Article

Police Responses to Violent Crime: Reconsidering the Mobilization of Law

Criminal Justice Review
2017, Vol. 42(1) 5-25

DOI: 10.1177/0734016816684198
journals.sagepub.com/home/cjr
SAGE

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Abstract

This work advances the relatively limited literature pertaining to police clearances of serious violent crimes by comparing and contrasting the correlates of homicide clearance with clearance of non-lethal violent crimes. Using 5 years of National Incident-Based Reporting System data from 2008 to 2012 and survival models, we analyze the impact of various victim and incident characteristics on time to clearance outcomes for four offense types: homicide, aggravated assault, robbery, and sexual assault. Examining longitudinal trends of clearance rates reveals important differences across violent crime types. Results of survival models also reveal substantial variation in the effects of victim and incident characteristics on time to clearance across types of violent crime. These findings indicate that results from previous studies on homicide case outcomes are not applicable to other types of violent crimes, and police efforts to solve violent crimes differ markedly. As such, the theoretical frameworks of mobilization of law and bounded rationality explanations for variation in police responses to violent crime may be more viable than found in previous studies. However, future research will need to consider these nuances to confirm if such dynamics extend to other forms of criminal behavior.

Keywords

violence, arrests, mobilization of law, clearance

Over the past 15 years, a growing body of literature has examined the question of what factors influence the likelihood that a homicide will be solved. The impetus for much of this work has been the marked decline in homicide clearance rates from a high of about 92% in the early 1960s to a low around 60% in the 1990s. However, surprisingly little attention has been given to the clearance trends of crimes other than homicide. This work is an effort to fill this gap in the literature. In particular, the long-term trends require examination to determine whether similar declines have occurred in all crime types or only homicides. If clearance rates for all crimes have fallen over the

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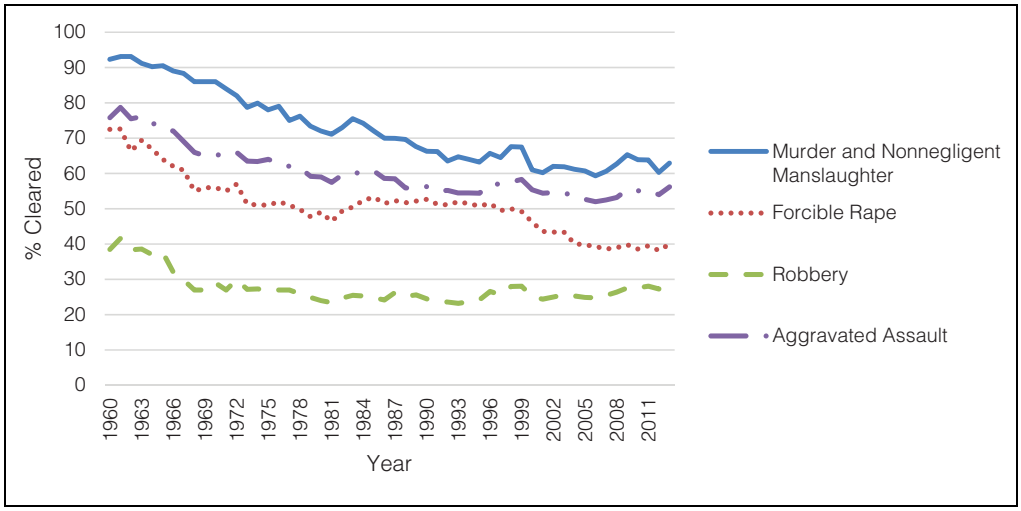

Figure 1. Uniform Crime reported offense clearance rates, 1960–2013.

period examined, then the notion offered by Cassell and Fowles (1998) that police effectiveness in solving crime in general has declined provides one possible explanation for such trends. However, if the trends in crime clearances are not uniform over the last half century, perhaps there are much more nuanced processes occurring that impact the ability of police to solve crimes as indicated by the variable outcomes. In either case, the scholarship has primarily been devoted to homicide case clearances, and little attention has been given to the other serious violent crimes.

The homicide clearance trend in Figure 1 shows that homicide has maintained the highest clearance rates throughout the time period, with a high of 93% in 1961 to a current rate of 63% in 2013. The aggravated assault clearance trend is most similar to the homicide clearance trend with a high of 79% in 1961 compared to current clearance rates around 56% in 2013. In stark contrast to the homicide and aggravated assault trends, the rape and robbery clearance trends are markedly different, with historical highs in 1961 at about 73% and 42%, respectively, and rates in 2013 around 40% for rape and 29% for robbery. These differences alone substantiate the need for the ensuing analysis presented here.

Perhaps more important for contemporary explanations of clearance rates is the observation that clearance trends for other crimes have some similarities and differences from homicide. Consider, as well, that the factors influencing such trends may or may not be similar for different types of violent crimes. Such observations frame the research question examined herein. That is, do the factors that have been found to affect homicide clearances exert similar or differing effects on the clearance rates of nonlethal violent crimes (i.e., aggravated assault, robbery, and sexual assault)? In order to explore this question, we first consider both the theoretical and empirical research that has been devoted to explanations of homicide clearances. Subsequently, using the Federal Bureau of Investigation's National Incident-Based Reporting System (FBI NIBRS) data, we apply these notions to compare models of homicide clearances with clearances for aggravated assault, robbery, and sexual assault.

Literature Review

While the emphasis in this article is not theory testing, the homicide clearance literature provides some relevant theoretical frameworks that merit discussion. Specifically, two perspectives are especially informative in our work.[1] The first is Donald Black's "Behavior of Law" (1970, 1976,

2015), which informs our understanding of the impact of extralegal factors on homicide clearances. The second is bounded rationality theory, which helps us understand the role of organizational dynamics, such as investigator workload and resource allocation, on crime clearance outcomes (Carter, 2013). Both of these theoretical perspectives have generated some mixed support in the existing literature, so a brief overview of the major tenets of each, as well as their empirical support, is offered here.

Behavior of Law

Inherent in arguments applying Donald Black's "behavior of law" (Black, 1976) to explain crime clearances is the assertion that police devalue certain victims. That is, a victim's social location can help us understand the variation in clearance outcomes, particularly the finding that homicides involving victims of lower social status (e.g., minorities; the poor) are less likely to be cleared (Litwin, 2004, Roberts, 2007; Roberts & Lyons, 2009). Borg and Parker (2001) characterized this as "mobilization of law." Empirical analyses of such effects have yielded only equivocal results. For example, some studies found homicides involving Black victims are less likely to be cleared (e.g., Alderden & Lavery, 2007), whereas others find no effect (e.g., Litwin, 2004; Puckett & Lundman, 2003). Furthermore, Litwin and Xu (2007) found Black victims decrease the likelihood of homicide clearance in some time periods in their analyses, but not others. Lastly, J. T. Taylor, Holleran, and Topalli (2009) found racial bias in violent crime case processing, but race had less salient impacts on clearances, once incident characteristics were taken into account. However, the influence of victim age appears to be one of the only victim characteristics found to have a consistent effect across studies. Specifically, research has found that there is a higher likelihood of clearing homicides involving child victims and a lower likelihood of clearing homicides involving the elderly (Addington, 2006; Cardarelli & Cavanagh, 1994; Lee, 2005; Litwin, 2004; Puckett & Lundman, 2003; Regoeczi, Kennedy, & Silverman, 2000; Riedel & Rinehart, 1996). Findings of this sort are suggestive of the notions explored further here. That is, while a modest body of work has identified correlates of homicide clearance rates, little work has been performed to determine whether such findings persist when examining police efforts to respond to, investigate, and solve other types of serious violent offending (but also see Briggs & Opsal, 2012; Roberts, 2008; Roberts & Lyons, 2009, for important exceptions).

