases to which dual arrest is applied to those of other cases. Two of these, one conducted by the Connecticut Department of Public Safety and the other by an independent researcher, are based on Connecticut State data. Both projects differentiate cases resolved by dual arrest from those resolved by single arrest.

The State of Connecticut Department of Public Safety (CDPS) framed their study of dual arrests in the executive summary of the report as follows:

A major area of concern since the inception of the mandatory arrest requirement has been the effects of arrest of all parties involved in a family violence incident, or dual arrest. Every evaluation of the family violence law has devoted space to dual arrest and has cited it as cause for concern. None of the evaluation projects to date have included input from law enforcement as to why dual arrests are made and what impact Connecticut's reporting mechanism has on the rate of dual arrest. (p.1).

The CDPS studied the application of dual arrests by analyzing arrest data to draw a comparison between dual arrest and single arrest incident characteristics and conducted police officer interviews to discern their opinions about mandatory arrest, dual arrest, and the training received in family violence.¹ The arrest data revealed that in the three years following implementation of the mandatory arrest policy, the rate of dual arrests grew disproportionately to the increase in total family violence arrests. Analysis of police incident data revealed that dual arrest cases tend to be less serious, to involve cohabiting couples, and to involve offenders who are younger than those arrested in single arrest incidents.

¹ In this jurisdiction "family violence" generally was the concern, rather than intimate violence, which is the interest of the present paper.

In a separate study, Margaret Martin (1997) examined dual arrest by analyzing a sample of 448 family violence cases disposed in Connecticut state criminal courts, originating from police agencies throughout the state. Her study followed implementation of the statewide mandatory arrest policy and compared characteristics of intimate violence cases resulting in single arrest to those resulting in dual arrest. Martin found that defendants in dual arrest cases were more likely to be female, white, younger, cohabitators (living with but unmarried to partner), and to have less serious family violence arrest histories, as well as less serious current charges, than single arrest defendants. Dual arrest incidents were also more likely to involve alcohol or drugs and were less likely to result in a court conviction. Interestingly, there was evidence of prior victimization among 40% of female defendants in dual arrest cases, which lends support to the notion that the women arrested in dual arrest situations are likely to be victims themselves.

The possibility that intimate violence victims may be harmed by policies established to protect them underscores the importance of understanding the true effects of policies such as mandatory arrest. According to the editors of *Violence in Families*, the cost and consequences of arrest policies “merit consideration,” specifically in terms of “improper or unwarranted arrests” (Chalk and King, 1998: 178). Quantifying and describing the phenomenon of dual arrests in specific localities and overall is important groundwork toward this goal. An evaluation of the Queens County, New York Arrest Policies Project includes a recommended strategy for addressing dual arrest stating, “To best attack the problem, statistics on the extent and nature of dual arrests need to be developed” (Miller, 1999: 17). While there is a wealth of expressed concern about dual arrest, so far there is little quantification and examination of the practice.

Some states, such as California and Minnesota, have sought to decrease the use of dual arrest by including language discouraging it in legislation (National Council of Juvenile and Family Court Judges, 2001a; National Council of Juvenile and Family Court Judges, 2001b). Others such as Washington, Alabama, Wisconsin, and New York have modified their intimate violence statutes or policies to include directives about identifying a “primary physical aggressor” (Holmes 1993; Sutton, 1999; Alabama Coalition Against Domestic Violence, 2001), and in some cases (California), a “primary dominant aggressor” (National Council of Juvenile and Family Court Judges, 2001b). These localities direct officers, through law or policy, to conduct a primary aggressor analysis if more than one party in an intimate violence dispute claims to have been victimized. Elements of primary aggressor analyses differ, but include considerations such as (Alabama Coalition Against Domestic Violence, 2001; Sutton, 1999):

- Prior complaints of domestic violence,
- The relative severity of injuries to each person,
- The likelihood of future injury to each person,
- Whether one of the persons acted in self-defense, and
- Consideration of the physical strength of the parties.

Our analysis seeks to contribute to the discussion on dual arrest by providing an exploratory overview of its use in a presumptive arrest jurisdiction with primary aggressor language.

The Present Analysis

Using a database of domestic violence police reports, we compare characteristics of cases resolved by single arrest, dual arrest, and with a warrant,² over a two-year period. This exploration has two components. First, a descriptive case study of the three officer actions in

² Police obtain warrants if the offender is not present during their investigation of the crime. In some cases, the victim obtains the warrant with or without the assistance of the officer.

intimate violence incidents in a jurisdiction with a mandatory arrest, primary aggressor law in effect, comparing differences between cases addressed with the three possible police actions. Second, logistic regression analysis exploring whether certain demographic, history of violence, and incident characteristics explain dual arrest, and whether officers taking certain actions in handling intimate assault cases is explained by dual arrest.

In our study site, violence between intimates was viewed as assault prior to July 1, 1991. That date marked the implementation of a new state code making assault against a family or household member a crime distinct from other assaults, with its own set of guidelines and penalties. The new code stated that officers *may* arrest without a warrant for an alleged crime against a family or household member regardless of whether the violation was committed in the officer's presence, if the officer established probable cause to believe an offense occurred (State Code Section 19.2-81.3, A.). This gave officers permission to arrest for domestic violence misdemeanors they did not witness, removing a major restraint on their ability to address domestic violence.

In 1997, the laws changed again, when a presumptive arrest law was put into place, and the term "primary physical aggressor" introduced with section B of Code Section 19.2-81.3: "A law-enforcement officer having probable cause to believe that a violation...has occurred *shall* arrest and take into custody the person he has probable cause to believe, based on the totality of the circumstances, was the *primary physical aggressor* unless there are special circumstances which would dictate a course of action other than an arrest" [italics added]. Following these changes, officers were trained to identify primary physical aggressors and were provided guidelines for seeking emergency protective orders.

Methodology and Data

This analysis draws from domestic violence incident reports, referred to here as (DVRs), which officers are required to complete for all domestic violence incidents. The DVRs provide more detailed information than the standard criminal incident report, which officers fill out in addition to the DVR if a crime has been committed. Information on the DVR includes demographic, relationship, and address information on the parties involved; the location, date, and time, of the incident; police action taken, presence of children, apparent use of alcohol or drugs by either of the parties, weapon use, victim injuries, and whether protective orders were on file.

In this study, we analyze intimate assaults among persons who are or were married, have a child in common, or cohabit.³ We eliminated cases that did not meet the state's definition of domestic violence, such as violence between same-sex couples. We also eliminated cases where the type of police report submitted was other than assault or was unknown, to ensure that we were only considering incidents involving assaults, since assault is the predominate charge in intimate violence. Applying these steps to the data available to this project produced a database of 1,376 intimate violence assaults reported to the police department between February 1, 1999, and March 31, 2001. This process is laid out in Appendix A. The data used in this analysis are also summarized in columns and rows and included as Appendices B and C respectively.

³ Cohabiters refer here to unmarried couples who live together.

Findings

In order to establish a context for the intimate assault data, we compared the DVR data to 2000 Census data, where possible, for the study city. The comparison includes demographic data such as race and age of individuals as well as type of couple. See Table 1.

Table 1:

Demographic Comparison between the Population of City and the Population of Reported Intimate Assaults			
	City-wide**	Domestic violence victims	Domestic violence offenders
Race			
Black	57.2%	83.1%	75.7%
White	38.3%	14.0%	8.5%
Other	4.5%	2.0%	2.8%
Unknown	0	0.9%	12.9%
Relationship			
Spouse	27.1%	29.2%	27.9%
Female householder	20.4%	20.4%*	N/A
Median Age	33.9	29.0	31.0
* This is the percentage of female victims whose relationship to the offender was Child-in-Common." If these victims lived with the offender, they would be listed as cohabitators. It is possible that some of these victims live with parents or others rather than heading a household, thus this should be considered only an estimate.			
**Source: 2000 Census data from the Census Website			

These comparisons revealed:

- As a share of the population in the city, blacks are over represented as both victims and offenders of intimate violence.
- Based on the closest estimate that can be made, the percentage of spouses and female-headed household in the database of intimate assaults is similar to that of city residents.
- The median age of domestic violence victims is four years less than for the city population, and the median age of offenders is two years less.

Focusing on the population of victims and offenders that comprise this analysis, it is notable how unevenly distributed offenders and victims are by race. Blacks comprise the great majority of offenders. Less than 10% of the offenders are white, and only 2.8% are neither black nor white

(other). While, in the interest of describing the complete dataset, we present comparisons between all three race groups, the uneven distribution – especially the small number of other race offenders – prevent us from drawing anything but speculative conclusions based on race.

Three possible police responses to intimate assaults are distinguished in the data: warrant, single arrest, and dual arrest, and there are specific conditions under which each outcome generally is most likely to occur. Officers obtain warrants when they find probable cause to believe that one person has assaulted another, but the person they have identified as the primary physical aggressor is not present at the scene. When the identified primary physical aggressor is present in these circumstances, officers make single arrests. Officers make dual arrests when they have probable cause to believe an assault occurred and are unable to determine who is the primary aggressor. Table 2 displays the distribution of police action across these three outcomes, in these data. Dual arrest is the least common outcome, occurring in only 7.3% of reported intimate assaults.

Table 2.

<i>Distribution of Police Outcomes</i>		
	Frequency	Percent
Warrant	581	42.2
Arrest	694	50.4
Dual arrest	101	7.3
Total	1376	99.9*
*Percentages do not add to 100 due to rounding.		

Part 1: Comparisons Across Three Police Outcomes

The first part of this analysis seeks to describe cases to which dual arrest is applied and to identify and explore any systematic differences between dual arrest cases and those addressed through single arrest or warrant. To explore case variation by outcome, we present comparisons in five categories: (1) demographics, (2) history of violence, (3) case characteristics, (4) incident characteristics, and (5) police action. These results are displayed and discussed below.

A. Demographics

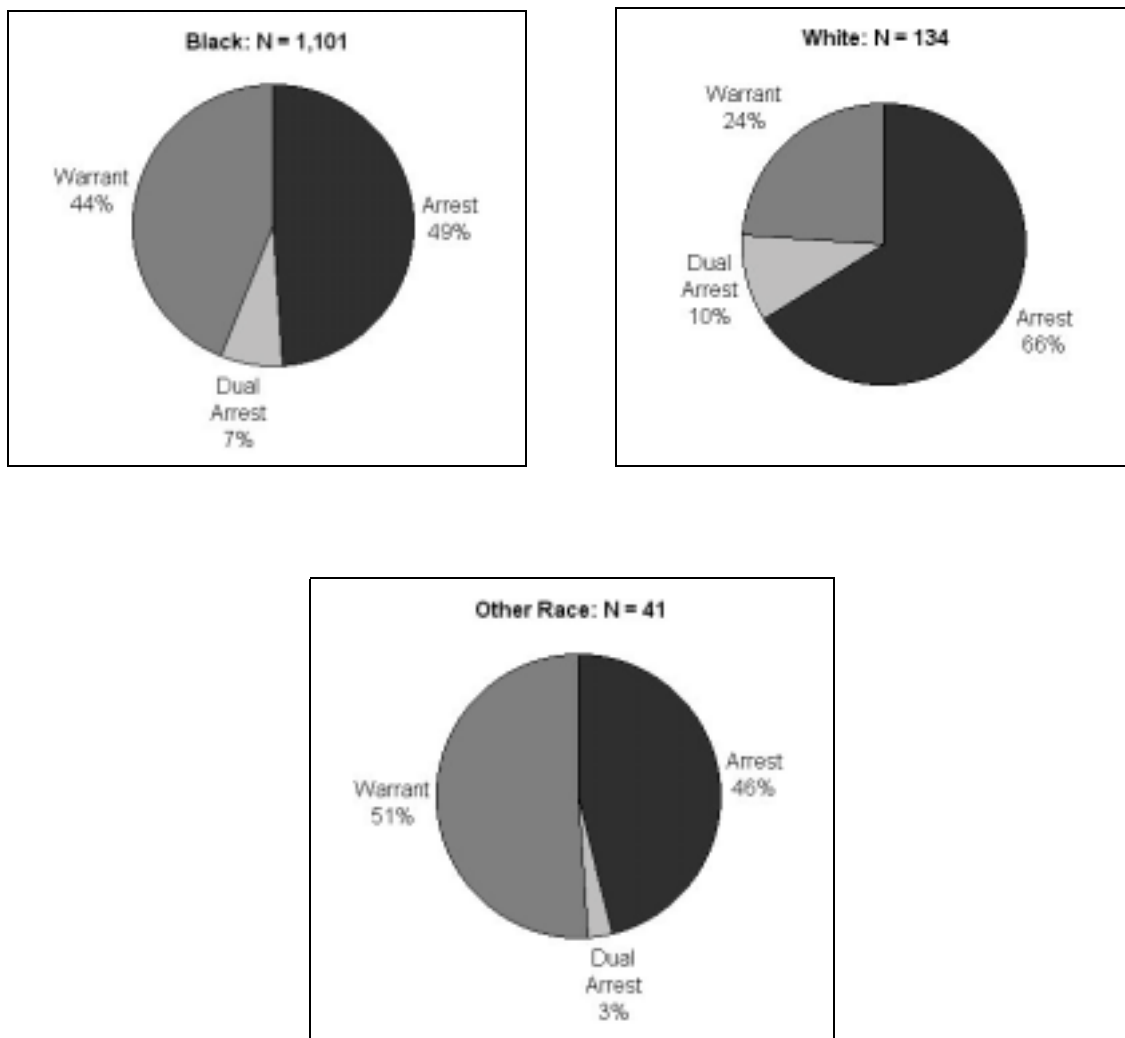
The majority of cases in this database involve cohabiting black couples, where the offender is male and the victim female. Ninety-four percent of cases involve male offenders and female victims. The average age of victims is 31 and the average age of offenders is 33 – a two-year difference that is consistent across all police outcome categories. While the average age of offenders in dual and single arrest categories is the same, offenders in the warrant category are on average two years younger. This difference is also true for victims. Since many of the demographic variables are best described and understood in relation to one another or to other variables, the key findings are synthesized and discussed below. Tables displaying all of the frequencies and percentages by columns and rows are included in Appendices 2 and 3.

Of the offenders whose race is known, 86.3 % of the offenders are black, 10.5 % are white, and 3.2 % are of another race (“other”). When examined by police action, an interesting difference emerges. While single arrest was the most common outcome for cases involving black and white offenders, among black offenders, the percent disposed by single arrest and by warrant is almost equal, whereas among white offenders, the percentage of cases disposed by arrest is much higher than the percentage where a warrant was issued. Similarly, the percentage of whites to whom

dual arrest is applied is greater than that of blacks and other race offenders. Police outcomes for other race offenders are more similar to cases involving black offenders than to white offenders, but again, since there were only 41 offenders of other races, 21 who received a warrant, 19 who were arrested, and one who was dual arrested, generalizations about this group are tentative.

Below are three pie charts that display the police outcome by race of offender.

