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Formal Social Control in Changing Neighborhoods: Racial Implications of Neighborhood Context on Reactive Policing

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Public reports to the police are a key component of the formal social control process and have distinct interracial dynamics. This study examines the relationship between incident severity, neighborhood context, and participant race and patterns in the determination of probable cause and arrest in reactive police contacts. We utilize a complete record of police incidents in Seattle, Washington from 2008 through 2012 including information on race of reporters and targets and type of offense. These data are matched to longitudinal tract-level census data to evaluate how incident outcomes relate to neighborhood change. Results indicate that black targets are more frequently subject to arrest overall, particularly in changing neighborhoods and when reporters are white. For nuisance crimes such as public disturbances, probable cause is found more often for white reporters but less often in changing neighborhoods.

INTRODUCTION

Reactive police contacts, initiated by individuals seeking help from the police (Tyler and Huo 2002), comprise the majority of interactions between the police and the public (Black 1971). In these situations, individuals who report crimes welcome and expect police intervention (Tyler et al. 2015); reporters serve as gatekeepers for neighborhood policing and the experience of formal social control for many individuals contacted by the police. Gottfredson and Gottfredson (1988) argue that reports to the police may be the most influential point in the criminal justice system because they initiate these formal interventions—situations that may have otherwise gone largely undetected by the police.

While the importance of choosing to contact the police has received increased public scrutiny through media coverage, contemporary sociological research on the topic has lagged behind. This gap in the literature is troubling considering the hegemonic and racialized nature of high-profile citizen–police interactions: examples include a white Oakland woman who called the police on an African American family for barbecuing in

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a park area that banned charcoal grills (Mezzofiore 2018), a white Yale graduate student who called the police on a fellow black graduate student who was napping in a common area (Wootson 2018), and the case of two African American men who had the police called on them while waiting for a colleague at Starbucks (Horton 2018). The police determined the barbecuing incident did not concern them, required the Yale student to provide identification, and arrested, processed, and held the two Starbucks customers for 9 hours before releasing them without charges. The deaths of Stephon Clark, Gregory Vaughn Hill, Jr., and Tamir Rice—three of the hundreds of black males killed by the police each year (Edwards et al. 2018)—remind us that complaints to the police can also have fatal consequences.[1]

Calls for service to the police initiate a process that is often marked by the cumulative bias and structural racism. Comparing the community interactions between police and black and white individuals, black community members were consistently addressed with less respect than white individuals, after controlling for the race of the officer and the location, severity, and outcome of the stop (Voigt et al. 2017). While research on the relationship between race and arrest offers mixed results, a recent meta-analysis on the topic indicates that nonwhite individuals are more likely to be arrested than white suspects (Kochel et al. 2011). Furthermore, a recent study by Miller et al. (2017) finds no racial difference in the number of individuals admitted to the hospital or killed due to police interactions when compared to the total number of police stops and arrests: The large racial differences in mortality are driven by higher rates of police contact with black men. After entering the criminal-legal system, black individuals continue to be at a marked disadvantage (Tonry and Melewski 2008; Stolzenberg et al. 2013). The result—mass surveillance and incarceration that disproportionally impact black individuals and communities—provides a stark bookend to seemingly minor complaints to the police.

To begin addressing this gap in the literature, this study explores the relationship between the racial composition of individuals involved in police incidents and neighborhood economic and sociodemographic histories in Seattle, Washington. A person's choice to contact the police may be influenced by their personal characteristics, situational factors, as well as the social and economic contexts of their surrounding community, where perceptions and responses to disorder may vary depending on place-dependent norms and beliefs. Past neighborhood dynamics may influence current residents' perceptions of their environment, how they relate to their neighbors, and their utilization of formal social control via complaints to the police. By evaluating the influence of individuals' race and neighborhood dynamics on reporter-initiated police contacts, we (1) contribute to research on racial social control at the neighborhood level, and (2) add nuance to the sociological research on how residents behave in collectively efficacious ways to guard their neighborhoods (Jacobs 1961; Sampson 2012).

COMPLAINING TO THE POLICE

Crime reporting is influenced by individual and situational characteristics, psychological factors, and neighborhood context. Research suggests victims are the most likely to notify the police of a crime. Hart and Rennison (2003:2) find that between 1992 and 2000, 54 percent of all violent crimes known to the police were reported by victims. Reporting behavior is also correlated with crime type—research consistently indicates that serious

crimes, such as aggravated assault and robbery, are more likely to be reported to police than other types of crime (Goudriaan et al. 2006; Skogan 1984). Less is known about the reporting of minor crimes, possibly because these offenses are commonly "victimless," involving the authorities may have higher costs than benefits, and situations may be more likely to be resolved informally.