Yet this particular theoretical framework of victim or incident devaluing persists even in the face of equivocal empirical support regarding the influence of extralegal factors on homicide clearances. Others, however, speculate that perhaps the crime of homicide is so severe that police are not free to devalue the incident or its actors and must exert full effort to solve all of these crimes. Perhaps, police efforts to devalue certain victims are masked when it comes to homicide due to the visibility and severity of the offense. It is unknown, however, whether they may be more likely to devalue a victim in the same social location for a less severe offense, such as an aggravated assault or robbery. Yet only a few empirical studies actually test these claims. Of those that do, some empirical support is found. For example, Briggs and Opsal (2012) found a lower likelihood of clearance for robberies and aggravated assaults involving Black victims but did not find this pattern in sexual assaults. As such, the seriousness of homicide could be argued to trump these dynamics. If so, it is possible that the social dynamics of crime clearances for lesser offenses would be more likely to exhibit the differential outcomes that reflect this perspective.

Organizational Dynamics

A second theoretical orientation that has been offered is a consideration of general aspects of organizational behavior and bureaucratic decision-making. One of the predominate offerings in this

vein is bounded rationality theory (Carter, 2013; Davies, 2007; Jensen, 2003; Keel, Jarvis, & Muirhead, 2009). This contention holds that criminal justice processing of cases is shaped by decisions that are made by police, investigators, and other actors in the criminal justice system based on heuristics of experience that shape the outcome. This would include notions of case processing dictated by legal and case characteristics that demand specific routine investigative processes to achieve an outcome. Variable outcomes, then, are a result of applying the bounded rules (sometimes self-imposed) and heuristics to each case, resulting in the success or failure of clearing such cases. Examples of this include manpower allocation, use of overtime, and case management directives (see, e.g., Hawk, 2015; Keel et al., 2009; Klinger, 1997). This general notion also includes principal agent theory as suggested by Davies (2007), which posits that factors such as political priorities and management directives can impact case resolution probabilities. Research in this realm has considered a variety of elements related to the case details, including victim and incident characteristics, investigative aspects and organizational factors, and more recently, the use of forensic evidence in homicide investigations (e.g., Baskin & Sommers, 2010; McEwen & Regoeczi, 2015; Schroeder & White, 2009).

With respect to the influence of incident characteristics, findings are more consistent than for the influence of extralegal victim characteristics. For example, across research settings and time periods, scholars tend to find that homicides involving firearms are less likely to be cleared (Litwin, 2004; Litwin & Xu, 2007; Mouzos & Muller, 2001; Regoeczi et al., 2000), whereas homicides committed with weapons that bring the victim and offender into close contact with each other (such as fists, knives, or blunt instruments) have an increased likelihood of the case being cleared (Addington, 2006; Mouzos & Muller, 2001; Puckett & Lundman, 2003; Roberts, 2007). Additionally, felony- and drug-related homicides have been found to have lower clearance rates (Cardarelli & Cavanagh, 1994; Lee, 2005; Litwin, 2004; Mouzos & Muller, 2001; Regoeczi & Jarvis, 2013; Regoeczi et al., 2000; Riedel & Rinehart, 1996; Rinehart, 1994; Roberts, 2007), and homicides occurring indoors are more likely to be cleared (Addington, 2006; Litwin, 2004; Litwin & Xu, 2007; Mouzos & Muller, 2001; Wellford & Cronin, 1999).

However, remaining unclear is the influence of organizational and investigative factors, such as investigator workload, investigator experience, and the availability of forensic evidence, with many studies finding null effects. For example, prior research generally has found that proxies for department workload and investigative experience do not affect homicide clearance outcomes (e.g., Borg & Parker, 2001; Puckett & Lundman, 2003). However, Keel, Jarvis, and Muirhead (2009) found that a number of organizational and investigative factors significantly affected homicide case outcomes. Specifically they found that analytic methods and formal training had positive effects, whereas political influences, search and seizure procedures, and staffing and management had negative effects. Most recently, the findings of Carter and Carter (2016) suggested that similar organizational factors impact the effectiveness of police agencies in clearing homicide cases.

In sum, two frameworks that have been offered to explain variation in homicide case outcomes include the notion that homicide clearances are governed by incident or victim ''devaluing'' social dynamics, which shape discretionary behaviors by police, and where organizational dynamics dictate case dispositions. Whether these perspectives are applicable to clearances for other crimes or other serious violence, such as sexual assault, robbery, and aggravated assault, remains underexplored. If analyses indicate that such findings are similar across crime types, the implication is that violent victimizations are endemically challenging, and the resources and logistics pertaining to solving such crimes are similar in nature. However, if the predictors of successful case outcomes are different for distinct forms of violence, then both the theoretical underpinnings and the practical investigation of violent crime should be tailored to the given type of violence. In other words, the investigation of specific forms of violent crime may require different strategies for success.

Hypotheses

In light of the existing patterns in the literature, we hypothesize that the factors influencing homicide clearance will have differing effects on the clearance of other serious violent offenses for a number of reasons. First, nonlethal violent crimes are qualitatively different from homicide and have different characteristics. For example, robberies tend to involve more distant relationships between the victim and the perpetrator (Snyder, 1999), potentially making them harder to clear. Conversely, aggravated assaults may mirror the more lethal outcomes of homicides varying only in whether the victim succumbed to their injuries. As such, we hypothesize that aggravated assault clearances may bear more similarity to homicide clearance patterns than other crimes. Second, while homicide clearances are persistently higher than other crimes (again see Figure 1), homicide investigations generally require significantly more investigative resources due to the lack of a surviving victim who may aid in identifying a suspect and informing its investigation. It appears that these additional resources generally are made available as is evidenced by the higher clearance rates for homicides than those of other crimes. However, practically, the death of a victim has an important influence on the investigation of the crime to the extent that the primary witness (the victim) is no longer able to provide police with information regarding the suspect. As is discussed later, the presence of a surviving victim may be a key distinction to consider when examining the differential rate of clearance by type of violent crime. Third, homicide is generally agreed to be the most serious violent crime (FBI, 1992), which may affect not only the time and resource allocations spent on a homicide investigation but also may limit officer discretion in handling of the case as suggested by Eitle, Stolzenberg, and D'Alessio (2005). These factors may vary more for less serious violent crimes. To consider such possibilities, a strategy for examining these dynamics is detailed below.

Method

Data

The current study uses 5 years of data from the FBI's NIBRS for the years 2008–2012. The numerous advantages of NIBRS data, especially for understanding clearance processes, have been extensively documented elsewhere (see, e.g., Addington, 2006, for a discussion). NIBRS data are also preferable to other official statistics, such as the Uniform Crime Reports (UCRs) because they provide a level of detail on victim, offender, and incident characteristics not afforded by other sources of official crime statistics. During this time period, a total of 840,432 violent crimes were reported to NIBRS, of which 818,249 were available for analysis after the appropriate selection criteria were applied and duplicates were eliminated.[2] This resulted in a final sample of 9,392 homicides; 526,959 aggravated assaults; 150,633 robberies; and 131,265 sexual assaults. These totals were derived from the incident-level file of the public use tapes stored at the Interuniversity Consortium for Political and Social Research.