Figure : 1 Police Outcome by Race of Offender



Since warrant issuance is an outcome applied when the offender is not present during police service, these race differences by arrest (single and dual) and warrant may indicate that there is a relationship between offender race and offender presence, perhaps through the type of

relationship with the victim. For example, couples in certain relationships more often live together, such as spouses versus former spouses. Offenders living with the victim may be more likely to be present during police service, compared to offenders who have a home elsewhere. In a study of police action in 189 domestic violence calls, Lynette Feder found that offenders not present during police service were more likely to be unmarried (Feder, 1996). She also found that police arrested 44% of offenders who were present when they arrived, and only 8% who were not. We believe it is reasonable to assume that this is the case in the analysis. Below, we explore the relationship between these variables.

Four, not necessarily mutually exclusive, victim-offender relationships exist in these data, which, in a hierarchy from most to least formal, are spouse, former spouse, cohabitants, and child-in-common. Clearly, it is possible for any of the couples to have a child in common, not just the “child-in-common” group. Cases that fit more than one category were placed in the most formal category into which they fit. For example, if a couple has a child together and lives together, they would be classified as cohabitators.

The largest relationship category in these data is cohabitators, who account for 50% of all cases. The next largest relationship category is married couples (29% of all cases), then child-in-common (20%), and the smallest category is former spouses, who accounted for less than 1% of cases. Although the largest share of offenders in all race categories are cohabitators, a greater percentage of whites and other race offenders are married than are blacks, while blacks have a greater percentage of child-in-common relationships. Table 3 displays these results.

Table 3:

<i>Victim-Offender Relationship by Race of Offender</i>								
	Black		White		Other		Total	
	%	N	%	N	%	N	%	N
Spouse	25.6	282	41.0	55	41.5	17	27.7	354
Former Spouse	.4	4	1.5	2	4.9	2	.6	8
Cohabitors	52.4	577	50.0	67	51.2	21	52.1	665
Child in Common	21.6	38	7.5	10	2.4	1	19.5	249

To explore the intersection of race, type of relationship, offender presence during police service, and arrest, we assume that spouses and cohabitators live together and that former spouses and couples designated as child-in-common do not. Under this assumption, approximately 78% of black offenders, 91% of white offenders, and 93% of other race offenders live together.

The offender was present in 51% of all cases. Differences among the race groups are apparent in that of cases with black offenders, the offender was present 50% of the time, white offenders, 62%, and other race, 45 %. Table 4 displays the results of these variables by race, relationship, whether victim and offender live together, and arrest.

Table 4:

<i>Relationship, Offender's Presence, and Arrest by Race</i>					
	Relationship		Offender lives with victim	Offender present during police service	Offender arrested (single or dual)
Black	Spouse	25.6%	78.0%	50.2%	56.0%
	Cohabitor	52.4%			
	Former Spouse	.4%			
	Child in Common	21.6%			
White	Spouse	41.0%	91.0%	61.8%	76.0%
	Cohabitor	50.0%			
	Former Spouse	1.5%			
	Child in Common	7.5%			
Other	Spouse	41.5%	92.7%	45.2%	49.0%
	Cohabitor	51.2%			
	Former Spouse	4.9%			
	Child in Common	2.4%			

A lower proportion of black offenders live with the victim, are present during police service, and are arrested, than are whites. Other race offenders are similar to whites in terms of living with the victim, but are not in terms of being present for police service and being arrested. Thus, the relationship between these variables appears to work similarly for blacks and whites, but not for offenders of other race. These findings should be considered cautiously, however, because of the unequal racial distribution of the data, in particular the small number of offenders of other races. On the surface, there does not seem to be a direct relationship between race and officers' arrest decisions; the more important variable seems to be presence during police service, which is directly related to arrest across all three race groups.

In sum, we found average age of single and dual arrest victims and single and dual arrest offenders to be more similar to each other than to victims and offenders respectively in cases where a warrant was issued. In warrant cases, victims and offenders are on average two years

younger than their respective single and dual arrest counterparts. Police outcome differences by race are interesting. A greater percentage of whites than blacks or other race offenders are single or dual arrested. This may be because a greater percentage of whites are present during police service. Racial differences by arrest were also true for dual arrest, while warrant cases again, had a different offender make-up. The distribution of single and dual arrest offenders across types of relationships also tended to be more similar than the relationship distribution of warrant cases.

Based on all the of these demographic measures the characteristics of single and dual arrest are more similar to each other than to cases where a warrant is issued. Regarding dual arrest cases specifically, cohabitators have the highest proportion of dual arrests, and in terms of race, whites have the highest proportion of dual arrests. Again, readers are cautioned that the small number of dual arrest cases as well as those involving offenders of “other” races greatly limit the conclusions that can be made.

B. History of violence

In differentiating the types of cases more often ending in dual arrest, one question is whether dual arrest is generally applied more often in cases where there is a history of violence. This may suggest whether dual arrest is being applied to cases where both parties are using violence equally, or, whether it is being applied to parties who acted in self-defense. If there is a history of violence in the relationship, then dual arrest may be more likely a result of self-defense by one of the parties. Variables such as whether protective orders were in place (either emergency, preliminary, or permanent), or whether the offender has been arrested for domestic violence in the past are indications of this – at least indications of past incidents that have come to the

attention of police. Given that so much intimate violence is not reported, there are likely many other cases in this analysis whose histories of violence are not reflected in these variables. Even if the data were considered complete, since the results of this analysis are ambiguous, no conclusions are drawn.

Of the three outcome categories, dual arrest cases have the lowest percentage of protective orders in place (4.0%), which could indicate less serious history of violence. The percentages of warrant and arrest cases where protective orders were in place are almost identical (6.4% and 6.8% respectively). As displayed in Table 5, most cases had no prior arrests. The range among those that did have prior arrests is 1-15.

Table 5:

<i>Offender's Prior Intimate Violence Arrests</i>									
	Warrant		Single Arrest		Dual Arrest		Total		
	%	N	%	N	%	N	%	N	
None	77.9	441	69.9	485	73.0	73	73.5	999	
One	14.1	80	18.3	127	15.0	15	16.3	222	
Two	4.8	27	8.1	56	9.0	9	6.8	92	
Three or more	3.2	18	3.7	26	3.0	3	3.5	47	

In terms of prior arrests, dual arrest cases appear more similar to single arrest cases than to warrant cases. The average number of prior arrests among dual arrest cases is .46 and the average among single arrest cases is .52. Warrant cases have an average of .34 prior arrests – the lowest of the three. However, an Anova test on the difference between these means showed them not to be significantly different.

C. Incident characteristics

To identify the types of incidents in which officers are most likely to arrest both parties, the following topics were explored: whether an aggravated or simple assault charge was filed (indicating seriousness of incident), substance use by the victim, the offender, both, neither; weapon use; what offense the victim alleged; whether the aggressor was present; whether children witnessed the incident; and whether medical treatment was administered.

Aggravated or simple assault

Officers can classify assaults as simple or aggravated, depending on the seriousness. Officers classified 7.3% of single arrest cases and 6.2% of warrant cases as the more serious type of assault, aggravated. Far fewer (3.0%) dual arrest cases were classified as aggravated.

Substance use

The DVR contains several questions pertaining to victim and offender substance use. It asks officers to record whether there is evidence of alcohol and or drug use for each member of the party. Since officers recorded very little drug use, suspected drug use was combined with suspected alcohol use into a substance use variable for the victim and for the offender. A third variable was created indicating whether both parties were suspected of using substances. Table 6 displays these results.

For all categories, officers reported that 17% of victims appeared to have used substances prior to the incident and 34% of offenders. At least one party appeared to have used substances in 39% of all cases. Both the victim and the offender appeared to have used substances in 12.5% of

all cases. In 61%, neither party appeared to have used substances. It is likely that offender substance use for the warrant outcome is less accurate than the others, because in many of these cases the offender was not at the scene. Officers may have reported offender substance use based on statements made by the victims, who might be disinclined to report drug use.

Table 6:

<i>Offender Substance Use</i>								
	Warrant		Single Arrest		Dual Arrest		Total	
	%	N	%	N	%	N	%	N
Victim	9.0	52	20.9	145	38.6	39	17.2	236
Offender	26.2	152	41.4	287	35.6	36	34.5	475
Both	6.0	35	15.9	110	26.7	27	12.5	172
Neither	70.9	412	53.6	372	52.5	53	61.0	837

It is notable that of the three outcome categories, dual arrest has the greatest percentage of cases where both offender and victim appeared to have used substances prior to the incident. The relationship between dual arrest and suspected substance use by the victim will be explored later in the logistic regression section.

Weapon use

Officers recorded weapon use in several categories on the DVR: gun, knife, hands and feet, and other. Other includes a range of objects such as “vehicles,” telephones, hammers, belts, bats, and even a baby monitor handset. Since hands and feet were used in almost every case, this variable was not considered. Overall, a weapon – other than hands and feet – was only used in 12.5% of all cases. Dual arrest was the police outcome category with the highest rate of weapon use, followed by single arrest, then warrant (see Table 7).

Table 7:

<i>Weapon Use</i>								
Variable	Warrant		Single Arrest		Dual Arrest		Total	
	%	N	%	N	%	N	%	N
Gun	.9%	5	2.0%	14	1.0%	1	1.5%	20
Knife	2.8%	16	3.5%	24	6.9%	7	3.4%	47
Other	8.3%	48	7.8%	54	8.9%	9	8.1%	111
Any	11.7%	68	12.8%	89	14.9%	15	12.5%	172

Alleged offense

Simple and aggravated assault were the official charges filed by the police, but on the DVR, officers also record what offense(s) was alleged by the victim. Physical assault was by the predominant alleged offense, claimed in 97.3% of cases. In the remaining 2.7% of cases, victims alleged that another offense had been committed by the offender, such as sexual assault, property crime, psychological abuse, or offense against a child. In some cases victims claimed that more than one type of offense had been committed; thus the alleged offenses total more than 100% across the outcome categories. These results are displayed in Table 8 on the following page. Because there are so few cases where an offense other than physical has been alleged, no conclusions about the alleged offense and police outcome are drawn.

Table 8:

<i>Offense Alleged by Victim</i>								
Variable	Warrant		Single Arrest		Dual Arrest		Total	
	%	N	%	N	%	N	%	N
Physical assault	96.6	561	97.8	679	98.0	99	97.3	1339
Sexual assault	.2	1	0	0	0	0	.1	1
Property crime	1.7	10	1.3	9	1.0	1	1.5	20
Psychological	1.4	8	2.2	15	3.0	3	1.9	26
Offense against child	.2	1	.4	3	0	0	.3	4
Other offense	.9	5	1.7	12	0	0	1.2	17

Children witnessed incident

Overall, children witnessed 42.8% of the incidents examined here. This percentage is virtually the same across police outcome categories.

Medical treatment received

Police reported that medical treatment was administered at the scene or at a hospital after the incident in 15.6% of all cases. In an additional 6%, victims reported to officers that they planned to see their personal physician. Cases where warrants were issued had the highest rate of receiving medical treatment (17%) closely followed by cases where arrest was made (14.8%). A marginally lower rate of medical treatment received (12.8%) was observed among the dual arrest cases compared to arrest cases, which could indicate that these cases were generally less serious.

D. Police action

The type of discretionary action officers take in intimate violence cases is a useful gauge for assessing officers' perceptions of the crime. Variables in this database that capture officer discretionary actions are whether they collected evidence and whether they obtained an emergency protective order (EPO) for the victim.

Overall, some type of evidence, such as statements, photographs, 911 tapes, or hospital records was collected in 16.3% of cases. Dual arrest cases had the lowest rate of evidence collection (see Table 9).

Table 9:

Evidence Collected								
Variable	Warrant		Single Arrest		Dual Arrest		Total	
	%	N	%	N	%	N	%	N
Statements	6.0	35	6.3	44	4.0	4	6.0	83
Photographs	7.9	46	9.2	64	7.9	8	8.6	118
911 Tapes	0	0	.1	1	0	0	.1	1
Hospital records	1.2	7	.4	3	0	0	.7	10
Other	.02	2	.06	8	.1	2	.1	12
Any	15.5	90	17.3	120	13.9	14	16.3	224

Officers obtained EPOs in 25.7% of cases overall. While they obtained them in close to the same percentage of warrant (27.4%) and single arrest (25.9%) cases, they did so at the lowest level for dual arrest cases (13.9%). It is not surprising that dual arrest cases have the lowest level of EPOs, in fact is surprising that there are any in this group. It indicates that in 13.9% of dual arrest cases, the officer was concerned for the safety of one party, even though that party was perceived to have committed a violent crime for which they were arrested.

The previous analysis seeks to differentiate characteristics of intimate assault handled by police through warrants, arrest, and dual arrest. Based on the data, interpretations are offered as to the seriousness of dual arrest cases compared to those where an arrest was made or a warrant issued. These interpretations are highly speculative and limited, because they are based on just a few variables which may not be the most relevant ones, and because of the uneven distribution of cases in certain of the variable categories.

In terms of comparing demographic, history of violence, and incident characteristics by police outcome, these data indicate that the demographic conditions under which dual arrests are made resemble those of arrest more closely than those of warrant. In terms of case seriousness, dual

arrest cases appear to be less serious than those resulting in arrest or warrant, in that dual arrest cases have the lowest percentage classified as aggravated assault. Based on history of violence, the results are ambiguous, but dual arrest cases appear to have a less serious history than those of warrants, and single arrest. In a slightly higher percentage of dual arrest incidents, a weapon was used, compared to the other two outcomes.

Part 2: Analysis of Dual Arrests Through Logistic Regression

Dual arrests occur when the police believe both parties participated in the violence and when they are unable to identify the *primary* physical aggressor. As noted earlier, dual arrest was the outcome in 101 of the cases in the sample of 1,376 cases, which is 7.3 %. While it was the least common specified outcome, dual arrests nonetheless accounted for 13.6 % of all arrests in the sample, since each incident produced two arrests.

Now that we have presented descriptive data comparing case characteristics of warrant, single arrest, and dual arrest, we focus our analysis further by comparing characteristics of single arrest cases to those of dual arrest, since these outcomes occur under similar conditions – in both cases the offender is present during police service. This allows for the analysis to be focused on police decision making.

To examine the influence of demographic, history of violence, and incident characteristics, on the police decision to make a dual arrest, and since dual arrest events are relatively rare, we use logistic regression to examine characteristics associated with dual arrest. We used the backward likelihood method as this is the stepwise method recommended by Andy Field in his SPSS statistics textbook (Field, 2000). Stepwise was used to allow us an additional way to compare the

importance of individual variables. Using this method, we ran three models with three different dependent variables: dual arrest, whether police collected evidence, and whether Emergency Protective Orders were obtained. In the first model we tested whether any of the demographic and case characteristic variables explained dual arrest, and in the latter two models we tested whether dual arrest explained whether police obtained evidence then whether the police obtained an Emergency Protective Order. In each case the models were run with each set of independent variables (demographic, history of violence, and incident characteristics) separately, and then together as a full model. This allowed us to see whether dual arrest is a predictor of either police action. Results of these regression models are displayed and discussed below.

For each of the three models, we report the Nagelkerke R^2 , the overall χ^2 , degrees of freedom, -2 Log Likelihood, goodness of fit, and the percent correct overall. Two demographic variables are included: relationship of couple, and race of offender. The relationship variable is dummy coded, using spouse as the reference category, so statistics for each of the other categories are reported in comparison to the spouse category. For race, we used black as the reference category because the vast majority of offenders were black; thus, white and other race is reported in comparison to blacks. Overall, we found that models did not result in strong goodness of fit scores or high R^2 s; however, in each model there were a few interesting findings worthy of discussion.