The effect of reporter race is less consistent in the research (Skogan 1984; Baumer and Lauritsen 2010). In his review of victim crime reporting literature, Skogan (1984:125) states that "race differences are small" and that in the U.S. black victims report some crimes at a higher rate than white victims due to black victims experiencing crimes that are more serious and more likely to include bodily harm; controlling for these case characteristics causes racial differences in reporting to disappear. However, using a pooled sample of victimization data from 1973 to 2005 and controlling for case characteristics, Baumer and Lauritsen (2010:156) find that non-Latinx black victims are more likely to report all nonlethal violence and simple assault than individuals of other races and ethnicities, and less likely to report rape, sexual assault, and robbery.

Additional studies of racial differences in crime reporting explore the role of race within its situational context, particularly the impacts of complainant-target racial pairings. Early research on these pairings was largely motivated by Black's theory of legal mobilization in *The Behavior of Law* (1976): He suggests an individual's propensity to invoke the law by reporting crimes to the police varies largely with the social integration of the complainant and target—low-status individuals will have less access to proactively use the law and will be more vulnerable to law's repressive and coercive capacities. Xie and Lauritsen (2012:280) explore Black's hypotheses and find the racial pairing of the offender and victim significantly influences a black victim's propensity to report assault: Black victims are more likely to report crimes with a black offender and less likely to report a white offender. Similarly, Avakame et al. (1999:781) find same-race pairings for assault incidents are more likely to be reported than cross-race pairings, with nonwhite minority-on-minority incidents having the highest reporting rate (and the highest arrest rate), followed by white-on-white and nonwhite minority-on-white incidents.

Literature suggests that individual attitudes toward the police do not greatly impact the propensity to report the most serious crimes (Skogan 1984). However, Schneider et al.'s (1976) study of crime reporting in Portland, Oregon, revealed that people's perceptions of the police—if they treat people well, take reported crimes seriously, and if they put effort into solving crimes—impact their likelihood of reporting *less* serious offenses. Individuals who view the police as more legitimate have an increased likelihood to both report crime to the police and work with other community members to fight crime (Tyler and Fagan 2008). Tyler and Fagan (2008) also find that individuals who have experienced negative police interactions perceive the police to be less legitimate (see also Skogan 2006). Tyler and Fagan's work suggests that the general policing environment of a neighborhood—characterized by the frequency of police contact, the tenor of interactions, and the perceived fairness of the process—will have a moderating impact on an individual's reporting decisions.

Individuals' attitudes toward the police, and their neighbors, are shaped both by their race and the characteristics of their residential environment. Black individuals are found to be less satisfied with the police than white individuals (Wu et al. 2009); however, this relationship is conditional on neighborhood racial composition: Residents in predominantly white and racially mixed areas have more favorable attitudes toward the police

than those in predominantly black neighborhoods, black and white residents have similar levels of police satisfaction in disadvantaged neighborhoods, and black residents in advantaged neighborhoods have lower levels of satisfaction than their white neighbors (Wu et al. 2009). Drakulich and Crutchfield (2013) find that aggregate neighborhood-level attitudes toward the police may be an important factor in the diminished informal social control capacity of Seattle neighborhoods with large black, Latinx, and Asian populations. Additionally, Guest et al. (2008) find that Seattle neighborhoods with increased levels of racial heterogeneity are negatively related to white residents' beliefs that neighborly relationships are calm, trusting, and helpful; it is possible that reduced trust between neighbors may lead to diminished levels of informal social control and increased reliance on state authorities to solve social problems.