Dependent Variables

Police responses to criminal offenses that come to their attention are most commonly gauged by whether the police are able to "clear" the crime by identifying and arresting an offender. A case is considered cleared if at least one person is arrested for the incident (FBI, 1984, p. 41).[3] NIBRS data were used to construct a time to clearance measure for four different offense categories: homicide, aggravated assault, robbery, and sexual assault,[4] using the NIBRS definitions of these crimes (FBI, 2000). We created a variable to measure the number of days between the incident date and the arrest date (for cleared cases) or the number of days the case had been open (for censored cases). As a result of NIBRS policy, censoring happens when the administrative reporting dates for that year's

crime data collection go beyond the 2-year window for updates to the NIBRS reporting system. Consequently, the maximum time to clearance for all offense types examined is 2 years or 730 days.

Independent Variables

We included a number of victim and incident characteristics in our analyses that have been found to be important in prior homicide clearance literature. Victim characteristics include victim sex, race, and age. Victim ethnicity, while available in NIBRS, is not included here as there are concerns regarding its reliability, which is a limitation we discuss in the conclusion of the work.[5] Specifically, we included dummy variables for victim sex (female victim) and victim race (white victim). Victim age is a continuous variable.

Incident characteristics include the location where the incident occurred, time when the incident occurred, type of weapon used, circumstance surrounding the incident, and the relationship between the victim and the offender. Location was collapsed into the following categories: residence, nonresidential indoor location, outdoor location, and other location. Time of the incident was collapsed into three categories to reflect common timing of police shifts. Incidents that occurred between 8 a.m. and 3:59 p.m. were coded as first police shift, 4 p.m. to 11:59 p.m. were coded as second police shift, and midnight until 7:59 a.m. represented the third police shift. These shift variables were used in the analyses as proxies for readily available investigative resources. This is supported by previous work that employed these measures to explore whether clearance outcomes are impacted by late night occurrences as opposed to more traditional business hours when criminal justice resources may be more timely when responding to a homicide or other serious crime (Alderden & Lavery, 2007; Jarvis & Regoeczi, 2009). Additionally, we created dichotomous measures reflecting the use of a gun, a knife, a blunt object, hands or feet, or some other weapon.[6] Circumstances surrounding the incident (argument, felony related, other circumstances,[7] and unknown circumstances) are also examined. Finally, we considered the relationship between the victim and the offender and collapse the victim–offender relationship into the following categories: intimate partner, other family, friend/acquaintance, and stranger.

To afford proper contrasts in the analyses, we selected reference categories based on previous literature devoted to homicide clearances (e.g., Addington, 2006; Litwin, 2004; Wellford & Cronin, 1999). Most of these reference categories were predicted to have a higher clearance rate than the comparison variables used in the analyses, with the exception of the relationship between the victim and the offender. As such, we chose residence as the reference category for locations. We use knives and arguments as the reference categories for weapon and circumstances, respectively, as they both are predicted to have higher clearance rates given their relation to domestic victimizations. First shift also was selected as the reference category for our time of day variable for two main reasons. First, there is potentially greater visibility of violent victimizations that occur during daylight hours, and second, incidents occurring in first shift avoid the extra obstacle of needing to wait for investigators in departments using third shift call-ups. Lastly, the stranger category for victim to offender relationship was employed as the reference category because incidents involving strangers are least likely to be cleared. Using strangers as the reference category allows us to examine variability in case closure among the known relationship categories.

Methodological Considerations

Preliminary exploration of our data revealed a substantial amount of missing data on important independent variables of interest, particularly victim/offender relationships. Including these

variables with high levels of missing data in our survival models markedly reduced the sample sizes, in one case by more than 50%. Previous research examining missing data on victim and offender demographics, weapons, and circumstances in homicide data argues that such data are missing at random (MAR) and can be predicted from standard variables in the data set (Regoeczi & Riedel, 2003). While there is no formal test of the MAR assumption, the arguments presented with respect to homicide can be extended to other serious violent crimes, and thus multiple imputation is an appropriate technique for handling the missing data in the NIBRS data sets used here.

We followed the strategies used by Roberts (2015) and Regoeczi, Jarvis, and Riedel (2008) and employed multiple imputation techniques to address this issue. Specifically, the imputation by chained equations procedure in STATA (Royston, 2004) was used to produce imputed values for the missing data encountered on the independent variables of interest. This procedure resulted in five imputed data sets for each offense. STATA's MI ESTIMATE command was used to combine the imputed data sets to analyze offense-specific survival models. Although the literature varies with respect to the recommended number of imputations, a number of studies indicated that 5–10 imputations produce very satisfactory results (e.g., Rubin, 1987; Schafer, 1999; Schafer & Olsen, 1998). While more imputations would have been feasible with the murder, robbery, and sexual assault data, the computational power it would have required to impute and analyze up to 10 sets of aggravated assault data (with more than half a million cases in the original aggravated assault data set) was well beyond what was available to the researchers and unlikely to yield superior results. As such, to be consistent in terms of the number of imputations used across offense types, we elected to use five imputations.

Analytical Strategy

Survival analyses using Cox proportional hazards models (Cox, 1972) were conducted to examine distinct models of clearances for the four crimes of interest: homicide, aggravated assault, robbery, and sexual assault. There are a number of advantages to this analytical approach. First, this semi-parametric model does not require any assumptions regarding the shape of the hazard over time (Allgulander & Fisher, 1986; Cleves, Gould, & Gutierrez, 2004), which when incorrect can produce misleading results. This results in a very flexible model that produces estimates of covariates without specifying the precise form of the dependency of the duration (Box-Steffensmeier & Jones, 2004). Survival analyses are particularly beneficial for studying clearance processes such as those under examination here. Unlike logistic regression, which treats cases clearing within a few days the same as cases taking a year or more to clear, survival analysis explicitly models the time to clearance (Roberts & Lyons, 2009). While some cases in the data set are solved during the 2-year window during which NIBRS permits information to be updated in the system, cases that remain uncleared after that point may still be cleared at a later date. Importantly, the Cox proportional hazards model allows us to appropriately treat these as censored cases that could potentially still clear at some point after the end of the 2-year updating window.