Model 1: Using Demographic, Case, and Incident Characteristics to Predict Dual Arrest

In this model, dual arrest is the dichotomous dependent variable, coded as one if there was a dual arrest, and zero if there was a single arrest. A range of explanatory variables is used to describe

demographic, history of violence, and incident characteristics, so that any variables associated with dual arrest can be identified. Regressions for each of these sets of variables, as well as for the complete model, are presented below.

Neither demographic variables, nor history of violence variables are predictors of whether the police make a dual arrest, and none of the variables in either group is individually significant. Clearly, most of the predictive power of these variables is in the incident characteristics category. The model for incident characteristics explains only, 5.9% of the variance in dual arrest, but two variables pertaining to suspected substance use are statistically significant. Dual arrest was 3.3 times as likely in cases where the victim is suspected of using substances ($p < .01$), and about half as likely when the offender is suspected of using substances ($p < .05$). The full model is a better fit but the only significant variables remain those pertaining to victim and offender suspected substance use. These results are displayed in Table 10 on the following page.

Table 10:

Dependent variable: Dual Arrest													
	Demographics			Case Characteristics			Incident Characteristics			Full model			
	N= 738			N= 795			N= 756			N= 704			
	R ² = .006			R ² = .003			R ² = .059			R ² = .073			
	Chi ² = 4.6			Chi ² = 1.48			Chi ² = 23.75			Chi ² = 28			
	B	Wald	sig.	Odds	B	Wald	sig.	Odds	B	Wald	sig.	Odds	
Demographic characteristics													
Former Spouse	-3.9	.09	.75	.02						.07	.78	.03	
Cohabitants	.18	.50	.48	1.2						.67	.41	1.2	
Child in Common	-.38	.81	.37	.68						.16	.68	.83	
White	-.04	.02	.89	.98						.24	.62	.83	
Other	-1.1	1.1	.30	.34						.62	.43	.44	
History of violence													
Prior arrests					-.55	1.1	.29	.57		.02	.90	.99	
Protective order in place					-.04	.16	.69	.96		.30	.58	.74	
Incident characteristics													
Victim substance use									1.12	19.9	.00**	3.3	
Offender substance use									-.64	5.9	.02*	.53	
Any weapon used									.21	.42	.52	1.2	
Medical attention given									.02	.00	.96	1.0	
Aggravated assault filed									-1.2	3.2	.07	.31	
Degrees of freedom	5				2				5			12	
-2 Log likelihood	565.96				603.8				543.97			510.11	
Goodness of fit	734.22				794.90				746.23			686.70	
Percent Correct total	86.9				87.3				87.5			87.2	
Notes:													
** P<.01													
* P<.05													

Model 2: Using Emergency Protective Order as the Dependent Variable

Using demographic, history of violence, and case incident, variables to predict whether police obtained an Emergency Protective Order produced a relatively weak model, although, of the three full models presented here, it has the highest R^2 (17%). Since this analysis focuses on dual arrest, we present only the full model rather than also including the partial models in which dual arrest is not included (see Table 11 below).

Table 11:

Dependent Variable: Emergency Protective Order Obtained				
	N= 704			
	$R^2 = .17$			
	$\chi^2 = 87.19$			
	B	Wald	sig.	Odds
Demographic characteristics				
Former Spouse	-3.9	.28	.59	.02
Cohabitants	-.37	3.1	.08	.69
Child in Common	-.56	2.7	.09	.57
White	.32	1.4	.23	1.4
Other	-1.3	2.7	.09	.25
History of violence				
Prior arrests	.06	.73	.39	1.1
Protective order in place	2.6	47.8	.00**	12.6
Incident characteristics				
Victim substance use	-.37	2.2	.14	.69
Offender substance use	.42	4.1	.04*	1.5
Any weapon used	-.14	.22	.64	.86
Medical attention given	-.15	.20	.65	.86
Aggravated assault filed	.04	.01	.92	1.0
Dual Arrest	-.49	2.3	.13	.61
Degrees of freedom	13			
-2 Log likelihood	693.39			
Goodness of fit	703.77			
Percent correct of total	79.26			
Note:				
* P<.01				
** P<.05				

The single strongest predictor of having an EPO obtained is whether a protective order was already in place. This increased the likelihood of obtaining an EPO 12.6 times ($P < .01$). Whether the offender was suspected of using substances was also significant ($P < .05$), and increased the likelihood 1.5 times. Notably, several demographic variables were almost significant. In comparison to cases involving spouses, all others were less likely to have EPOs obtained. We were especially interested in whether dual arrest was a predictor of officers obtaining EPOs. This analysis indicates that EPOs are less likely to be obtained in dual arrest situations, but the difference is not significant. Overall, officers were 12.6 times more likely to obtain EPOs when protective orders were already in place and were about 1.5 times more likely to do so if the offender was suspected of using substances.

Model 3: Using Whether Officers Collected Any Evidence as the Dependent Variable

When regressed against whether officers collected any evidence, these same demographic, history of violence, and incident variables produce an R^2 of 8%, indicating a relatively weak model. The regression results are displayed in Table 12 on the next page.

The strongest predictor of officers collecting evidence is whether medical attention was administered, which increased the likelihood of officers collecting evidence 2.2 times ($P < .01$). Having protective orders in place also doubles the odds of officers collecting evidence. Interestingly, the other history of violence variable, whether the offender had been arrested before for domestic violence, is almost significant, but in the opposite direction, indicating that officers may be less likely to collect evidence in cases where they are aware of prior intimate

violence arrests. As with EPOs, dual arrest was inversely related to whether police collected any evidence, but was not significant.

Table 12:

Dependent Variable: Evidence Collected				
	N= 704			
	R ² = .08			
	Chi ² = 38.22			
	B	Wald	sig.	Odds
Demographic characteristics				
Former Spouse	1.4	1.2	.27	4.2
Cohabitants	-.16	.46	.49	.85
Child in Common	.52	2.4	.12	1.7
White	.45	2.4	.12	1.6
Other	.45	.61	.43	1.6
History of violence				
Prior arrests	-.25	3.5	.06	.78
Protective order in place	.76	4.4	.04*	2.1
Incident characteristics				
Victim substance use	.34	1.6	.20	1.4
Offender substance use	-.04	.03	.87	.96
Any weapon used	.28	.93	.33	1.3
Medical attention given	.78	6.9	.00**	2.2
Aggravated assault filed	.41	1.1	.29	1.5
Dual arrest	-.18	.28	.59	.84
Degrees of freedom	13			
-2 Log likelihood	604.68			
Goodness of fit	707.22			
Percent correct of total	83.38			
Note:				
* P<.01				
** P<.05				

Discussion

Since presumptive and mandatory arrest laws have taken hold, dual arrests have become a more common outcome in domestic violence incidents. This has raised concern among advocates as well as police who want to ensure that, to the extent possible, police action protects victims by

inhibiting revictimization. Many have expressed concern, however, that dual arrests are being applied to victims who acted in self-defense rather than to co-combatants.

While answering this question is beyond the scope of this study, as the data do not allow for such specific conclusions to be drawn, it is possible to speculate based on comparisons between cases with different police outcomes. This first set of comparisons is between all three police outcomes and is descriptive. Second, logistic regression is used to compare cases to which dual arrest and single arrest are applied, to ascertain which variables are the best predictors of dual arrest. The logistic regression analysis excludes cases where a warrant was issued instead of an arrest being made to focus on the police decision between dual and single arrest.

Dual arrest cases appear in general to be relatively less serious than those where a single arrest is made in that, compared to single arrest and warrant cases, they are less often classified as aggravated assault, involve medical treatment, or have protective orders in place; however, they have about the same average number of prior arrests. Since advocates worry that dual arrest is applied to particularly serious cases where one party is driven to violence in self-defense, and these data indicate dual arrest cases to generally be less serious, our data do not support the advocates' concerns. However, we must once again caution against drawing definitive conclusion from these data.

The logistic regression indicates that overall, the variables included do not fit and are not found to be strong predictors of dual arrest. The two variables that are significant are suspected substance use by the victim and by the offender. Suspected victim substance use tripled the odds

of dual arrest. Since dual arrest is applied when officers cannot determine who is most to blame, this may indicate that victim intoxication increases the chance that officers view both parties as sharing substantial responsibility. While it is understandable that substance use by both parties might indicate mutual guilt to officers, these data do not explain officers' decision making. We do not know whether the officers decided upon dual arrest due to true ambiguity, or whether the fact that both parties appeared to be using substances was interpreted as mutual responsibility. The authors feel that the possibility that officers interpret intoxication to mean complicity in violence is important to investigate, as it could have serious negative ramifications for victims.

To explore the relationship between dual arrest and police action, two additional logistic regression models were run with dual arrest as a predictor variable (1) of whether emergency protective orders were obtained, and (2) of whether the police collected evidence. These police officer actions are somewhat discretionary, and thus may indicate how serious officers' perceive these incidents to be. Dual arrest was not found to be a significant predictor of getting an EPO, though this model was the strongest of the three. The strongest predictor for obtaining EPOs, was whether other protective orders were in place at the time, which increased the likelihood 12.6 times. This makes sense, because if a police officer is informed that protective orders are in place, he or she would be expected to consider the case more serious. Interestingly, an offenders' record of past intimate violence arrests known to officers is not found to be a predictor of whether officers obtain EPOs. One would think that these cases would appear more serious and thus merit EPOs.

In addition, dual arrest was not a predictor of collecting evidence. Whether medical attention was administered was the strongest predictor, which more than doubled the chances of officers obtaining evidence. This outcome is not surprising. In cases where medical attention is administered, either at the scene, or after the victim is transferred from the site by ambulance, clearing the call takes much longer, giving the officer more time to collect evidence.

Additionally, cases where medical attention is given may be the cases most likely to go to court where evidence will be needed by the prosecutors. The fact that the single most common form of evidence collected is photographic also may explain this outcome. Even though photographs of property damage or disarray can also be evidence, officers may be more inclined to take pictures of visible injuries than property damage, and visible injuries are probably more common in victims to whom medical attention is administered.

One of the most interesting findings in this model is that measures of history of violence are contradictory. One would expect officers to take incidents more seriously and thus to collect evidence if there is a history of violence. This seems to be the case when protective orders are in place, where the likelihood of evidence collection more than doubles. However, in cases where the offender has prior arrests for domestic violence, the likelihood of officers collecting evidence decreases (odds ratio .78). One possible interpretation for this is that in cases where officers are aware that there are past offenses, officers may feel that the couple is resistant to outside assistance and that additional efforts may be ineffectual.

Conclusion

Of vital concern to law enforcement, victim advocates, and the community at large is ensuring that current responses to intimate violence do not “revictimize the victim.” The question has been raised that dual arrest may do just that, by arresting individuals, who, though they participated in violence, did so in self-defense and are more accurately classified as victims than offenders. Ascertaining to what extent, if any, this is the case is important in evaluating law enforcements’ response to intimate violence and specifically, its success at assisting and protecting victims. Distinguishing the types of cases in which dual arrest is most likely to be applied by officers may not answer this question directly or decisively, but we believe it has some utility for shedding light on it. This is the approach we have employed in the present analysis. Here we have sought to describe characteristics of dual arrest in comparison with those resulting in other police outcomes. We have also conducted analysis to determine whether certain case characteristics are predictive of dual arrest. Based on our data, cases to which dual arrest is applied appear to be somewhat less serious.

We feel that much more needs to be done in this area to replicate as well as expand on our findings. Ideally, further analysis would use a dataset that includes more dual arrest cases to allow for greater sensitivity in detecting patterns among dual arrest cases. We also believe it would be useful to compare a dual arrest analysis based on a primary aggressor jurisdiction, such as this one, to one based on a non primary aggressor jurisdiction. In the absence of further research on the dual arrest outcome, dual arrests will continue to be made, yet it will be unknown whether intended law enforcement goals are being achieved, or whether victims are being “revictimized” by the system that has been sent to help. Continuing when so much is unknown

is risking missing opportunities to help victims as well as increasing the chance that victims will become alienated from what may be the best protection available to them.

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Chapter 6 Appendix A

Data Cleaning Table

Reason for Deletion	Number of records deleted
Entered in database twice.	110
The relationship between the offender and victim was non-intimate.	112
The relationship was boyfriend/girlfriend – not included in VA code.	17
Relationship was noted by officer as “unknown”.*	8
The case accounted for two reports because it was a dual arrest.**	14
Police outcome listed as “No arrest.”	182
Police outcome listed as “unknown” or blank.	99
Victim and offender same sex.	8
Sex of offender could not be established.	64
Type of report not indicated.	73
Type of report other than assault (couldn't be recoded).	13
Number of cases remaining for analysis	1,376

*We deleted cases where the officer recorded the relationship as unknown to ensure that we were only considering cases between intimate or past intimate couples.

**When dual arrests are made, each arrest is assigned its own incident number. Most officers report dual arrests by recording both incident numbers on the same PD 109, since there is a space designated for that purpose. Some officers report dual arrests by completing two forms, one for each offender. For consistency, we removed from the database the second report, leaving us with exactly one record per incident.