Racialized attitudes toward the police may be one mechanism underlying the relationship between neighborhood racial composition, disadvantage, and crime reporting. Desmond et al. (2016:866) find that neighborhood racial composition influenced crime reporting after a publicized incident of police brutality: All Milwaukee neighborhoods experienced a decrease in calls to the police after the widely reported abuse, but the decrease in white neighborhoods was small and quickly receded, whereas the effect was larger and more persistent in black areas. More generally, Warner (1992) finds that white victims in nonwhite neighborhoods are more likely than black victims to report assault, whereas their reporting behavior for robbery and burglary is unaffected by neighborhood racial composition; for black victims, residing in a predominantly nonwhite area decreases their likelihood of reporting an assault and increases the likelihood of reporting a robbery (Warner 1992). These micro-meso racial interactions are further supported by Xie and Lauritsen's (2012) finding that metropolitan areas marked by high levels of income inequality between racial groups and residential segregation have stronger associations with the racialized patterns of crime reporting by victim and offender race. Baumer's work (2002:599) adds nuance to the relationship between neighborhood disadvantage and crime reporting, suggesting that the effect of neighborhood disadvantage on victim reporting varies by crime type: For relatively serious crimes, such as aggravated assault and robbery, formal reporting is uncorrelated with neighborhood disadvantage; for less serious crimes, like simple assault, the probability of reporting increases through the 90th percentile of the disadvantage index and declines precipitously for the 10 percent of neighborhoods with the highest levels of disadvantage.

Rapid neighborhood change—such as gentrification—can lead to social disorganization by dismantling social cohesion and impacting residents' response to criminal behavior (Kirk and Laub 2010). Gentrifying areas tend to experience a short uptick in crime, leading to more police patrols and surveillance (Kreager et al. 2011). This uptick may be due, in part, to the co-occurring emergence of early gentrification and the rise of post-9/11 "see something, say something" cultural expectations. Newcomers unfamiliar with neighborhood legacies, prior police contact, or crime control norms in the area (Kirk and Laub 2010) may apply stricter standards to deviant behavior, leading to more calls to the police for infractions that would have been ignored in the past (Braga and Bond 2008). Additionally, new community members may not have developed trust and solidarity with other residents, feel able to address situations informally, nor have the resources (such as contact information) to inform their neighbors of low-level crimes (Sampson 2012). It is also possible that a trade-off exists between formal and informal control in changing neighborhoods: Kreager et al. (2011:635) "...speculate that downtown gentrifying

areas are unlikely to have strong and cohesive resident networks, reducing these communities' efforts to control neighborhood criminal behaviors informally and necessitating increases in formal crime control measures." There is also evidence that complaints to police for nuisance crimes are more common in "fuzzy boundaries" between more racially homogenous areas (Legewie and Schaeffer 2016), which may describe gentrifying areas. Finally, Seiler (2007) notes that the combination of legal ambiguity, presumption of black guilt, and internalization of the "broken windows" conception of disorder (see also Harcourt 2001) may contribute to elevated complaints against minorities in gentrifying neighborhoods.

DETERMINATION OF PROBABLE CAUSE

Reports to the police initiate a process in which police evaluate the behavior of the individuals involved, circumstances of the case, and possible evidence. Determination of probable cause is a key point in this process, as it is required before an arrest and extends beyond reasonable suspicion to include evidence that a crime was committed. The probable cause standard is both legally required for arrest or filing charges and inherently ambiguous, making the role of police discretion particularly consequential.

Like the decision to report crime to the police, the determination of probable cause is influenced by individual characteristics, situational factors, and broader neighborhood context. Racial and ethnic status is correlated with the type of suspicion formed by officers—black individuals are more likely to be perceived as suspicious to police for nonbehavioral reasons than white individuals (Alpert et al. 2005:424). Additionally, reporter race is a consequential factor in the arrest of a subject (Smith et al. 1984; Brown 2005), implying that the complaints of white individuals may be taken more seriously by the police or that the race of a reporter influences the formulation of reasonable suspicion and probable causes. Smith et al. (1984) label the consequentiality of complainant race *differential responsiveness* and suggest that it is a more invisible form of police discrimination, greater in magnitude than suspect-directed bias, and less amenable to corrections later on in the legal process.

The severity of a crime is also related to the likelihood that probable cause is found. Serious crimes are more likely, by definition, to have a victim who may be willing to provide a statement to the police, may have stronger evidence, and police may feel increased pressure to identify a subject (Ousey and Lee 2008). Additionally, because of the ambiguous nature of probable cause, courts are more likely to adopt a broader definition in severe circumstances (Legal Information Institute 2018). We speculate that minor crimes reported by the public may receive less thorough police investigation due to finite police resources and their reduced likelihood of having a victim.

Neighborhood context also shapes perceptions of the individuals involved in an incident and may alter the determination of probable cause. Racial residential segregation has been shown to result in neighborhoods being identified as "black" or "white" areas, an important step in associating black neighborhoods with negative cultural stereotypes of increased social disorder and crime (Sampson and Raudenbush 2004). It is possible that implicit negative stereotypes of black neighborhoods make the overall levels of suspicion higher in these neighborhoods (Fagan and Davies 2000). Additionally, the interaction between an individual's race and neighborhood racial composition may raise suspicion:

One situation described by an officer as suspicious was a white individual in a black neighborhood (Dunham et al. 2005:376).