Results

We began by examining trends and descriptive statistics for each of our four offense types to illustrate the variation in clearance rates and characteristics for each of these offense types. Figure 2 shows clearance rates for each of these four violent crimes, generated from NIBRS data for the period under study (2008–2012). This figure mirrors the UCR longitudinal trend found in Figure 1, showing that homicides and aggravated assaults follow similar patterns and have much higher clearance rates, whereas sexual assaults and robberies have much lower clearance rates.[8]

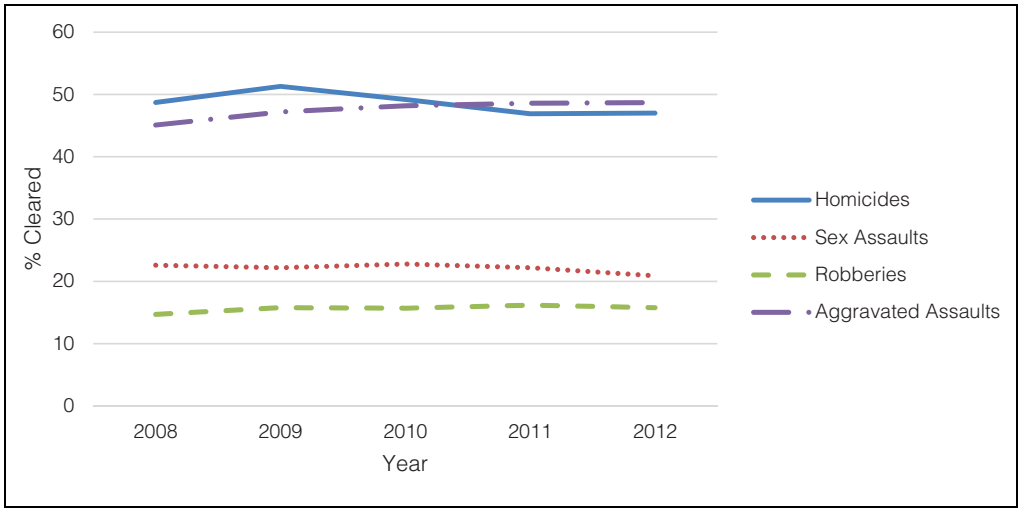

Figure 2. National Incident–Based Reporting System reported clearance rates, 2008–2012.

Univariate Analyses

Table 1 presents the univariate descriptive statistics for all of the variables included in the survival models of the four target offenses.

Examining these results yields some notable contrasts. Specifically, victim characteristics vary markedly. When considering victim sex, homicide shows a higher percentage of male victimization (74%) as compared to aggravated assault (55%), robbery (66%), and sexual assault (10%). Considerably more White victims are reported to be involved in nonlethal violence. This contrast is particularly stark when comparing the percentage of White victims in homicide (47%) relative to sexual assault (79%). Interestingly, age composition is similar across offense types with the exception of sexual assault, where victims tend to be younger (21 years on average for sexual assault compared to early to mid-30 for the other offense types).

Turning to incident and organizational characteristics, homicide and aggravated assault appear to be similar in terms of the location where these incidents occurred, with a majority of both offenses occurring in the home (57% and 58%, respectively). Similarly, sexual assaults are especially likely to occur indoors, largely in a residence (73%). Robberies, however, are more frequently reported to have occurred outdoors (56%). The reported time of the incident is similar across most violent crime, with most occurring at night. Again, an exception is found with the frequency of sexual assaults being reported throughout the day. With regard to weapon involvement, homicides predominately involve firearms (57%), whereas aggravated assaults involve a wider range of weapons with hands, feet, and knives being the most common (27%). Robbery also showed more variation than homicide but still has considerable involvement of guns and personal weapons. Here, again, sexual assault offenses are considerably different from other offenses with the majority of reported weapons being hands, fists, and feet (59%) and only marginal involvement of more lethal weapons.

Incident circumstances are only reported in NIBRS for homicide and aggravated assault.[9] Arguments are the most common circumstance for aggravated assaults (60%), whereas homicides are plagued by unknown circumstances (49%; likely at least partially a consequence of the lack of a surviving victim). However, when considering just the reported known circumstances, arguments prevail for homicides as well (29%). In terms of the victim/offender relationship, homicides and sexual assaults are more likely to be committed by a friend or acquaintance (46% and 56%, respectively), whereas robberies are mostly perpetrated by strangers (61%). Aggravated assaults,

Table 1. Descriptive Statistics, National Incident–Based Reporting System, 2008–2012.

Characteristic	Murder (n = 9,392)	Aggravated Assault (n = 526,959)	Robbery (n = 150,633)	Sexual Assault (n = 131,265)
Victim sex				
Female	2,476 (26.5%)	235,398 (44.8%)	45,949 (34.4%)	117,548 (89.6%)
Male	6,868 (73.5%)	289,536 (55.25%)	87,788 (65.6%)	13,629 (10.4%)
Missing	48	2,025	16,896	88
Victim race				
White	4,346 (47.1%)	316,265 (61.4%)	77,987 (59.7%)	99,523 (78.7%)
Non-White	4,873 (52.9%)	198,561 (38.6%)	52,593 (40.3%)	26,859 (21.3%)
Missing	173	12,133	20,053	4,883
Victim age				
Mean	35.3 years	32.2 years	35.1 years	20.9 years
SD	17.4 years	14.0 years	16.2 years	12.9 years
Missing	183	6,794	17,483	1,617
Location				
Residence	5,314 (56.8%)	301,787 (57.7%)	27,132 (18.1%)	94,467 (72.7%)
Nonresidential indoor	630 (6.7%)	58,828 (11.2%)	30,169 (20.2%)	12,577 (9.7%)
Outdoor location	2,934 (31.3%)	137,754 (26.3%)	83,854 (56.0%)	13,443 (10.3%)
Other location	483 (5.2%)	24,741 (4.7%)	8,495 (5.7%)	9,531 (7.3%)
Missing	31	3,849	983	1,247
Time of incident				
First shift	2,318 (25.5%)	137,427 (26.7%)	36,956 (25.0%)	41,421 (33.8%)
Second shift	3,817 (42.0%)	235,530 (45.8%)	71,088 (48.1%)	42,223 (34.5%)
Third shift	2,946 (32.4%)	141,688 (27.5%)	39,895 (27.0%)	38,848 (31.7%)
Missing	311	12,314	2,694	8,773
Weapon				
Gun	5,342 (56.9%)	86,672 (16.4%)	51,347 (34.1%)	1,859 (1.4%)
Knife	1,373 (14.6%)	114,205 (21.6%)	12,112 (8.0%)	2,196 (1.7%)
Blunt object	494 (5.3%)	83,630 (16.4%)	4,355 (2.9%)	546 (0.4%)
Hands/feet	936 (10.0%)	144,017 (27.2%)	56,234 (37.3%)	77,827 (59.3%)
Other weapon	723 (7.7%)	92,993 (17.4%)	5,137 (3.4%)	5,654 (4.3%)
Unknown/missing	524 (5.6%)	5442 (1.0)	21,448 (14.2%)	43,183 (32.9%)
Circumstances[a]				
Argument	2,702 (28.8%)	317,318 (60.2%)	8 (0.0%)	2 (0.0%)
Felony related	357 (3.8%)	15,603 (3.0%)	54 (0.0%)	11 (0.0%)
Other circumstance	1,806 (19.2%)	94,480 (17.9%)	13 (0.0%)	8 (0.0%)
Unknown circumstance	4,600 (49.0%)	102,919 (19.5%)	150,559 (100%)	131,245 (100%)
Victim/offender relationship				
Intimate partner	1,299 (25.1%)	146,832 (35.2%)	4,026 (6.5%)	15,057 (14.4%)
Other family	990 (19.1%)	66,204 (15.9%)	1,315 (2.1%)	21,294 (20.4%)
Friend/acquaintance	2,361 (45.6%)	157,182 (37.6%)	18,615 (30.2%)	58,090 (55.7%)
Stranger	526 (10.2%)	47,268 (11.3%)	37,634 (61.1%)	9,935 (9.5%)
Missing	4,216	109,473	89,043	26,889
Clearance				
Cleared	4,564 (48.6%)	250,661 (47.6%)	23,557 (15.6%)	29,015 (22.1%)
Uncleared	4,828 (51.4%)	276,298 (52.4%)	127,076 (84.4%)	102,250 (77.9%)
Time to clearance				
Less than 1 day	1,908 (41.8%)	181,414 (72.4%)	13,196 (56.0%)	9,088 (31.3%)
1 Day to 1 week	1,563 (34.2%)	39,751 (15.9%)	4,913 (20.9%)	6,781 (23.4%)
8 Days to 1 month	455 (10.0%)	14,607 (5.8%)	2,744 (11.6%)	4,246 (14.6%)
1–6 Months	460 (10.1%)	12,405 (4.9%)	2,325 (9.9%)	6,530 (22.5%)
Over 6 months	178 (3.9%)	2,484 (1.0%)	379 (1.6%)	2,370 (8.2%)

[a]Percentages add up to over 100 due to multiple circumstances reported in a single incident.

however, are equally likely to be perpetrated by intimate partners (35%) as by friends or acquaintances (38%).