Chapter 6 Appendix B

Table of Data Used for Analysis in Columns

Percent of Victims and Offenders in Various Demographic Categories by Outcome									
Variable	Warrant		Single Arrest		Dual Arrest		Total		
	%	N	%	N	%	N	%	N	N
Sex of Offender									
Male	96.6%	561	93.2%	647	N/A	N/A	93.8%	1291	
Female	3.4%	20	6.8%	47	N/A	N/A	6.2%	85	
Race of Offender									
Black	90.1%	485	83.2%	534	85.4%	82	86.3%	1101	
White	5.9%	32	13.9%	89	13.5%	13	10.5%	134	
Other	3.9%	21	3.0%	19	1.0%	1	3.2%	41	
Average Age									
Average victim age	29.2	(559)	32.4	(673)	32.8	(99)	31	(1331)	
Average offender age	30.6	(521)	34.7	(645)	34.6	(95)	33	(1261)	
Relationship									
Spouse	27.0%	157	31.1%	216	28.7%	29	29.2%	402	
Former spouse	1.0%	6	.6%	4	0	0	.7%	10	
Cohabitants	41.1%	239	54.9%	381	62.4%	63	49.6%	683	
Child in Common	30.8%	179	13.4%	93	8.9%	9	20.4%	281	

History of Violence									
Variable	Warrant		Single Arrest		Dual Arrest		Total		
	%	N	%	N	%	N	%	N	
Protective order in place	6.4%	37	6.8%	47	4.0%	4	6.4%	88	
Offender's prior DV arrests									
None	77.9%	441	69.9%	485	73.0%	73	73.5%	999	
One	14.1%	80	18.3%	127	15.0%	15	16.3%	222	
Two	4.8%	27	8.1%	56	9.0%	9	6.8%	92	
Three or more	3.2%	18	3.7%	26	3.0%	3	3.5%	47	

Chapter 6 Appendix C

Table of Data Used for Analysis in Rows

Incident Characteristics										
Variable	Warrant		Single Arrest		Dual Arrest		Total			
	%	N	%	N	%	N	%	N	%	N
Substance Use										
Victim	9.0%	52	20.9%	145	38.6%	39	17.2%	236	17.2%	236
Offender	26.2%	152	41.4%	287	35.6%	36	34.5%	475	34.5%	475
Both	6.0%	35	15.9%	110	26.7%	27	12.5%	172	12.5%	172
Weapon Use										
Gun	.9%	5	2.0%	14	1.0%	1	1.5%	20	1.5%	20
Knife	2.8%	16	3.5%	24	6.9%	7	3.4%	47	3.4%	47
Other	8.3%	48	7.8%	54	8.9%	9	8.1%	111	8.1%	111
Any	11.7%	68	12.8%	89	14.9%	15	12.5%	172	12.5%	172
Alleged Offense										
Physical assault	96.6%	561	97.8%	679	98.0%	99	97.3%	1339	97.3%	1339
Sexual assault	.2%	1	0	0	0	0	.1%	1	.1%	1
Property crime	1.7%	10	1.3%	9	1.0%	1	1.5%	20	1.5%	20
Psychological	1.4%	8	2.2%	15	3.0%	3	1.9%	26	1.9%	26
Offense against child	.2%	1	.4%	3	0	0	.3%	4	.3%	4
Other offense	.9%	5	1.7%	12	0	0	1.2%	17	1.2%	17
Additional Characteristics										
Aggressor present	7.1%	41	82.4%	572	90.1%	91	51.2%	704	51.2%	704
Children witnessed incident	44.8%	260	41.1%	285	43.6%	44	42.8%	589	42.8%	589
Medical treatment given	17.0%	92	14.8%	98	12.8%	12	15.6%	202	15.6%	202

Police Action									
Variable	Warrant		Single Arrest		Dual Arrest		Total		
	%	N	%	N	%	N	%	N	
Type of Report									
Aggravated assault	6.2%	36	7.3%	51	3.0%	3	6.5%		90
Simple assault	93.8%	545	92.7%	643	97%	98	93.5%		1286
Evidence Collected									
Statements	6.0%	35	6.3%	44	4.0%	4	6.0%		83
Photographs	7.9%	46	9.2%	64	7.9%	8	8.6%		118
911 Tapes	0	0	.1%	1	0	0	.1%		1
Hospital records	1.2%	7	.4%	3	0	0	.7%		10
Other	.02	2	.06%	8	.14%	2	.05%		12
Any	15.5%	90	17.3%	120	13.9%	14	16.3%		224
Obtained EPO	27.4%	159	25.9%	180	13.9%	14	25.7%		353

Victim and Offender Demographic Categories by Outcome						
Variable	Warrant		Single Arrest		Dual Arrest	
	%	N	%	N	%	N
Sex of Offender						
Male	43.5%	561	50.1%	647	6.4%	83
Female	23.55%	20	55.3%	47	21.2%	18
<i>Total</i>	<i>42.2%</i>	<i>581</i>	<i>50.4%</i>	<i>694</i>	<i>7.3%</i>	<i>101</i>
Race of Offender						
Black	44.1%	485	48.5%	534	7.4%	82
White	23.9%	32	66.4%	89	9.7%	13
Other	51.2%	21	46.3%	19	2.4%	1
<i>Total</i>	<i>42.2%</i>	<i>538</i>	<i>50.3%</i>	<i>642</i>	<i>7.5%</i>	<i>96</i>
Relationship						
Spouse	39.1%	157	53.7%	216	7.2%	29
Former spouse	60%	6	40%	4	0	0
Cohabitants	35%	239	55.8%	381	9.2%	63
Child in Common	63.7%	179	33.1%	93	3.2%	9
<i>Total</i>	<i>42.2%</i>	<i>581</i>	<i>50.4%</i>	<i>694</i>	<i>7.3%</i>	<i>101</i>

History of Violence							
Variable	Warrant		Single Arrest		Dual Arrest		N
	%	N	%	N	%	N	
Protective order in place	42.0%	37	53.4%	47	4.5%	4	4
<i>Total</i>	<i>42.2%</i>	<i>581</i>	<i>50.4%</i>	<i>694</i>	<i>7.3%</i>	<i>101</i>	
None	44.1%	441	48.5%	485	7.3%	73	73
One	36.0%	80	57.2%	127	6.8%	15	15
Two	29.3%	27	60.9%	56	9.8%	9	9
Three or more	38.3%	18	55.3%	26	6.4%	3	3
<i>Total</i>	<i>41.6%</i>	<i>566</i>	<i>51.0%</i>	<i>694</i>	<i>7.4%</i>	<i>100</i>	

Incident Characteristics						
Variable	Warrant		Single Arrest		Dual Arrest	
	%	N	%	N	%	N
Substance Use						
Victim	22.0%	52	61.4%	145	16.5%	39
Offender	32.0%	152	60.4%	287	7.6%	36
Both	20.3%	35	64%	110	15.7%	27
Weapon Use						
Gun	25.0%	5	70.0%	14	5.0%	1
Knife	34%	16	51.1%	24	14.9%	7
Other	43.2%	48	48.6%	54	8.1%	9
Any	39.5%	68	51.7%	89	8.7%	15
Alleged Offense						
Physical assault	41.9%	561	50.7%	679	7.4%	99
Sexual assault	100%	1	0	0	0	0
Property crime	50.0%	10	45.0%	9	5.0%	1
Psychological	30.8%	8	57.7%	15	11.5%	3
Offense against child	25.0%	1	75.0%	3	0	0
Other offense	29.4%	5	70.6%	12	0	0
Aggressor present						
Aggressor present	5.8%	41	81.3%	572	12.9%	91
Children witnessed incident	44.1%	260	48.4%	285	7.5%	44
Medical treatment given	45.5%	92	48.5%	98	5.9%	12

Police Action							
	Warrant		Single Arrest		Dual Arrest		
	%	N	%	N	%	N	
Type of Report							
Aggravated assault	40.0%	36	56.7%	51	3.3%	3	
Simple assault	42.4%	545	50.0%	643	7.6%	98	
Total	42.2%	581	50.4%	694	7.3%	101	
Evidence Collected							
Statements	42.2%	35	53.0%	44	4.8%	4	
Photographs	39.0%	46	54.2%	64	6.8%	8	
911 Tapes	0	0	100%	1	0	0	
Hospital records	70.0%	7	30.0%	3	0	0	
Any	40.2%	90	53.6%	120	6.3%	14	
Obtained EPO	45.0%	159	51.0%	180	4.0%	14	

Dependent variable: Dual Arrest																
	Demographics				Case Characteristics				Incident Characteristics				Full model			
	N= 738				N= 795				N= 756				N= 704			
	R ² = .006				R ² = .003				R ² = .059				R ² = .073			
	Chi ² = 4.6				Chi ² = 1.48				Chi ² = 23.75				Chi ² = 28			
	B	Wald	sig.	Odds	B	Wald	sig.	Odds	B	Wald	sig.	Odds	B	Wald	sig.	Odds
Demographic characteristics																
Former Spouse	-3.9	.09	.75	.02									-3.4	.07	.78	.03
Cohabitants	.18	.50	.48	1.2									.22	.67	.41	1.2
Child in Common	-.38	.81	.37	.68									-.18	.16	.68	.83
White	-.04	.02	.89	.98									-.17	.24	.62	.83
Other	-1.1	1.1	.30	.34									-.83	.62	.43	.44
History of violence																
Prior arrests					-.55	1.1	.29	.57					-.20	.02	.90	.99
Protective order in place					-.04	.16	.69	.96					-.30	.30	.58	.74
Incident characteristics																
Victim substance use									1.12	19.9	.00	3.3	1.2	18.4	.00**	3.3
Offender substance use									-.64	5.9	.02	.53	-.59	4.6	.03*	.55
Any weapon used									.21	.42	.52	1.2	.31	.86	.35	1.4
Medical attention given									.02	.00	.96	1.0	-.29	.50	.48	.75
Aggravated assault filed									-1.2	3.2	.07	.31	-.95	2.0	.15	.38
Degrees of freedom	5				2				5				12			
-2 Log likelihood	565.96				603.8				543.97				510.11			
Goodness of fit	734.22				794.90				746.23				686.70			
Percent Correct total	86.9				87.3				87.5				87.2			
Notes:																
** P<.01																
* P<.05																

Dependent Variable: Emergency Protective Order Obtained				
	N= 704			
	R ² = .17			
	Chi ² = 87.19			
	B	Wald	R	Odds
Demographic characteristics				
Former Spouse	-3.9	.28	.59	.02
Cohabitants	-.37	3.1	.08	.69
Child in Common	-.56	2.7	.09	.57
White	.32	1.4	.23	1.4
Other	-1.3	2.7	.09	.25
History of violence				
Prior arrests	.06	.73	.39	1.1
Protective order in place	2.6	47.8	.00**	12.6
Incident characteristics				
Victim substance use	-.37	2.2	.14	.69
Offender substance use	.42	4.1	.04*	1.5
Any weapon used	-.14	.22	.64	.86
Medical attention given	-.15	.20	.65	.86
Aggravated assault filed	.04	.01	.92	1.0
Dual Arrest	-.49	2.3	.13	.61
Degrees of freedom	13			
-2 Log likelihood	693.39			
Goodness of fit	703.77			
Percent correct of total	79.26			
Note:				
* P<.01				
** P<.05				

Dependent Variable: Evidence Collection					
	N= 704				
	$R^2 = .08$				
	$\text{Chi}^2 = 38.22$				
	B	Wald	R	Odds	
Demographic characteristics					
Former Spouse	1.4	1.2	.27	4.2	
Cohabitants	-.16	.46	.49	.85	
Child in Common	.52	2.4	.12	1.7	
White	.45	2.4	.12	1.6	
Other	.45	.61	.43	1.6	
History of violence					
Prior arrests	-.25	3.5	.06	.78	
Protective order in place	.76	4.4	.04	2.1	
Incident characteristics					
Victim substance use	.34	1.6	.20	1.4	
Offender substance use	-.04	.03	.87	.96	
Any weapon used	.28	.93	.33	1.3	
Medical attention given	.78	6.9	.00	2.2	
Aggravated assault filed	.41	1.1	.29	1.5	
Dual arrest	-.18	.28	.59	.84	
Degrees of freedom	13				
-2 Log likelihood	604.68				
Goodness of fit	707.22				
Percent correct of total	83.38				
Note:					
* $P < .01$					
** $P < .05$					

Chapter 7

Mapping Reported Intimate Assault

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Chapter 7: Mapping Reported Intimate Assaults

Introduction

Since the advent of desktop-based geographic information systems (GIS) software, the application of spatial analysis to understanding and responding to a variety of crime and public safety problems has expanded. Researchers as well as practitioners have found GIS an invaluable tool for examining crime. For example, researchers have used GIS to study the spatial dimensions of various types of crime (Radcliff & McCullagh, 1998; Rogers & Delores, 1996), and police managers have adopted GIS as a means for understanding and responding to crime in their jurisdictions (LaVigne & Wartell, 1998; Taxman & McEwen, 1994; Weisburd & McEwen, 1997). GIS has, however, rarely been used as a tool to examine intimate violence.

The paucity of spatial applications to the study of intimate violence is easy to understand. Researchers and practitioners have been disinclined to spatially analyze intimate violence because it is not considered a crime affected by place and environmental characteristics such as street lighting, type of road, or even neighborhood crime levels. Additionally, most types of intimate violence data are not well suited for mapping.

There are many sources of intimate violence data, including victimization surveys, hospitals, shelters, and police departments, and each type has shortcomings. Victimization data are ideal for examining the spatial nature of intimate violence because they are the most comprehensive and least biased, providing a snapshot of intimate violence across all demographic categories. Yet, victimization data do not typically include location information, which is necessary for spatial examination. Another source, hospital records of admissions are biased toward more

serious incidents because victims without serious physical injuries are unlikely to go to a hospital. Additionally, these records may be incomplete because medical staff may treat a patient for injuries without being aware that the injuries resulted from intimate violence. Even when records are complete, confidentiality issues often restrict the availability of these data to researchers. Still another data source is domestic violence shelters. However, since for a variety of reasons most victims do not go to shelters, records of shelter clients reflect only a small amount of actual intimate violence. Confidentiality concerns also make obtaining data from shelters very difficult.

Lastly, since police data include only incidents that are reported to the police, they are also subject to bias, but they do have two important advantages for spatial analysis. First, they are relatively accessible in that strict confidentiality does not apply, and second, they include location information that makes spatial examination possible. In the exploratory analysis presented here, we examine intimate assault reported to the police using spatial analysis methods that are frequently applied to other types of crime to determine if these methods are also useful for analyzing intimate assault. We examine intimate assault by frequency, type (simple or aggravated), and in relation to several demographic variables commonly considered with crime data such as population, population density, race, and median rent, and in relation to locations where victims could seek assistance.

It is important to keep in mind that the incidents comprising this analysis represent intimate assaults reported to police, which is a subset of all intimate violence. In addition to the general biases of reported intimate assault data, the data used in this study are subject to several

additional biases. One important characteristic of intimate violence is its repetitiveness, in that violence reoccurs in violent relationships. Unfortunately, it is not possible to analyze repeat addresses in these data because reliable apartment numbers are not present. Finally, the time range of the data used here is March 1999 to February 2001. It would be appropriate to use 2000 census data for this analysis, but block group level variables from the 2000 census were not available at the time of this examination.

The Present Analysis

This is an exploratory spatial analysis of intimate assaults, both simple and aggravated, reported to the city police department during a two-year period, using 1990 census data at the block group level provided by Environmental Systems Research Institute (ESRI). Census block group boundaries are used as proxies for neighborhoods, allowing for examination of reported intimate assault, by neighborhood characteristics such as population, population density, socio-economic level, and race.

Research Questions

The following are research questions that guide this exploratory analysis.

1. *What is the spatial distribution of reported intimate assaults in this city?* First, we examine reported simple and aggravated intimate assault separately, using the kernel density method.

This method uses point data to determine the relative density of intimate assaults in the city (see ESRI, 1996). Because the demographic data used in the subsequent analyses are aggregated to

the block group level, the reported intimate assaults are also examined through thematic shading of the block groups by number of assaults.

2. *What is the relationship between reported intimate assault and demographic variables commonly examined in criminal justice research such as population, population density, socioeconomic level (median rent), and race?*

A. *What is the spatial distribution of reported intimate assaults by population?* Using the block group as the unit of analysis, this analysis shows the rate of intimate assaults by population to determine if there are any areas of the city that have relatively higher rates of reported intimate assault. Population is obtained through the census data.

B. *What is the spatial distribution of reported intimate assaults by population density?* A question often asked anecdotally about reported intimate assaults is whether areas with high population density have relatively higher numbers of reported intimate assault. The assumption is that people who live in closer proximity to others are more likely to hear intimate disputes and call the police – “thinner walls, more calls.” We examine the relationship between population density and number of reported intimate assaults. To determine areas as relatively high population density and high levels of reported intimate assaults or the reverse, which also follows the same argument, (i.e., lower density, lower number of reported intimate assaults), we break down the distribution of block groups into quartiles. That is, 25% of the distribution of block groups with the highest and lowest rates of population density are selected as are the 25% with the highest and lowest

numbers of reported intimate assaults. The remaining block groups (that fall into these categories for both variables) then are coded into one of the following categories:

1. High population density/high frequency of reported intimate assaults
2. Low population density/low frequency of reported intimate assaults
3. High population density/low frequency of reported intimate assaults
4. Low population density/high frequency of reported intimate assaults

These block groups are then mapped to determine their spatial distribution, comparing groups #1 and #2 to groups #3 and #4. Population density is obtained through the census data.