Differential patterns of crime reporting associated with reporter race, crime severity, and neighborhood context determine which crimes are known to the police and shape determination of probable cause. We assume that if a factor *reduces the likelihood of people reporting crime to the police*, it should result in a *higher likelihood of probable cause and/or arrest* because, all else being equal, these incidents will likely be more serious situations or situations where reporters believe that police intervention is warranted. Based on these assumptions, as well as the factors influencing complaints to the police and the determination of probable cause, we hypothesize the following:

- **Hypothesis 1**: Because black reporters may refrain from notifying police of less severe incidents, probable cause will be more likely for black reporters in general.
- **Hypothesis 2**: Probable cause will be more likely in incidents with black targets.
- **Hypothesis 3**: A determination of probable cause will be less likely in incidents with white reporters, due to white individuals' elevated reporting of minor incidents.
- **Hypothesis 4**: Incidents involving white reporters in changing neighborhoods will have the lowest likelihood of probable cause, compared to similar incidents occurring in other types of neighborhoods.

ARREST

Research shows that, like complaints to the police and the determination of probable cause, the likelihood of arrest is shaped by the roles and races of the individuals involved, crime severity, and neighborhood context. Studies on the role of suspect race in arrest decisions have provided contradictory findings. Kochel et al.'s (2011) meta-analysis of these studies suggests that black and nonwhite suspects are consistently more likely to be arrested than white suspects. Stolzenberg et al. (2004), however, found that white individuals are more likely to be arrested for assaults. Additionally, the type of police stop shapes the likelihood of arrest differently for white and black suspects. Reactive police stops involving a black suspect are substantially more likely to end in arrest, compared to proactive police stops (Brown 2005:61).

Victim race and incident severity also influence arrest outcomes. White victims broadly experience higher rates of arrest (Avakame et al. 1999:778; Smith et al. 1984). Cases with a white victim and white offender have the highest clearance rate of all victim–offender race combinations, with a 16 percent higher clearance rate than similar cases with a white victim and black offender (Taylor et al. 2009). Generally, black victims experience less protection from the law, when compared to white victims (Smith 1984; Smith et al. 1984). Unsurprisingly, incident seriousness is a strong predictor of arrest (Smith 1984; Smith et al. 1984). When providing reasons for making an arrest, officers suggest that a victim's level of injury is an important consideration (Bonner 2015).

Terrill and Paoline (2007) find that serious crimes, such as homicide, robbery, aggravated assault, or sexual crimes, were four times more likely result in arrest than minor crimes.

As determination of probable cause is rarely separated from arrest in studies of neighborhoods, relevant neighborhood factors related to arrest are similar to those implicated

in the determination of probable cause. In particular, the conspicuousness of black individuals in predominantly white neighborhoods may increase arrest probability (Dunham et al. 2005). Additionally, serious crimes in black neighborhoods may be underprioritized by police (Corsianos 2003), leading to lower arrest probabilities.

However, in gentrifying neighborhoods, residents may push local government to apply place-based policing initiatives that increase patrols and the probability of arrest for black citizens (Kreager et al. 2011; Seiler 2007).

- **Hypothesis 5**: Black individuals will experience a higher likelihood of arrest in all incidents, regardless of reporter race.
- **Hypothesis 6**: Incidents with a white reporter/black target will have a higher likelihood of arrest than all other reporter-target race pairings.
- **Hypothesis 7**: Black individuals are more likely to be arrested in a white neighborhood.
- **Hypothesis 8**: Arrest probabilities will be lower in disadvantaged neighborhoods due to underenforcement by police.

STUDY CONTEXT

Author analysis of Seattle arrest data reveals that from 2008 to 2012, approximately 46 percent of the 230,000 arrests conducted by the Seattle Police Department (SPD) involved black suspects, while 45 percent involved white suspects. While nearly identical numerically, these percentages are disproportionate when compared to the racial composition of Seattle. Black residents comprise only 7.9 percent of the city's population. Between 2008 and 2012, the SPD recorded arresting a number of unique black individuals equal in size to approximately 38 percent of the city's total black population, as compared to arresting the equivalent of only 8 percent of the city's white population. These findings may provide context as to why the Department of Justice (DOJ) Civil Rights Division opened an investigation of SPD in March 2011. Their findings indicated that SPD engaged in "patterns or practice of excessive use of force" and the DOJ "raised serious concerns that some SPD policies and practices, particularly those related to pedestrian encounters . . . could result in discriminatory policing" (US DOJ 2011).