Descriptive statistics for clearance status across violent crime types are supportive of a differential clearance hypothesis and mirror what was displayed in both Figures 1 and 2. That is, homicides are the most cleared crime type with approximately 49% of homicides being cleared, and aggravated assaults are a close second at 48%. Sexual assaults and robberies are much less likely to be cleared (22% and 16%, respectively). The time to clearance variable also illustrates some important variations across crime types. For example, the chances of an aggravated assault offense being cleared markedly declines if it is not cleared within the first 24 hr. The likelihood of clearance also goes down after 24 hr for homicides and robberies; however, there is still a reasonable likelihood of clearance within the first week. Perhaps not surprising, but in stark contrast to the other offenses, sexual assaults still have a reasonable chance of clearance after 6 months. This may be a function of delays in reporting of such offenses, reluctance of either victims or witnesses to take part in the investigation, as well as administrative or investigative delays relative to forensic analysis of evidence (e.g., rape kits, etc.).

Multivariate Analyses

While these descriptive results are suggestive of differences in characteristics that may contribute to variances in the clearance of these crimes, examination of the influence of a number of incident, victim, and contextual factors also are important for illuminating sources for the differential outcomes. In order to examine these possibilities, we consider the influence of a number of key victim and incident predictors on time to clearance for each offense type. Table 2 displays the hazard ratios for these survival analyses, and Appendix reports the 95% confidence intervals for the hazard ratios. Hazard ratios greater than 1 reflect an increase in the hazard rate or a quicker time to clearance. Hazard ratios less than 1 indicate a decreased hazard rate or a longer time to clearance (Cleves et al., 2004; Roberts & Lyons, 2009). Two aspects are important to consider in interpreting these findings. First, examining the *columns* in the table illuminates the importance of individual predictors of time to clearance within a specific offense type. Second, examining the *rows* in the table highlights the variable influence of specific factors across offense types. Additionally, due to the large sample sizes and the tendency for such large samples to bias significance tests, we focused on the magnitude of these effects in our discussions rather than on whether they achieved statistical significance.

Murder. With regard to victim demographics, victim sex and age do not quicken or slow the time to clearance for homicide. When White victims are killed, however, cases tend to be cleared more quickly than incidents involving non-White victims. Consistent with other studies, the location of the offense exhibits a chilling effect on homicide clearance rates when the incident occurs outdoors or in "other locations," with these cases taking longer to clear relative to homicides that occur in residences. Yet, the timing of the homicide exhibits little impact on clearance outcomes. Regarding weapons involved, only guns and "other" weapons decrease the time to clearance, as compared to homicides where a knife was used. Interestingly, all circumstance categories take longer to clear compared to the contrast category of arguments. Lastly, when relationships between the victim and offender were known, in contrast to stranger victimizations, the times to clearance were consistently shortened by about 29–38% for acquaintance and other family relationships, respectively.

Aggravated assault. Within this offense type, again, victim race has an important impact on time to clearance, with incidents involving White victims experiencing about 41% quicker clearances than non-White victims. Cases involving female victims are marginally slower to be cleared. While these findings are initially supportive of victim-devaluing contentions, victim age showed no substantive

Table 2. Cox Proportional Hazard Model Results of Factors Predicting Clearance for Murder, Aggravated Assault, Robbery, and Sexual Assault Cases Submitted Through the National Incident–Based Reporting System, 2008–2012.

	Murder (n = 9,392)	Aggravated Assault (n = 526,959)	Robbery (n = 150,633)	Sexual Assault (n = 131,265)
Predictor	Hazard Ratio	Hazard Ratio	Hazard Ratio	Hazard Ratio
Victim demographics				
Female victim	1.001	0.979**	1.156**	1.062**
White victim	1.276**	1.406**	1.325**	.956**
Victim age	0.997**	1.004**	0.999	.992**
Situational factors				
Nonresidential indoor versus residence	0.968	0.919**	1.866**	.857**
Outdoor versus residence	0.744**	0.757**	0.794**	.856**
Other local versus residence	0.693**	0.779**	0.923*	.701**
Second versus first shift	1.029	1.035**	0.842**	1.048**
Third versus first shift	1.016	0.998	0.672**	1.154**
Incident characteristics				
Gun versus knife	0.682**	0.677**	0.725**	1.150**
Blunt object versus knife	1.082	0.969**	0.980	1.782**
Hands/feet versus knife	1.073	1.026**	1.150**	1.335**
Other weapon versus knife	0.887*	0.956**	1.404**	1.321**
Felony related versus argument	0.627**	1.546**	—	—
Other circumstances versus argument	0.644**	0.840**	—	—
Unknown circumstances versus argument	0.386**	0.575**	—	—
Intimate partner versus stranger	1.208	1.844**	2.935**	2.134**
Other family versus stranger	1.378**	1.654**	2.765**	2.099**
Friend/acquaintance versus stranger	1.286**	1.213**	1.828**	2.838**
F test	71.70**	2,636.61**	59.55**	167.47**

*p < .05. **p < .01.

impact on time to clearance. Similarly, the situational variables related to the location of the offense exhibit slower clearances for victimizations occurring in outdoor and other locations (hazard ratios = 0.757 and 0.779, respectively) as compared to residences. As with homicides, police shift variables showed no particular impact on the time to clearance in aggravated assaults. Aggravated assaults involving guns took substantially longer to clear than assaults involving knives, whereas other weapon types had negligible impacts on the time to clearance (hazard ratios ranging from 0.956 to 1.026). Felony-related circumstances, however, substantively increased the speed of clearances by about 55% compared to aggravated assaults stemming from arguments, yet unknown and other circumstances delay the time to clearance by about 43% and 16%, respectively. Finally, as expected, when relationships between the victim and offender were determined, the time to clearance is 65–84% quicker for aggravated assaults involving family members and intimate partners compared to strangers. In contrast, cases involving friends or acquaintances only quickened the time to clearance by 21%.

Robbery. Similar to homicides and aggravated assaults, victim age does not substantively impact time to clearances of robbery. The hazard ratios for incidents involving White and female victims reveal quicker clearances (1.325 and 1.156, respectively) compared to non-White and male victims. The situational variables related to the location of the offense also reveal a substantially quicker time to

clearance with a hazard ratio of 1.866 for offenses occurring in nonresidential indoor locations and substantially slower clearance for outdoor robberies with a hazard ratio of 0.794. However, robberies occurring in other locations only result in a modest reduction in the time to clearance (0.923) as compared to robberies that occurred in residences. Similarly, robberies occurring during afternoon and evening hours also experience slower clearances than those occurring earlier in the day as reflected by the hazard ratios of 0.842 and 0.672 for the second and third shift variables.