C. How does the spatial distribution of the rate of reported intimate assaults by population compare to the median rent? Using the block group as the unit of analysis, a map depicting rate of reported intimate assault by population is compared to one depicting median rent by block group. Median rent is obtained through the census data.

D. How does the spatial distribution of the rate of reported intimate assault compare to racial homogeneity of the population? Again, using the block group as the unit of analysis, a map depicting the rate of reported intimate assault by population is visually compared to one depicting racial homogeneity. Racial homogeneity is defined as a block group's population being at least 80% one race and is obtained through the census data.

E. What is the spatial distribution of block groups in which blacks or whites are overrepresented as offenders of reported intimate assault? Another notion in criminology is that minorities are overrepresented in phenomena such as arrests,

convictions, and the prison population. Is this also true with intimate violence? All things being equal, we would expect the proportion of offenders of a given race to be equal to that race's proportion of the population. This analysis compares the percent of black and white offenders residing in a block group with the percent of black and white residents of that block group to determine whether each race is under, over, or equally represented in the population of reported offenders. The maps shade block groups according to a ratio of these percentages to determine any spatial pattern.

3. *What is the spatial relationship between reported intimate assault and locations of victim assistance?* Localities seeking to ensure that victims are adequately served and protected would value knowing where intimate assault occurs in relation to locations where these victims could seek assistance. While reported intimate assaults cannot be thought to accurately describe the actual intimate violence problem, they are a starting point. In this part of the analysis, we present a kernel density map showing reported intimate assault in relation to police stations and medical facilities. The reported intimate assault data come from the police department, and the city's GIS coordinator provided the hospital, clinic, and police station point data.

Methodology

This analysis draws data from the city's GIS coordinator, the city police department, as well as by ESRI. The police data come from domestic violence incident reports (DVRs), which officers are required to complete for every domestic violence substantiated calls. They provide demographic, relationship, and address data on the parties involved; the location, date, and time, of the incident; police action taken, presence of children, apparent use of alcohol or drugs by

either of the parties, weapon use, victim injuries, and whether protective orders were on file. This analysis includes only those DVRs in which an aggravated or simple intimate assault has occurred between persons who are or were married, have a child in common, currently cohabit, or have cohabited within the previous 12 months. The city's GIS coordinator provided a layer with addresses of hospitals and clinics, a layer with addresses of the four police stations, and a layer of the police patrol division boundaries.

The resulting database contains 1,350 intimate assaults reported between March 1, 1999, and February 28, 2001. The street addresses of the incident were geocoded to the city's street centerline files obtained through ESRI®, resulting in a geocoding rate of 94% (1223). Eighty-two (6%) of the addresses did not geocode. This is attributed to slightly out-of-date street files and, in some cases, to incomplete address information recorded by officers on the DVR form.

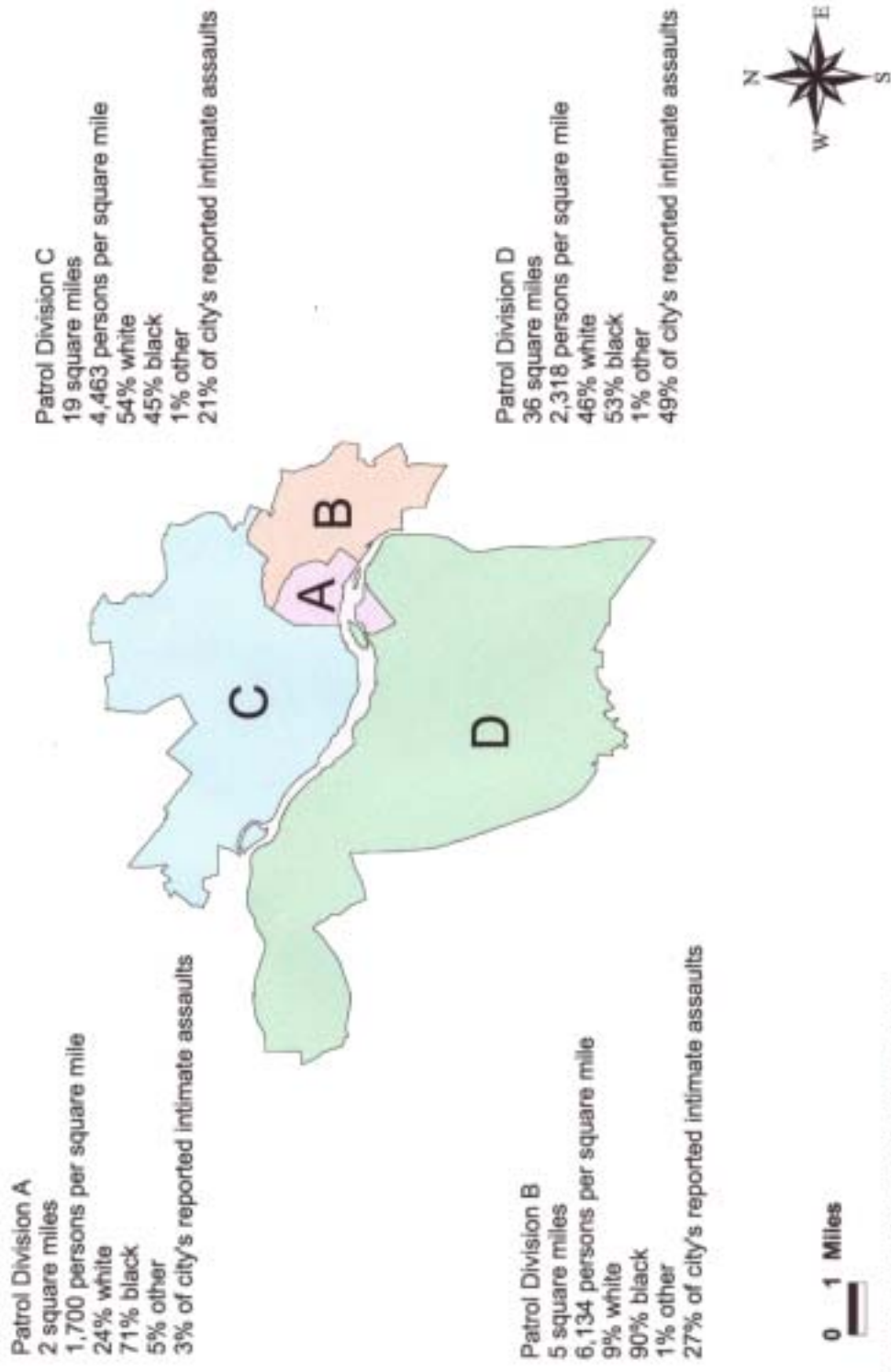
Study City

The study city is in the mid-Atlantic region of the country, covers approximately 62 square miles, and has a police department of approximately 700 sworn officers. A river runs through the city horizontally, and forms the northern border of the largest of the four patrol divisions Division D, and the other three, A, B, and C, which are north of the river. Between 1990 and 2000 the population decreased from 203,000 to 200,000. During this time the percent of whites decreased from 43% to 38%, the percent of blacks increased from 55% to 57%, the percent of Hispanics increased from 1% to 3%, and the other and mixed race category increased from 1% to 2% (ESRI; City Website). Map 1 on the next page displays the boundaries of the four patrol

divisions and provides demographic context to each one. As noted earlier, we use the 1990 data for this analysis.

Division A is the smallest of the four divisions, covering two square miles, and is the center city business district. This division has the lowest population per square mile of the four police patrol divisions (1,700 persons per square mile). Twenty-four percent of the population is white, 71% is black, and a small number of Hispanics, Asians, and others make up the remaining 5% (Police Department's Web site). Three percent of the city's reported intimate assault occurs in this division.

Map 1: Patrol Divisions and their Characteristics



Within its small, five square miles, Division B has several public housing complexes that are well known to the police. Division B has the highest population density of the four divisions (6,134 persons per square mile), and is 90% black, 9% white, and 1% other. Twenty-seven percent of the city's reported intimate violence occurs in this division.

Division C is the most diverse of the four patrol divisions with three distinct areas. The northern band of this division is similar to Division B, with a good deal of low income, multi-family housing. In the southern section, the area closest to the center houses a university, and thus, many students. The wealthiest section of the city is in the southwest portion of this division. Division C covers 19 square miles and has a population density of 4,463 persons per square mile. This division accounts for 21% of the reported intimate assaults, is 54% white, 45% black, and 1% other. It is the only division where blacks are not the majority of residents.

Division D is the largest of the patrol districts, covering 36 square miles, but has a relatively low population density of 2,318 persons per square mile. Blacks comprise 53% of the population, whites 46%, and 1% is made up of other races. Forty-nine percent of the city's reported intimate violence occurs in this division.

Analysis

This analysis explores the spatial distribution of intimate assault in three parts. The first part uses two methods to depict the spatial pattern of citywide reported intimate assault. Second is a spatial examination of reported intimate assault in relation to population, population density, median rent and race. The third part is a visual examination of the spatial patterns of intimate

assault in relation to the locations of police stations and medical facilities – institutions where intimate assault victims could seek assistance.

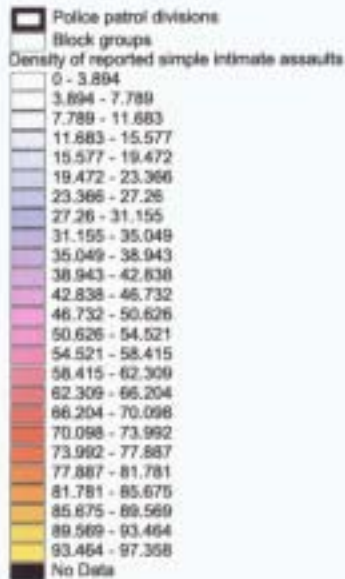
Our analysis includes two types of maps, kernel density and graduated area. The kernel density maps were created using a cell size of 50 feet and a search radius of one mile. The graduated area maps are thematically shaded by census block group. Six block groups were excluded from consideration in the thematically shaded maps. Five were excluded because they had no recorded population in the 1990 census, making rates impossible to compute. The sixth was excluded because its reported intimate assault rate was far outside the distribution due to an extremely small population and several reported intimate assaults.

Part I: Overall Spatial Patterns of Intimate Assault


“Hotspots” of Reported Intimate Assault: Maps 2 and 3

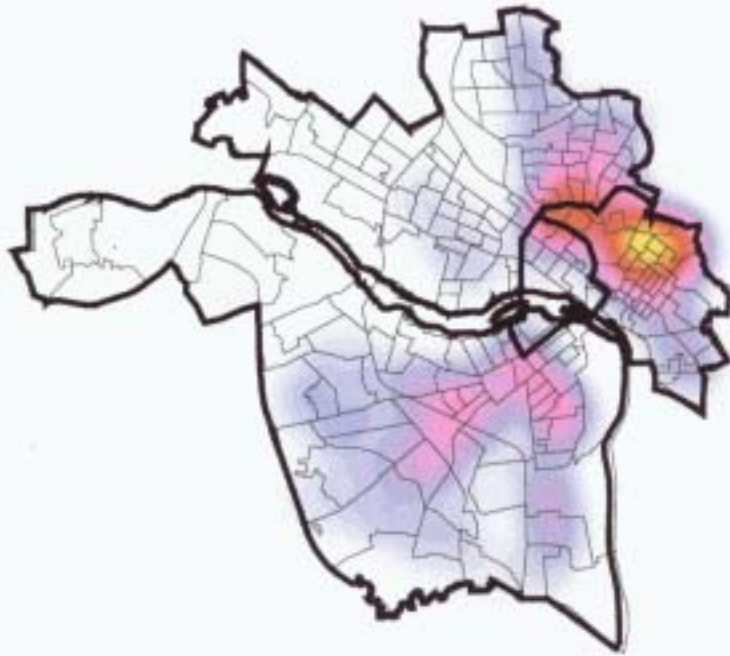
In order to (1) identify concentrations of reported intimate assault across block group boundaries, and (2) to compare the geographic concentrations of simple intimate assault to aggravated intimate assault, we produced kernel density maps of simple (Map 2) and aggravated (Map 3) reported intimate assault. The maps on the next page were created with a cell size of 50 feet and a search radius of one mile. Unlike graduated area maps, which consider the map sections (in this case block groups) separately, kernel density maps facilitate citywide comparison by indicating relative density of activity irrespective of block group boundaries.

Maps 2 and 3: Kernel Density of Reported Simple and Aggravated Intimate Assault per Square Mile



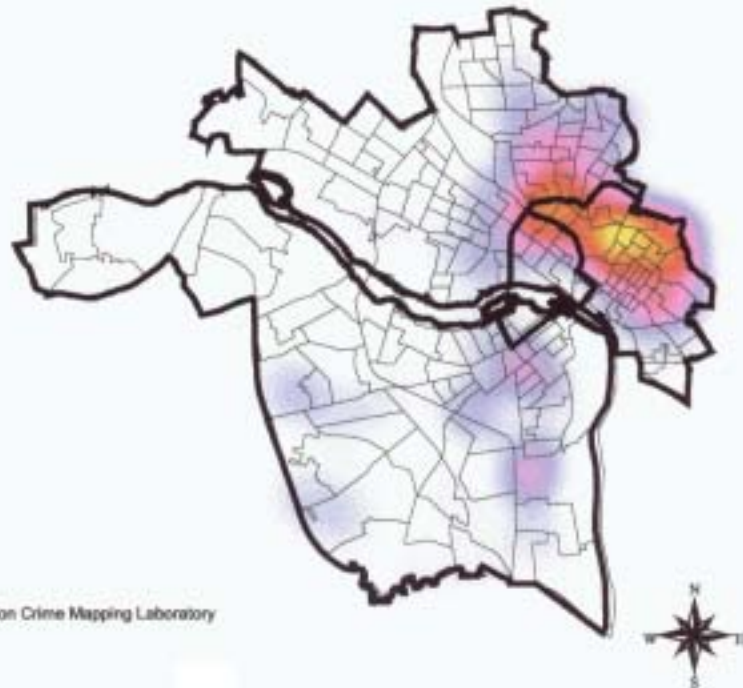
Cell size: 50 feet
 Search radius: 1 mile

0 1 Miles




Cell size: 50 feet
 Search radius: 1 mile

0 1 Miles

Prepared by: Police Foundation Crime Mapping Laboratory
 April 2002



Assaults can be charged as simple or aggravated depending on the seriousness. Aggravated assaults are more serious, and account for only 6.6% of all intimate assault charges in the city. To compare the geographic distribution of simple and aggravated assaults, Maps 2 and 3 are shown together. It is important to note that while the density patterns on these two maps can be compared their respective magnitudes cannot. Because there are so many more simple assaults than aggravated assaults, it takes many more simple assaults in one area to register as a high-density area. As shown in the legends, the “hottest” areas for simple assault have between 93.464-97.358 incidents per square mile while the “hottest” areas for aggravated assault have just 8.409-8.759 incidents – a vast difference.

The concentrations of reported intimate assaults across block groups are readily apparent in Map 2, which, though it only shows simple assaults, is a suitable proxy for all intimate assaults since simple assaults are the vast majority of assaults. This map shows (1) that the highest concentration of reported intimate assaults occur in Division B, specifically in the northwest section, (2) that there are several areas of lesser concentration in the east of Division D, and (3) that there are few reported intimate assaults in the western areas of Divisions C and D.

These comparisons indicate that the highest concentrations of reported intimate assaults occur in the northwest area of Division B, with some lesser concentrations in Division D, and that simple and aggravated assaults cluster in similar geographic patterns in the city. Since these maps show the geographic pattern of simple and aggravated assault to be nearly identical, for the remainder of the paper they are considered together as “intimate assaults.”

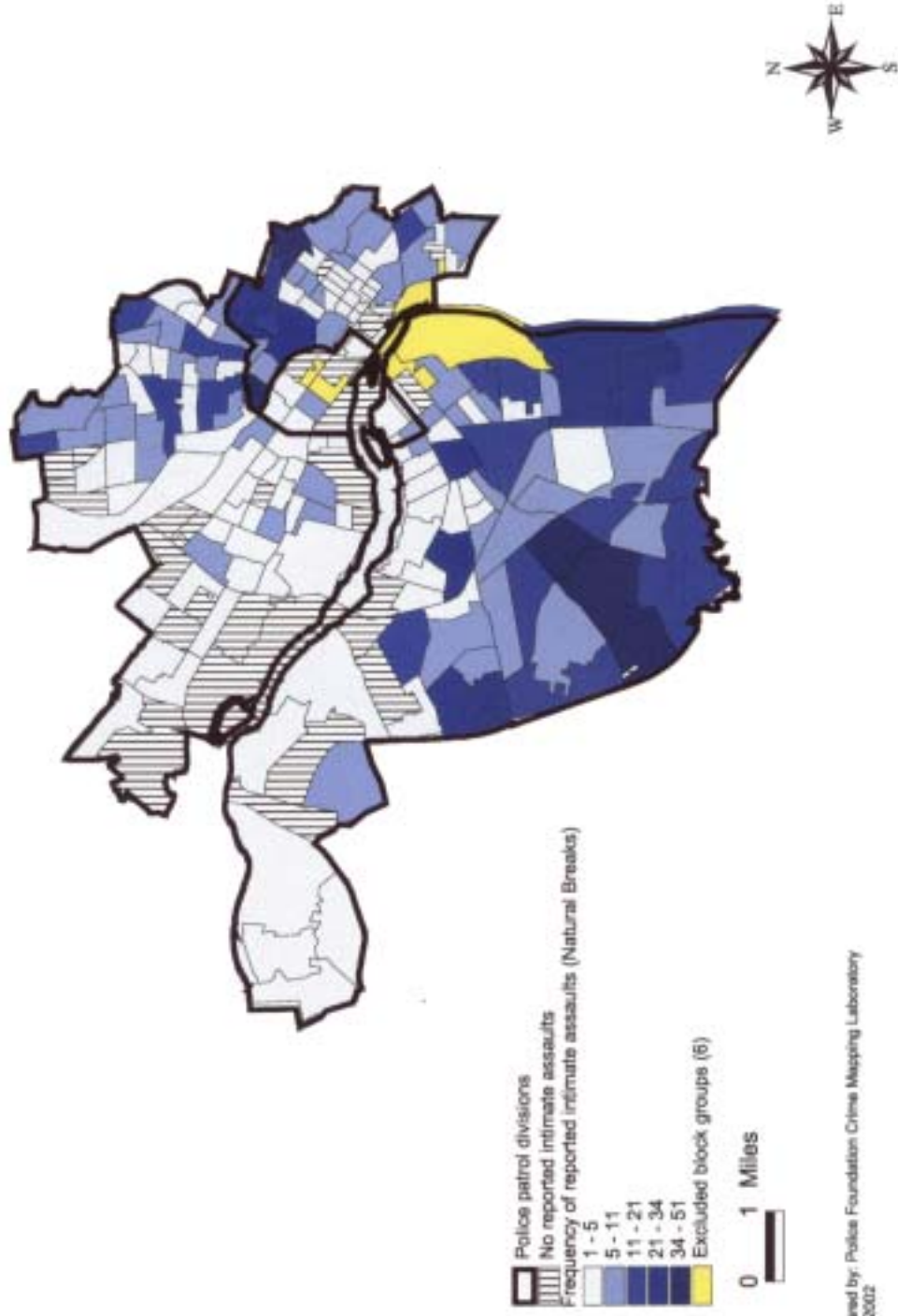
Comparing the pattern of simple assaults (Map 2) and aggravated assaults (Map 3) reveals little differences in the clustering of these two types of assault. At first glance some of the aggravated assault clusters in Division D appear tighter, but this is because there are so few aggravated assaults, and just one or two assaults may appear as a cluster.

Frequency of Reported Intimate Assault by Block Group: Map 4

To provide a baseline for the analyses by block group demographic characteristics, we created a graduated area map displaying frequency of reported intimate assault by block group, which is displayed on the next page. Block groups are shaded in blue with darker hues indicating higher frequencies of reported intimate assault.

This method reveals that many block groups had no reported intimate assault over the two-year period. Many of these block groups are located in the western area of Division C, with a few scattered elsewhere in the city. Comparing this map to Map 2 confirms that the greatest concentrations of reported intimate assault are located in the northwest area of Division B and that several less intense concentrations are located in Division D. This map also identifies the specific blocks within these areas that have the highest frequencies of intimate assault. Using the maps together can provide a double check to the conclusions drawn based on only one.

Map 4: Frequency of Reported Intimate Assault by Block Group



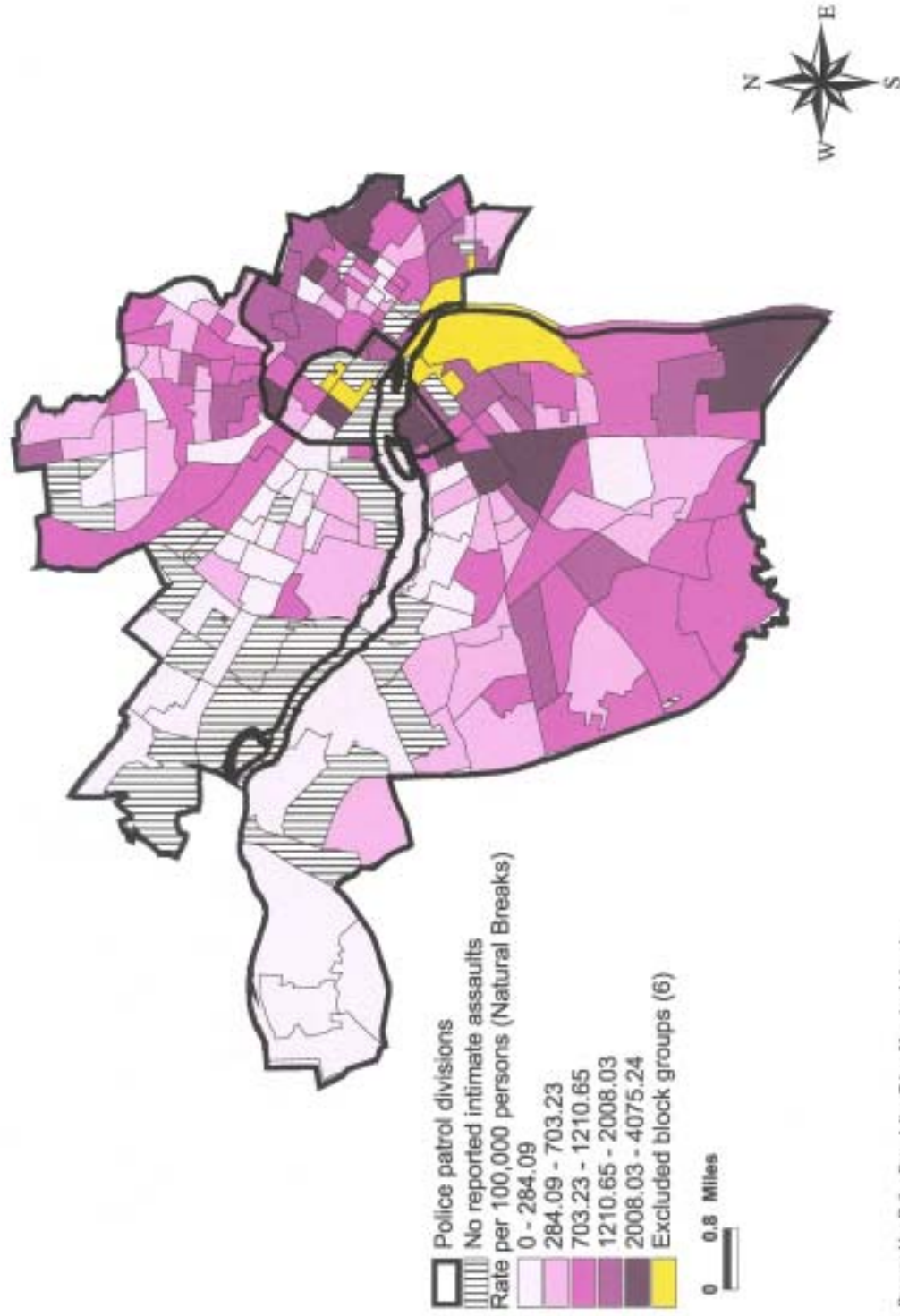
Part 2: Relationship between Reported Intimate Assault and Demographic Variables

Rate of Reported Intimate Assault by Block Group: Map 5

To examine the geographic distribution of intimate assault while controlling for population, we thematically mapped the rate of reported intimate assault per 100,000 persons by block group. In Map 5 on the next page, block groups are shaded in purple by rate of intimate assault, with darker hues indicating higher rates. We used the natural breaks method so that outliers as well as clusters of block groups with similar rates could be easily identified. The median rate is 546 reported intimate assaults per 100,000 persons for the two years of data. The mean is 706, and the standard deviation is 715. The high standard deviation indicates that there is a wide range of rates across block groups and that outliers are present.

In terms of the overall distribution of intimate assault, Map 4 showing frequency, and Map 5 showing rate are very similar, in that the western areas of Divisions C and D have strikingly low frequencies of intimate assault and rates per population, and block groups in Division B and in some areas of Division D have the highest frequency and rates per population. Within smaller areas, however, the maps show differences. For example, along the northern border of Division B, the frequency map (Map 4) indicates the highest concentration to be in the northwest corner of Division B, whereas the rate map (Map 5) indicates the highest concentration to be in the northeast corner. This is also the case along the eastern border of Division D where

Map 5: Rate of Reported Intimate Assault by Block Group



Prepared by: Police Foundation Crime Mapping Laboratory
April 2002

Map 4 shows the three block groups to have high frequencies of reported intimate assault, while Map 5 shows these block groups to be in different rate categories, reinforcing the importance of considering rates when comparing block groups.

Reported Intimate Assault and Population Density by Block Group: Map 6

Another demographic characteristic that may be related to reported intimate assault is population density. It is plausible that intimate assault would be reported more often in high density areas where neighbors cannot help but be aware of each others' activities, and thus may more often call the police because of disturbances, than in areas where neighbors have more privacy. To explore the premise that population density is positively related to reported intimate assault, we created a map showing block groups with low intimate assault and low population density (shaded dark red), low intimate assault and high population density (shaded light red), high reported intimate assault and high population density (shaded in dark blue), and high intimate assault and low population density (shaded light blue).

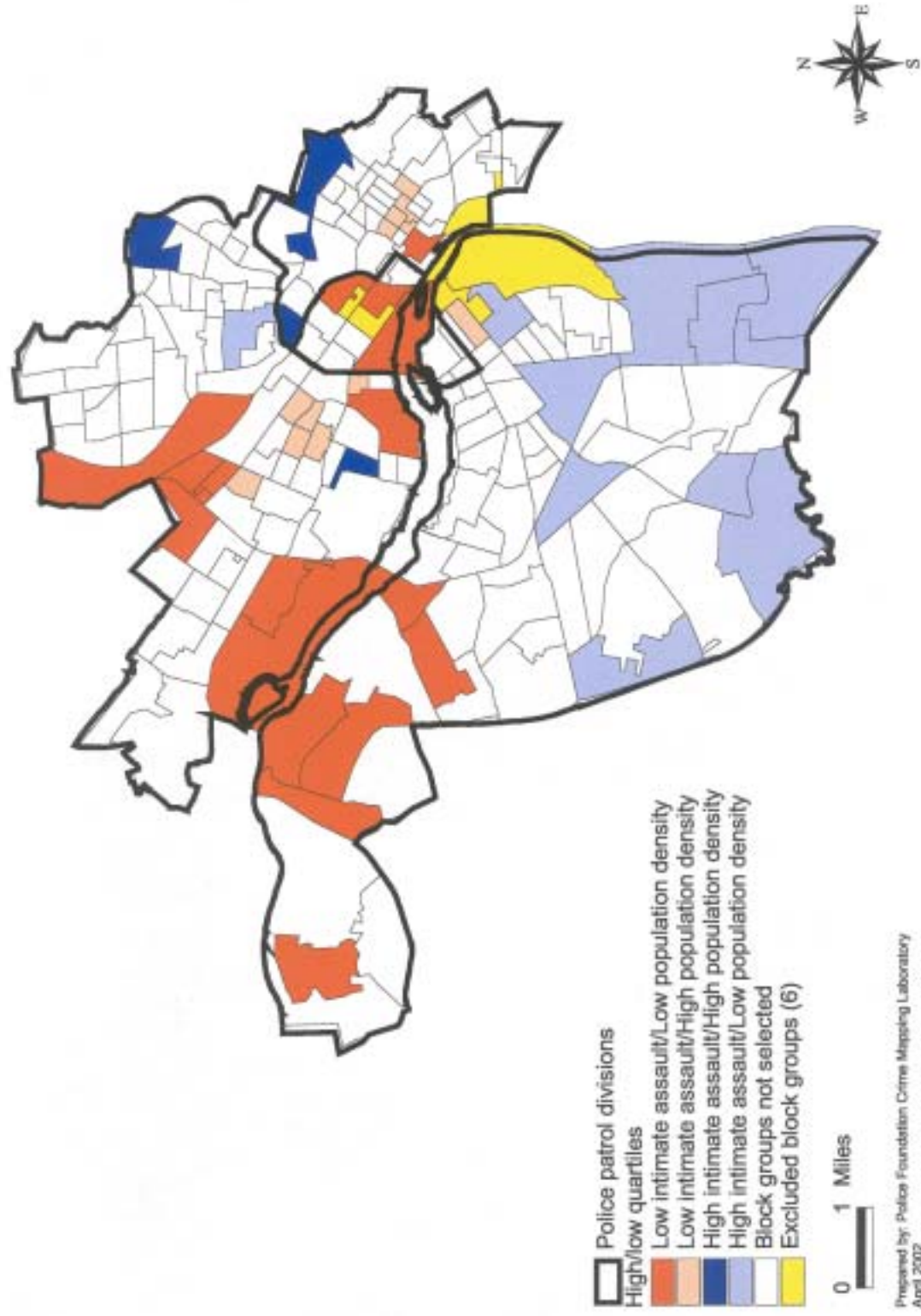
As discussed earlier, we achieved these classifications by ranking block groups in order of population density and then by frequency of reported intimate assault, and then grouping them into quartiles. Those block groups in the lowest intimate assault quartile that are also in the lowest population density quartile are classified as low/low and shaded dark red. Those block groups in the lowest intimate assault quartile that are in the highest population density quartile were classified as low/high and shaded light red. Those block groups in the highest intimate assault quartile that are also in the highest population density quartile are classified as high/high and shaded dark blue. Finally, those block groups in the highest intimate assault quartile that are

in the lowest population density quartile are classified as high/low and shaded light blue. Block groups that did not fall into any of these four categories are not considered in this examination and are not shaded.