Interestingly, when it comes to weapons used in robberies, those involving a gun or "other weapon" have opposite impacts. That is, gun use in robberies lengthens the time it takes to clear a case by about 27%, whereas the use of other weapons substantially shortens the time it takes to clear a case (by about 40%) compared to robberies involving knives. When turning to the relationship of the victim to offender, similar to both homicides and aggravated assault offenses, known relationships substantially decrease the time it takes to clear a robbery. The largest hazard ratio magnitudes are exhibited when robberies occur among intimate partners (2.935) or other family members (2.765) compared to strangers.

Sexual assault. Turning to sexual assault offenses, little victim devaluing is evidenced here as no victim characteristics appear to have much of an effect on the time to clearance. Situational variables show small impacts on the time to clearance. One exception is clearances of sexual assaults occurring in other locations, which lengthen the time to clearance by about 30% compared to sexual assaults occurring in residences. Perhaps counterintuitively, the timing of the assault also shows a 15% increase in the speed of clearance for those occurring during the third shift. All of the weapon variables quicken clearances of sexual assault offenses when compared to knives with the largest increase for blunt objects (1.782) and the smallest increase for guns (1.150). Finally, and consistent with the previous offense types, known relationships among the victim and offender lead to more rapid clearances with sexual assaults among intimate partners or family cleared twice as quickly as sexual assaults perpetrated by strangers (2.134 and 2.099, respectively). Sexual assaults among friends or acquaintances exhibited the highest hazard ratio of 2.838, suggesting the quickest clearances of any relationship category reported when compared to strangers.

Variance of predictors across offenses. The findings to this point highlight the within-offense results relative to the contributions of individual sets of variables on the time to clearance outcome. These are the traditional predictors that have been explored in most studies of homicide clearance rates. As noted earlier, the importance of individual factors to overall clearances across offense types can be derived from careful examination across the rows of Table 2. Specific findings from individual sets of variables that have bearing on the theoretical foundations offered earlier are discussed below in more detail.

Victim demographics. Overall, victim age and sex variables have relatively minimal impact on clearances for the offenses analyzed. White victims, however, tend to experience faster clearances for the offenses of murder, aggravated assault, and robbery (hazard ratios = 1.276, 1.406 and 1.325, respectively). This offers some support for a devaluing hypothesis, at least in terms of victim race, with White victims experiencing quicker clearances, especially in nonhomicidal violence. As noted above, the exception lies with sexual assault where cases involving a White victim take longer to clear than those involving non-White victims.

Situational factors. Situational characteristics of the incident showed some variation on time to clearance. Nonresidential indoor locations were found to have minimal substantive influence on clearance processing except in the case of robbery, where the hazard ratio indicates that incidents occurring in a nonresidential indoor location substantially increase the speed of clearance. Outdoor locations uniformly decreased the odds of timely case clearances regardless of offense type,

although less so in cases of sexual assault. Our results also show little impact of police shifts across offense types with the notable exception again for robberies, with robberies occurring during second and third shifts taking longer to clear. We hypothesized that time, as measured by police shift, may impact clearances to the extent that offenses taking place in the late evening or early morning hours may result in delays in interviewing witnesses and collecting and processing physical evidence relative to offenses occurring during the daytime hours. This hypothesis was supported to some extent for robberies. Otherwise, the shift variables exhibited no substantial impacts, suggesting only marginal support for this notion. Another possibility is that certain case characteristics, including a lack of information, prohibit similar case processing by investigators, regardless of officer desire to clear all cases, and the effects of these characteristics, may vary by crime type. Keeping this information in mind, an alternative explanation to organizational dynamics or mobilization of law arguments may be that social disorganization of the case itself may influence case outcomes.

Incident characteristics. Turning to particular attributes of the offense, gun use dramatically slows the time to clearance by about 30% in all offenses except sexual assaults. In these cases, use of a gun actually increases the time to clearance by about 15%. Similarly, the use of both blunt objects and personal weapons (hands, fists, and feet) have negligible effects on homicides, aggravated assaults, and robberies; however, they exert a substantial impact on the time to clearance of sexual assaults. The use of other weapons slows clearance outcomes for homicides, yet their presence speeds up clearance outcomes for robberies and sexual assaults.

Circumstance variables were only available for aggravated assaults and murders, but these also yielded some interesting contrasts. Here, felony-related circumstances result in a longer time to clearance in homicides yet decrease the duration to clearance for aggravated assaults. Other circumstances and unknown circumstances both lengthen time to clearance, but the delay was more notable in murder than aggravated assaults (approximately 36% vs. 16% and 61% vs. 43%, respectively). Lastly, the relationship of the victim to offender variables reveals some consistent, yet contrasting, findings. Offenses committed by intimate partners and family members increase the speed of clearances across the board but have the largest effect for robberies followed by sexual assaults. Although still substantial, this effect is much smaller for aggravated assaults and the smallest for homicides, where the impact for intimate partner cases is modest but remains not significant. A similar pattern persists among friends and acquaintances, however in this case, the largest increases in the speed of clearances were found in sexual assaults. Here, the smallest impacts were found in aggravated assaults and murders perhaps again due to increased seriousness of the crime and perhaps less reliance on victim cooperation to assist in the investigation.

Discussion

The results found for these offense-specific clearance models revealed clear patterns that support the following conclusions: (1) clearance rates vary significantly by offense, (2) variables associated with clearance processes do not have uniform impacts across offense types, and (3) the offense-specific findings as well as the variable impacts of explanatory factors illustrate that much of what is known about police responses to violent crime may be obscured by reliance on previous studies that only focus on the most serious offense of homicide. Each of these conclusions has important implications for the theoretical frameworks that were discussed earlier as the foundation of much of the crime clearance literature and for future studies of crime clearance. The clear variability illustrated in both the trend analyses and the survival models reveals that different violent offenses yield differing clearance processes. This finding is consistent with the research by Roberts (2008), who examined event history (survival) models for robbery, aggravated assault, and forcible rape clearances for 106 U.S. cities and reported varying impacts of victim sex, race, and age on clearances. Similarly,

Roberts and Lyons' (2009) study comparing homicide and aggravated assault clearances reported differential impacts of victim sex, age, and victim–offender racial dyads on time to clearance. Our results also are consistent with prior research indicating that felony-related circumstances quicken clearances for aggravated assault offenses, while firearms result in longer time to clearance for robberies and aggravated assaults (Roberts, 2008; Roberts & Lyons, 2009).

The variability we found in the influence of predictors across offense types has import for the theoretical foundations discussed at the outset. Specifically, the deviation from homicide clearance patterns may reflect differences in the gravity of the offense that were not apparent in homicide clearance analyses alone. Following this line of reasoning, Black's notions of the behavior of law or its operationalization as "mobilization of law" (Borg & Parker, 2001) may be more germane for less serious offenses, and this finding may have been missed in other studies devoted only to homicide. Specifically, the higher hazard ratios for White victims for homicide, aggravated assault, and robberies are supportive of a mobilization of law thesis. The comparatively larger hazard ratios for offenses generally regarded as less serious than homicide also indicate greater mobilization of police resources in nonhomicide cases. In other words, the importance of victim race found here for nonlethal violent crimes may be indicative of a possible dilution of the victim-devaluing argument in the most severe case of homicide. Contrary to this argument and consistent with recent findings by Stacey, Martin, and Brick (2016), however, victim race does not appear to have a substantial effect on the mobilization of law in sexual assault cases. This is likely due to the qualitatively different nature of sexual assaults compared to the other offense types.[10] The relatively invariant findings related to victim age and sex also erode support for a victim-devaluing argument.