The more block groups in the high/high and low/low categories the more evidence for our assumption that intimate assault is positively related to population density. In Map 6 (on the next page) there are a total of 24 block groups that were either dark blue (7) high/high or dark red (17) low/low. All but one of the dark blue block groups is located in the area with the greatest concentrations and highest rates of reported intimate assault – the northern areas of Divisions B and C. Most of the dark red block groups are concentrated in the western areas of the city where the lowest frequencies and rates of domestic violence were observed. Several of these block groups are also in the central, commercial area of the city, Division A. The placement of the dark blue and red block groups fits our expectations about patterns of reported intimate assault in relation to population density because it comports with what we observed in the previous maps.

Conversely, there were 23 block groups that are either light red (12) low/high or light blue (11) high/low. The light red block groups are mainly in two areas, Division C near the university and in Division B on the periphery of the highest concentration of reported intimate assault. All but one of the light blue block groups is in Division D, where most of these light blue block groups lie on the edge. The single light blue block group not in Division D is in Division C, near the concentration of reported intimate assault.

Map 6: Reported Intimate Assault and Population Density by Block Group



Since only 47 out of 190, or 25% of the block groups fall into any of these categories and the breakdown is nearly identical between high/high and low/low and the block groups that are mixed (low/high and high/low), no conclusions can be drawn. The assumption that more intimate assaults will be reported in more densely populated areas can neither be supported or denied.

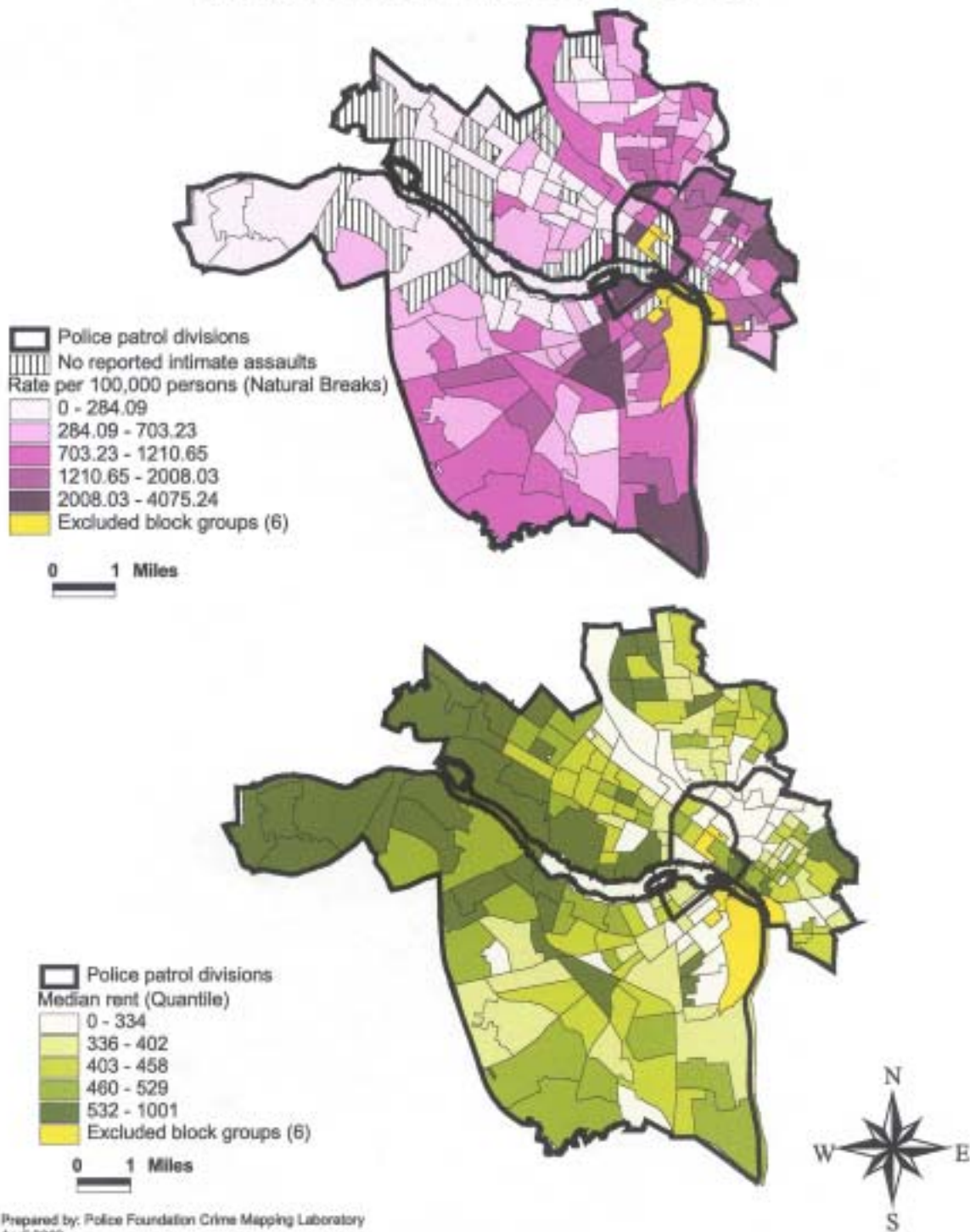
Rate of Reported Intimate Assault and Median Rent by Block Group:

Maps 5 and 7

To explore the relationship between rate of reported intimate assault and socio-economic level (here measured as median rent), we compare Map 5 (rate of reported intimate assault) to a thematically shaded map showing median rent by block group, Map 7, displayed on the next page. In Map 7, the color green is used to show the median rent category of each block group, with darker shades of green indicating higher median rent categories. The citywide median rent is \$429, and the mean and standard deviation are \$426 and \$158 respectively, indicating that median rents are normally distributed with 68% falling between \$268 and \$584, and that there are not extreme outliers.

By examining these maps side by side, we found that rate of intimate assault and median rent appeared to be inversely related to each other. Map 5 indicates that block groups with higher rates of intimate assault tend to be in the eastern area of side of the city, where Map 7 indicates block groups with lower median rents tend to be and vice versa. To test this apparent relationship statistically, we ran a correlation on median rent and rate of reported intimate assaults by block group which resulted in a -0.35 Pearson R which was significant at the .01

Maps 5 and 7: Rate of Reported Intimate Assault and Median Rent by Block Group



Prepared by: Police Foundation Crime Mapping Laboratory
April 2002

level (N=190). The test indicates that median rent is inversely and significantly related to rate block group rate of intimate violence. In other words, as median rent decreases, the rate of reported intimate assault increases.

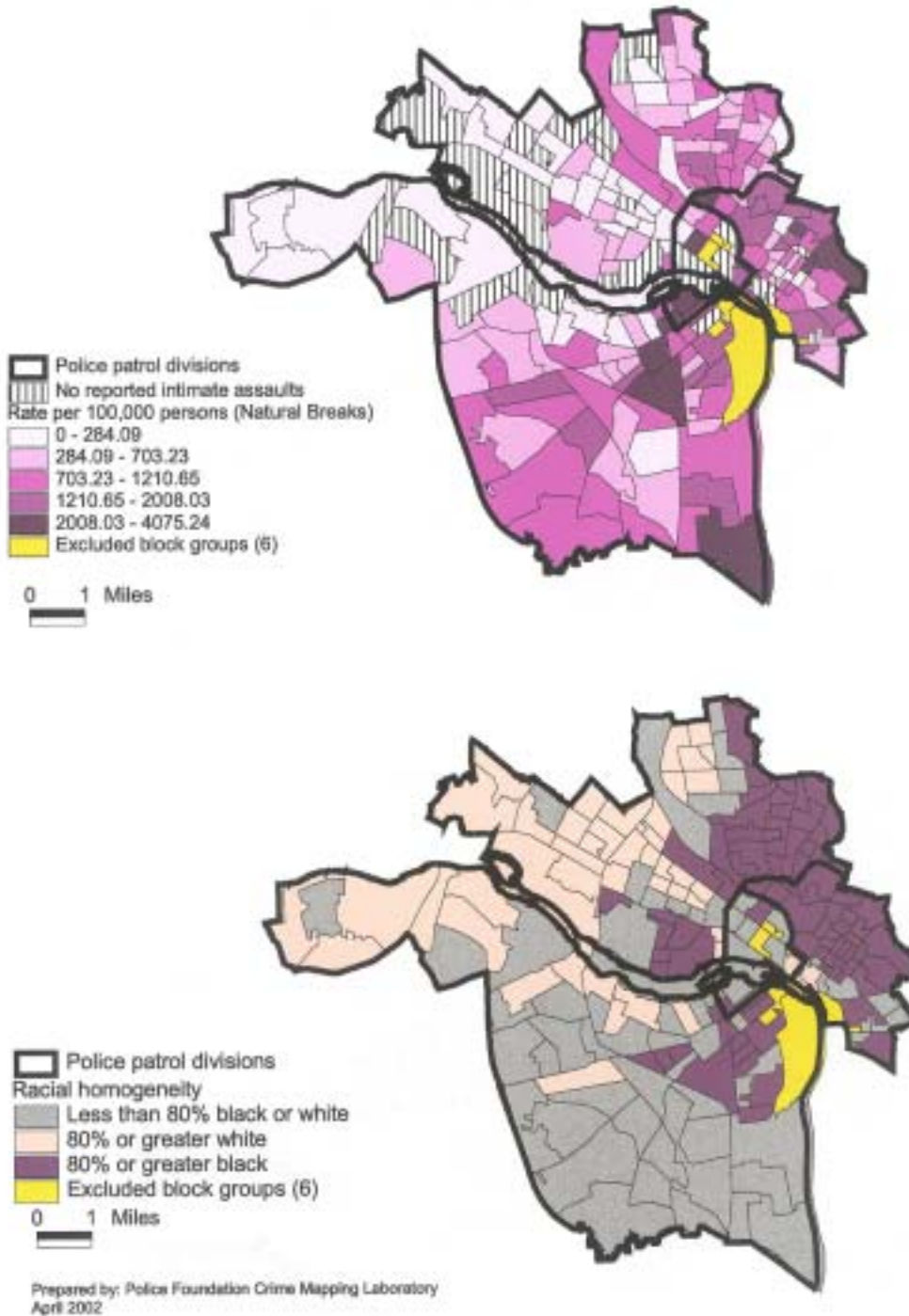
Rate of Reported Intimate Assault and Racial Homogeneity by Block Group: Map 5 and 8

As mentioned in the introduction to this report, race is a demographic variable that is frequently considered in criminal justice research. There are many ways to examine race in relation to crime problems, and we employ two. On the next page we compare Map 5, rate of reported intimate assault by block group (discussed earlier), to Map 8, which shows racial homogeneity by block group. We define racial homogeneity as a block group's population being at least 80% one single race. Map 8 contains three racial homogeneity categories. If the population of a block group is at least 80% white it is shaded pink, block groups where blacks make up at least 80% of the population are shaded purple, and block groups where neither race comprises 80% of the population are shaded gray.

Examination of Map 8 reveals that there are distinct portions of the city where the 80% black block groups are clustered (predominately in the northeast in Divisions B and C), and where the 80% white block groups are clustered (predominately in the western areas of Divisions C and D). Racially heterogeneous block groups are scattered around most of the city, mainly in Division D.

Generally, rates of reported intimate assault tend to be lower in the block groups that are at least 80% white. Many of the block groups with the highest rates of reported intimate assault are those that are at least 80% black. The area where the more heterogeneous block groups are, in

Maps 5 and 8: Rate of Reported Intimate Assault and Racial Homogeneity by Block Group



Division D, is also where the rates of reported intimate assault appear to vary the most. A correlation was conducted (see Table 1) to see whether number of reported intimate assaults in block groups was correlated with the percent of block group race. The table indicates that the number of incidents in the block group is positively and significantly related to the percent black in the block group and significantly inversely related to the percent white in the block group.

Table 1: Correlation Between Number of Reported Incidents and Percent of Black and White in Block Group

		% Black	% White
Intimate assaults	Pearson Correlation	0.33	-0.34
	Sig. (2-tailed)	0.00**	0.00**
	N	190.00	190.00
**	Correlation is significant at the 0.01 level (2-tailed).		

Proportion of Reported Offending to Population by Race: Maps 9 and 10

To examine race and intimate assault in another way, we explored whether offending by whites and blacks was proportionate to their share of the population in each block group. We created maps showing percent of total offending by each race in relation to percent population of each race by block group. That is, all things being equal we would expect the percent of offenders by race to match the racial make up of the block group. For example, if whites make up 50% of the population in a block group, we would expect them to make up 50% of the reported offenders. But if they make up 75% of the reported offenders, because $75\%/50\%$ is 1.5, whites are one and a half times as likely to be offenders than would be expected given their share of the population. In other words, they would be overrepresented. Calculations comparing proportion of observed to expected offenders were made for whites (Map 9) and for blacks (Map 10) for each block group and are illustrated on page 28.

Maps 9 and 10 are thematically shaded by the ratio of observed versus expected offending by block group. Dark gray shading indicates that offenders of the race displayed are equally represented as offenders in that block group, and light gray shading indicates that offenders of the race displayed are underrepresented. The equal representation category captures block groups where the expected value is within two tenths of one. In other words, a ratio of observed to expected anywhere between .91 and 1.1 was considered to be equal representation. Color shading indicates that offenders of the race displayed are overrepresented as offenders in the block group. Block groups may be put into the “No intimate assault” category either because there were no intimate assaults reported in that block group, or because there are no residents of the race displayed in that block group.