The general trends in overall clearances for nonlethal violent offenses could be interpreted as support of an organizational dynamic perspective in which more resources are devoted to the most serious crime of homicide and comparatively fewer resources being devoted to nonlethal violent offenses. However, using police shift as a proxy for allocation of resources, the multivariate results here do not provide much support for this contention. One exception is for robberies showing slower clearances for offenses occurring during the third shift or when police are least likely to have adequate resources available to them. Otherwise, the shift variables exhibited no substantial impacts, suggesting only marginal support for this perspective.

Another possibility is that certain case characteristics, including a lack of information and investigative leads, prohibit similar case processing by investigators, regardless of officer desire to clear all cases, and the effects of these characteristics may vary by crime type. Keeping this in mind, an alternative to organizational dynamics or mobilization of law arguments may be that social disorganization of the case itself may influence case outcomes. Consider the results offered here. The case-level variables exhibited substantial variation by crime type. Although gun use displayed relatively consistent dampening effects on case solvability, other weapons showed varied impacts by offense with the most substantial impacts for sexual assault offenses. Felony-related circumstance variables showed consistent increases in the speed of aggravated assault clearances compared to homicide clearances, which may be due to surviving victims who are able to assist in cases of aggravated assaults. Lastly, the relationship variables consistently indicated faster clearances for offenses other than homicides, with the most substantial impacts for sexual assaults and robberies and less, but still modest, impacts for aggravated assaults. Taken as a whole, it appears that case characteristics exert stronger influences on nonlethal violent crime clearances as compared to homicides.

While none of the variables here measure the ecological aspects of social disorganization that have been previously argued to influence both crimes and their clearances (see especially Regoeczi & Jarvis, 2013), perhaps an extension of social disorganization to aspects of case investigation is warranted. That is, chaotic events of violence involving various victim and offender demographics, varying incident attributes such as location and time of day as well as the involvement of differing

weapon types, vague or unarticulated circumstances, and changing or unstable relationships may contribute to disorganization in the reporting and determination of case attributes, all of which likely hamper effective investigative processes. In combination with mobilization of law interpretations of the findings reported here, this suggests that police discretion may be even more prevalent for less serious crimes.

In support of these arguments, recent research by Hawk and Dabney (2014) found considerable variation in terms of prioritization of cases and investigative effort even within homicide cases themselves. For example, in their study of homicide investigations in a metropolitan police department, they found that although homicide investigators claimed to investigate all homicides equally, there were certain case characteristics that complicated this process, regardless of officer discretion. That is, cases with few viable leads, such as a lack of physical evidence, witnesses, or information on the identification of the victim, sufficiently hinder an officer's ability to effectively investigate a case. Thus, certain case characteristics prohibit similar case processing by investigators, regardless of officer desire to clear all cases. Along these same lines, one would think that nonlethal cases involving living victims may be easier to clear due to a potentially greater availability of evidence and information. However, surprisingly, both the data and the analysis offered here do not provide support for this argument.

The lower clearances for nonlethal offenses may be due to other organizational hindrances that are unique to cases involving surviving victims, such as perceptions of victim believability and credibility (Larcombe, 2002) or perceptions that the victim will not cooperate in later case processing (Dawson & Dinovitzer, 2001; Frazier & Haney, 1996). Additionally, in cases involving surviving victims, victims may be reluctant to cooperate for a variety of reasons, including perceived fear or retribution by the offender, intimidation or uncertainty with criminal justice processing, or possible stigmatization associated with the offense and being labeled a ''victim'' (e.g., Bachman, 1998; Dawson & Dinovitzer, 2001; Erez & Belknap, 1998; Frazier & Haney, 1996; Hart, 1993; Randall, 2004; Riedel & Jarvis, 1998). The resulting lack of evidence, tangible or otherwise, will pose challenges that the investigating officer must overcome for a successful case outcome.

While many of these notions were not explicitly tested here, the need to impute upward of a third of the data in some instances to compensate for missing attributes reported in NIBRS may be reflective of this potential case disorganization. Case in point, recent work by Hawk and Dabney (2014) encapsulates this notion of a socially disorganized case, wherein they provide the following excerpt from a case detective:

> [This case] is one of these we call 'bag of shit's' that you get the day after Thanksgiving, the Friday after Thanksgiving at four o'clock in the morning. You know, they respond to a shooting up on [street name] by the [business reference] and this homeless guy is laying out there with gunshot and he's dead. No shell casings, no witnesses, nothing. I didn't even know who he was for several hours. So I mean that, you, that laid on your desk what do you get, what do you do? So you got to start on that one at some point, but there really isn't anything, nobody has come forward to say that they were, you know, the victim's mother is old, I mean she's in her 70's or whatever and you know she doesn't know any of her son's friends because he's homeless and you know . . . . So some cases just have no angle. (p. 1192)

Clearly, this passage is illustrative of the social disorganization that may befall some cases, wherein the crime scene and the surrounding circumstances are so chaotic or ambiguous that specific attributes of the incident, victim, and offender may not be obtainable. Such cases would yield unknowns in records pertaining to the reporting and investigation of that crime. As such, investigative practices, as well as research and analyses of those processes, may be hampered.

Limitations and Directions for Future Research

This study, like many others that employ NIBRS data, has some limitations. First, NIBRS is not national in its reporting unlike the original UCR system. As of 2012, agencies in 32 states were certified to report crime statistics to NIBRS, and most agencies that report crime statistics to NIBRS are small to midsize agencies with underrepresentation from larger, urban jurisdictions (FBI, 2012). The factors impacting clearance processing may differ considerably in these jurisdictions. Future research should consider this possibility. Nevertheless, this study still sheds light on important variation in these offenses, and NIBRS provides a unique opportunity to examine offense clearances for nonlethal crimes across a range of jurisdictions. This type of study would not be possible with the original UCR system.

Second, the large sample size for each of the four models precluded investigations of statistical significance because with large sample sizes, almost any variance will reach statistical significance. As such, the focus here was on the patterns and substantive significance of the results rather than statistical significance. That said, the variable patterns found are indicative of a well-known practical contention that police investigative strategies need to conform to the type of offense and the case dynamics that are at work in each incident in order to maximize clearance probability (see Carter, 2013).

Third, this study focused on extending our knowledge base of factors impacting not only homicide investigations but also clearance processes for violent crimes more generally. Future exploration of case clearance dynamics in nonviolent crimes may illustrate even more variation in predictors of case clearance due to greater discretion afforded to investigators and to the less serious nature of the offense. In fact, examinations of less serious crimes may shed more light on victim devaluing and hindrances to the mobilization of law. Future studies should consider this possibility, as clearance rates for property crimes are substantially less than those reported here.