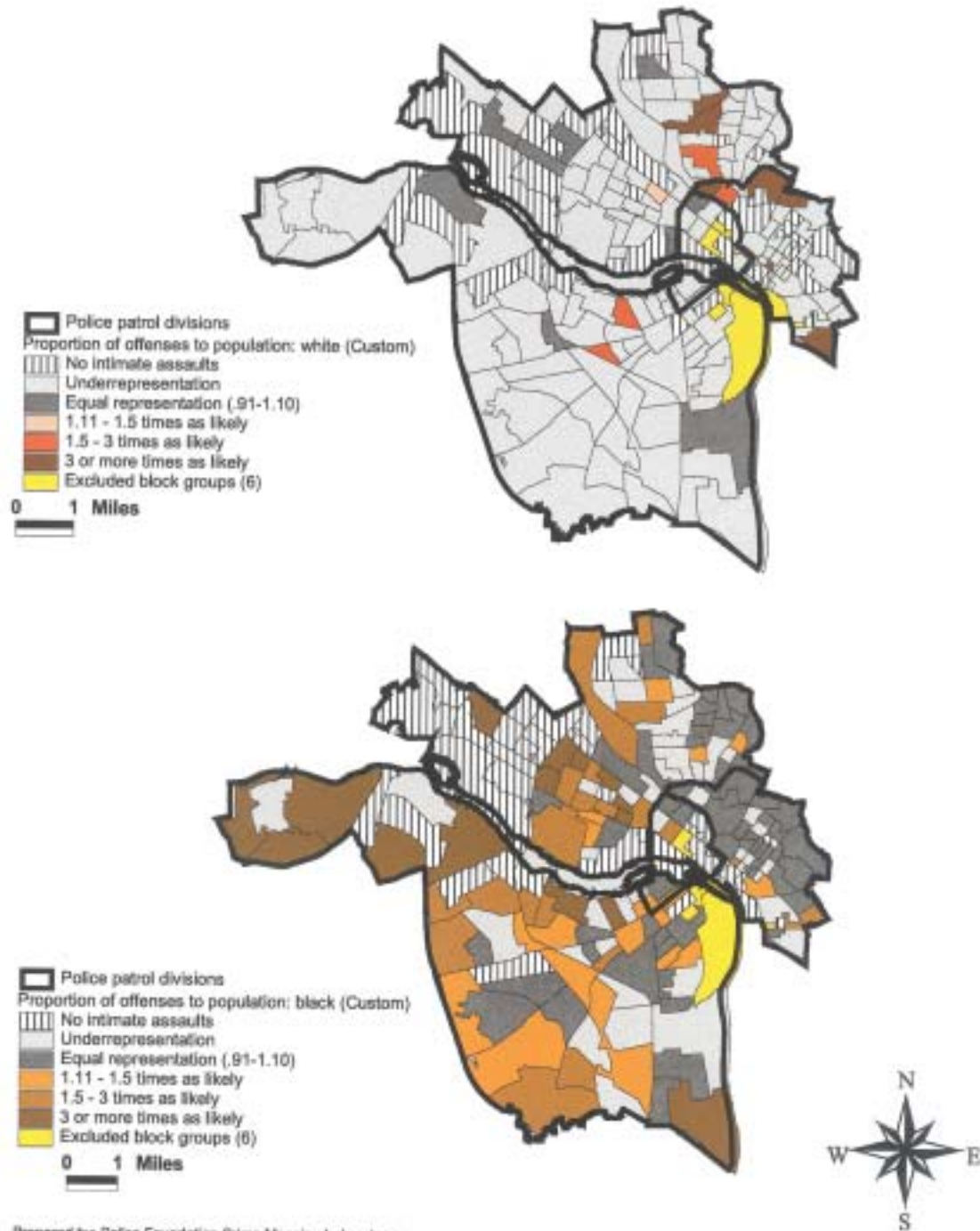
Taking the entire city into account, we found that blacks are 1.34 more likely to be reported offenders than expected given their share of the population. Whites, on the other hand, are .25 as likely, meaning that they are underrepresented as reported offenders compared to their proportion of the population. Specifically, they were 75% less likely to be reported offenders. Examination of the maps indicates that there are more block groups throughout the city in which black offenders are overrepresented (53), than there are block groups where white offenders are overrepresented (13).

In examining Map 9, we found that the relatively few block groups where whites are overrepresented tend also to be block groups where the population is at least 80% black – where

whites are the minority. In many areas where whites are at least 80% of the population, they are underrepresented as offenders.

Map 10, displaying the ratio by block group of observed black offending to expected black offending based on the population, shows that block groups where blacks are overrepresented are distributed throughout the city in each of the three types of block groups. In block groups that are at least 80% black, blacks tend to be equally represented rather than overrepresented. This is not surprising since it would be more difficult to achieve overrepresentation of a race when that race comprises such a substantial majority of the population. It is interesting that both blacks and whites seem more likely to be overrepresented as offenders in block groups where they are the minority.

Maps 9 and 10: Proportion of Reported Offending to Population by Race



Prepared by: Police Foundation Crime Mapping Laboratory
April 2002

Part 3: Reported Intimate Violence in Relation to Service Providers

Medical Facilities and Police Stations in Relation to Reported Intimate Assault:

Map 11.

To show the geographic clustering of reported intimate assault in relation to locations where intimate assault victims could seek assistance, we created a kernel density map of all reported intimate assaults and overlaid it with the locations of hospitals, clinics, and the headquarters of the four police divisions. We also include a cutout of the central city and “hotspot” (high density area of reported intimate assaults) area to make it easier to see all of the locations shown, and for closer examination of the sources of assistance near the “hotspot.”

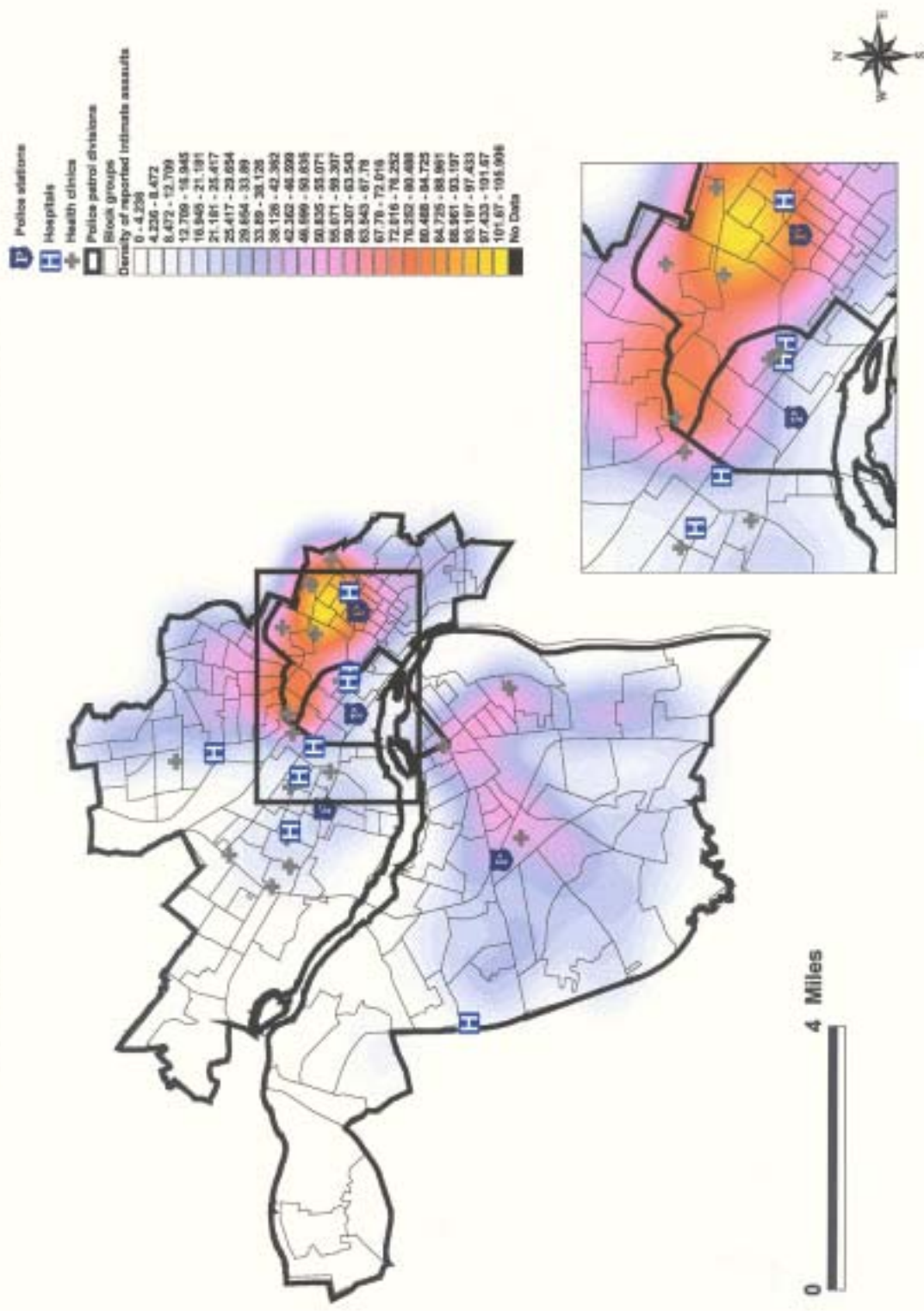
Such a comparison can be useful for localities wishing to assess how well the community’s needs are being served, by showing where service providers are in relation to crime problems. Since these data are reported intimate assaults rather than actual intimate assaults, this comparison is an imperfect measure of how well needs are being met, but it still offers an idea of how close possible sources of assistance are to concentrations of known intimate assault. Although analyzing reported crime should not be an end to assessing community service needs, it can be a useful beginning. After all, reported crime tells you where at least part of the problem is, and the known part of the problem still needs attention.

Map 11 on page 31 is not meant to be a definitive assessment of victim needs in relation to sources of assistance for the reason above, and, because it includes only a selection of possible sources of victim assistance. In this map, hospitals and police stations are self-explanatory, and we assume to be locations victims could access on their own or to which they might be

transported. Clinics are a different matter, since there are many different types. We do not have enough descriptive information to differentiate between them, and thus cannot distinguish between clinics that would be appropriate sources of assistance to victims and those that would not. Additionally, there are probably many additional service agencies in the city to which victims could appeal for assistance. This map is meant merely as a general comparison between spatial patterns of reported intimate assault and a selection of possible victim assistance locations.

Based on the locations that are included, overall it appears that there are many sources of victim assistance, including one of the four police stations, in and around the main hotspot area in Division B. Also, there seem to be many more hospitals and clinics throughout Divisions A, B, and C, and relatively few in Division D. Of the eight hospitals in the city, seven are in the northern part of the city in Divisions A, B, and C. Only one is south of the river in Division D, where, incidentally, 49% of the reported intimate assaults are generated.

**Map 11: Kernel Density of Reported Intimate Assaults
with Police Stations and Medical Facilities**



Discussion

This exploratory examination of the geographic patterns of reported intimate assault has sought to examine three questions:

1. What is the spatial distribution of reported intimate assaults in this city?
2. What is the spatial relationship between reported intimate assault and population, population density, median rent and race?
3. What is the spatial relationship between reported intimate assault and locations where victims could seek assistance?

We addressed the first question by creating kernel density maps showing the spatial distribution overall and with graduated area maps showing the spatial distribution using frequency of reported intimate assault by census block group. We found that simple and aggravated assault had virtually the same pattern even though the magnitude was much different. The block group analysis indicated a similar pattern as the kernel density maps which served as a double check of our findings. In general these maps revealed the highest areas of reported intimate assault to be the northern area of Division B, and the adjacent area of Division C and the lowest levels of reported intimate assault to be the western areas of Divisions C and D adjacent to the river.

To assess the relationship between reported intimate assault and several demographic variables commonly used in criminal justice research, we first created a graduated area map showing the rate of reported intimate assault by block group population. This map identifies roughly the same spatial patterns of reported intimate assault as the map showing frequency of reported intimate assaults. We then explored population density by displaying block groups with the highest and lowest population densities and highest and lowest frequencies of reported intimate assault to test the theory that areas of high population density generate greater reporting of

intimate assault. We did not find strong evidence in support or against our assumption that population density was positively related to reported intimate assault.

To examine median rent and race, we created three comparisons. First, we compared rate of reported intimate assault by block group to median rent by block group, and found a visually apparent inverse relationship between these variables. Areas where block groups had high median rents tended to be areas where rates of reported intimate assault were low. Conversely, areas where block group median rents tended to be low tended to have high rates of reported intimate assault. This relationship was confirmed statistically through a correlation which found the variables to be inversely and significantly related.

We then compared rate of reported intimate assault by block group to block group racial homogeneity. In the study city, block groups with populations of over 80% black tended to be located in areas of the city with high block group reported intimate assault rates and block groups with populations of over 80% white tended to be in areas with low reported intimate assault rates. This relationship was also confirmed using a correlation between frequency of reported intimate assault and percent black or white in the block group. The lower the percentage of whites in a block group, the fewer reported intimate assaults, and the higher the percentage of blacks in a block group, the more reported intimate assaults.

We also examined race by mapping the ratio of each race's expected offending to its observed offending by block group. We found that there were many more block groups where blacks were overrepresented as offenders of reported assault than where whites were reported offenders.

Interestingly, many of the block groups where whites were overrepresented as offenders are those comprised of at least 80% black. The converse is also true for blacks; thus it seems that offenders are more likely to be overrepresented in block groups where their race is the minority (20% or below). Overall, in this city, our results suggest that blacks are overrepresented as offenders of reported intimate assault and whites are underrepresented.

The last section of this paper explores the relationship between reported intimate assault and locations of institutions victims could go for assistance. We found that many clinics, several hospitals, as well as one police station are located in and around the densest cluster of reported intimate assault, in the northern part of city, in Division B. On the other hand, only three clinics, and one hospital – of the eight in the city – are located in Division D. We caution against drawing conclusions about how well victims are served because our analysis uses reported intimate assault rather than actual intimate assault. This type of analysis could be very useful if victimization or hospital data were used, as these data would provide a more accurate view of victims needs which could then be compared to available resources.

This paper is meant to explore the utility of using GIS to examine intimate violence by testing several possible applications of spatial analysis to intimate assault. While the reported intimate assault data analyzed here do not describe the geographic patterns of actual intimate violence, they do describe the geographic and demographic patterns of intimate offending known to police, thus offering a means for understanding the basis for police officers' perceptions of intimate violence. In this case, it is easy to see how officers could get an inaccurate view of intimate violence in relation to socio-economic level and race, since the victims and offenders they encounter fall into particular categories.

The majority of the offenders in these reported data are black and living in lower income areas (unfortunately two related characteristics). This does not mean, however, that blacks, or those less wealthy have a greater propensity for intimate assault. These observed preponderances may simply be functions of the fact that these individuals tend to live in higher population density areas where intimate violence is more likely to be reported to police. Our efforts to examine this issue were inconclusive, but we believe it to be an important subject to explore, especially so that individuals with certain characteristics are not unfairly maligned.

This analysis employs several methods for examining intimate assault data. While the findings of each method generally reinforce each other, there are also small differences. We believe that descriptions of reported intimate assault based on areas of agreement among the maps are more reliable than those of areas where the maps indicate slightly different results.

Conclusion

We hope that the ideas for examining intimate violence spatially presented here will generate additional explorations of this topic. Ideally, future efforts will use hospital or victimization data to either replicate our methods or apply new ones. We believe that such efforts could prove useful in improving responses to intimate violence or at least in contributing to a better understanding of it.

Given the ever-increasing importance of GIS as tool for addressing crime, the value of determining whether it can usefully be applied to addressing intimate violence is evident. If constructive uses exist, then they should be identified so that agencies responding to intimate

violence can put them into practice. On the other hand, knowing that such uses do not exist creates an opportunity to direct resources for understanding and addressing intimate violence more constructively elsewhere.

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