Fourth, due to data complexities, our study was limited to violent incidents involving just one victim and one offender. Cases involving multiple victims or multiple offenders likely also have important effects on crime clearance outcomes. Additionally, we were not able to use the ethnicity variable in NIBRS due to known data quality issues. As such, more reliable data on some of these demographic characteristics of victims and offenders may illuminate differential outcomes by such demographic factors that were not accounted for in this analysis. Finally, the environments in which crimes occur impact their investigation. Consequently, future research also should consider the effects of the social and economic characteristics of the area in which crimes and their subsequent investigations occur and how this may differ across offense types.

Conclusion

Our study demonstrated that the victim and incident dynamics considered here impact the times to clearance for different violent offenses. Additionally, our research illustrated that the factors found to be relevant to clearing homicides have differing influences for solving other violent crimes such as aggravated assault, robbery, and sexual assault. These findings have both practical and theoretical import. Practically, these results confirmed the notion that violent crime investigations are influenced by different factors, and victim and incident characteristics vary in their importance by crime type. Theoretically, previous studies suggesting hindrances to the "mobilization of law," and possible victim devaluation in police investigations may require reexamination for crimes other than homicide, given the findings here. These results did not provide definitive evidence that such processes are widespread in police investigations. However, most previous work has been limited to homicide rather than the broader spectrum of violent offenses examined here that revealed such dynamics may be trumped by the seriousness and visibility that often accompany today's homicide investigations.

Appendix

Table A1. 95% Confidence Intervals (CIs) for Cox Proportional Hazard Model Estimates for Factors Predicting Clearance for Murder, Aggravated Assault, Robbery, and Sexual Assault Cases Submitted Through the National Incident-Based Reporting System, 2008–2012.

	Murder (n = 9,392)	Aggravated Assault (n = 526,959)	Robbery (n = 150,633)	Sexual Assault (n = 131,265)
Predictor	Hazard Ratio CI	Hazard Ratio CI	Hazard Ratio CI	Hazard Ratio CI
Victim demographics				
Female victim	[0.920, 1.089]	[0.970, 0.987**]	[1.121, 1.192**]	[1.022, 1.104**]
White victim	[1.195, 1.363**]	[1.394, 1.419**]	[1.283, 1.368**]	[0.929, 0.983**]
Victim age	[0.996, 0.999**]	[1.004, 1.005**]	[0.999, 1.001]	[0.991, 0.993**]
Situational factors				
Nonresidential indoor versus residence	[0.859, 1.090]	[0.906, 0.932**]	[1.792, 1.942**]	[0.820, 0.895**]
Outdoor location versus residence	[0.685, 0.808**]	[0.748, 0.766**]	[0.765, 0.824**]	[0.819, 0.895**]
Other location versus residence	[0.597, 0.804**]	[0.763, 0.796**]	[0.865, 0.985*]	[0.664, 0.739**]
Second shift versus first shift	[0.956, 1.107]	[1.025, 1.045**]	[0.817, 0.868**]	[1.018, 1.079**]
Third shift versus first shift	[0.940, 1.098]	[0.987, 1.009]	[0.647, 0.698**]	[1.120, 1.189**]
Incident characteristics				
Gun versus knife	[0.634, 0.734**]	[0.668, 0.687**]	[0.698, 0.752**]	[1.026, 1.289**]
Blunt object versus knife	[0.957, 1.224]	[0.957, 0.980**]	[0.903, 1.063]	[1.528, 2.077**]
Hands/feet versus knife	[0.976, 1.180]	[1.016, 1.036**]	[1.113, 1.188**]	[1.302, 1.370**]
Other weapon versus knife	[0.794, 0.992*]	[0.945, 0.967**]	[1.319, 1.493**]	[1.247, 1.398**]
Felony related versus argument	[0.534, 0.736**]	[1.513, 1.581**]	—	—
Other circumstances versus argument	[0.593, 0.699**]	[0.831, 0.850**]	—	—
Unknown circumstances versus argument	[0.358, 0.415**]	[0.567, 0.582**]	—	—
Intimate partner versus stranger	[0.956, 1.526]	[1.811, 1.878**]	[2.760, 3.122**]	[2.015, 2.260**]
Other family versus stranger	[1.127, 1.686**]	[1.621, 1.688**]	[2.536, 3.014**]	[1.978, 2.227**]
Friend/acquaintance versus stranger	[1.107, 1.495**]	[1.194, 1.233**]	[1.748, 1.911**]	[1.492, 1.658**]

*p < .05. **p < .01.

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The authors received no financial support for the research, authorship, and/or publication of this article.

Notes

1. Social disorganization theory (Shaw & McKay, 1942) also has some relevance to homicide solvability but is not the focus of the analysis offered here, as National Incident-Based Reporting System (NIBRS) data alone do not afford the data to test such relationships. However, some studies have matched Census data with NIBRS data to illuminate these possibilities (Eitle, Stolzenberg, & D"Alessio, 2005). Furthermore, the impacts of structural features as well as collective efficacy and other possible intervening social control mechanisms on crime clearances can be found within the existing literature. Some examples include, but are not limited to, Mustaine, Tewksbury, Corzine, & Huff-Corzine (2012); Regoeczi & Jarvis (2013); Roberts (2008).

2. This includes the exclusion of incidents involving multiple victims or offenders, incidents that were cleared by exceptional means, and incidents that were attempted but not completed.
3. This study focuses on clearances by arrest and does not include incidents cleared by exceptional means (e.g., cases in which the offender committed suicide or prosecution was declined).
4. Sexual assault offenses include the offenses of forcible rape, forcible sodomy, and sexual assault with an object.
5. There are several instances where this occurs within NIBRS data elements (most of which are not employed in this work), and the consequences for analyses are contingent upon the uses to which the data are put (Jarvis, 2015). Specifically, in this work, victim ethnicity variables in NIBRS are known to be discretionary and are not self-reported. As such, the reliability of those data remains questionable. Stacey et al. (2016) found similar reliability concerns pertaining to ethnicity in their analyses of NIBRS data on sexual assault clearances. As a result, we elected not to include ethnicity data in our analyses. That said, we view ethnicity (whether self-identified or perceived) as a potentially important covariate, but such impacts cannot be explored effectively in the current effort.
6. Other weapon includes motor vehicle, poison, explosives, fire, drugs/narcotics, asphyxiation, other, and unknown.
7. Other circumstances include assault on law enforcement officers, gangland, juvenile gang, mercy killing, and other. Each of these is included with the "felony-related" category, with the exception of "mercy killing" which remained as an "other circumstance."
8. The data in Figures 1 and 2 are drawn from similar but different FBI data sources. Figure 1 draws upon historical Uniform Crime Report data, whereas Figure 2 uses more contemporary NIBRS data. The sampling frames, participating agencies, and reporting rules differ for each data source, which partially explains the differences in the levels and trends observed.
9. The lack of circumstance codes in NIBRS for offenses other than aggravated assault and homicide has been noted elsewhere as a particular deficit in being able to determine the genesis of the context from which the apparent violent conflict between the offender and victim may have occurred (see especially Jarvis, 2015).
10. This qualitative difference includes, but is not limited to, to the possible reluctance of victims to report such offenses, the delays in forensic analysis results that sometimes may accompany such criminal investigations, as well as the ongoing debates pertaining to the role of victim consent in the behavior that constitutes the reported criminal offense. Stacey et al. (2016) also suggest reluctance to cooperate with police (see also Dawson & Dinovitzer, 2001) may be an important and overlooked qualitative difference that may produce racial disparities in sexual assault clearances.

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