Exploring the racial dynamics of reporter–target pairings, crime type, and neighborhood context may illuminate these disparate patterns of policing. Our data are well suited for this analysis, as they feature detailed information on the characteristics of individuals involved in police incidents and outcomes of those contacts.

DATA

POLICE INCIDENT DATA AND VARIABLE OPERATIONALIZATION

This study uses a full population of SPD Records Management System (RMS) incident reports generated by police officers between 2008 and 2012. Incidents here are general offense reports used by SPD to "document information related to a reported or potential crime or criminal investigation that may form the basis for either an arrest or a referral for prosecution without arrest" (Seattle Police Department 2017). All incidents feature

geocodes and were assigned to 2010 U.S. Census tracts. We restrict our analyses to incidents that occurred within Seattle city limits and feature adult participants. Juveniles are omitted from our analyses for two reasons: (1) prior research suggests racial patterns of suspicion and policing differ significantly for adults and juveniles (Brown 2005)—including both populations in our sample may bias results, and (2) alternative forms of incident resolution (such as notifying parents of the reported behavior) are commonly available for juveniles but are undocumented in our data (Bonner 2015).

We focus on two incident crime categories: serious crimes and nuisance crimes, which together compose 43.9 percent of all RMS incidents (see Appendix A for more information on omitted incident types). The serious crime category mirrors crimes included in Part 1 of the FBI Uniform Crime Report offense definition and includes thefts (67.8 percent of the serious crime category), burglary (19.5 percent), aggravated assault (5.37 percent), robbery (4.57 percent), vehicle theft (2.05 percent), rape (0.32 percent), arson (0.28 percent), and homicide (0.07 percent). We omit retail thefts, such as shoplifting, however, as SPD indicates these incidents are reported by store employees for insurance purposes (personal communication, September 5, 2018) and may not mirror the broader social processes we hope to examine. The nuisance crime category captures behavior that (1) is minor in severity, (2) occurs in public spaces, and (3) does not cause direct physical harm to victims. These reported behaviors include suspicious circumstances (40.2 percent of the nuisance crimes category), noise and other disturbances (27.4 percent), trespassing (13.5 percent), graffiti (9.93 percent), and other nuisance crimes (8.91 percent). Incidents with both a serious and nuisance crime ($N = 584$) were classified as serious crimes for these analyses (however, these dual-crime type incidents are only 0.30 percent of all incidents).

We further limit our analyses to only include individuals with clearly defined roles, such as the "reporter" of a crime or the "target" of policy scrutiny. Roles for the *reporter* category include complainant, witness, and victim and *target* roles include subject, suspect, and arrestees.[2] Complainants are individuals who file a complaint with the police without witnessing a crime or suffering direct harm, e.g., reporting a possible car prowler. Subjects are individuals who face police scrutiny but for whom officers determine there is no probable cause for further investigation. If officers find probable cause, individuals are categorized either as suspects—those believed to have committed a crime but are not arrested—or arrestees—those taken into custody. If an individual has multiple roles in an incident, SPD assigns to them to the most significant role (i.e., an individual who witnessed a crime and is also victimized would be assigned the role of victim in the RMS data). Note that while general offense reports are opened with the initial police contact, they are continually updated as long as a case remains open. Thus, incident roles do not reflect the immediate on-site resolution of incidents, but rather the status of involved individuals at the time data were obtained;[3] an individual arrested several weeks after the initial complaint will be recorded as an arrestee in that incident.

Additionally, the data do not allow us to determine how the report was initiated (a call to 911, a visit to a police station, or flagging a nearby officer down). Therefore, by call or report, we refer to any initiation by a citizen as a report to police.

According to SPD, recorded participant race ethnicity is based on a combination of police perception, preexisting documentation, and reporter descriptions (personal communication, September 5, 2018). If police make direct contact with an individual but do not check their identification against police records—as is the case for most reporters

TABLE 1. Frequencies of Incidents by Reporter and Target Race and Crime Type

Participants	Crime Type Nuisance	Serious	All
Any Target	30,209 (28.1 percent)	77,237 (71.9 percent)	107,446 (100 percent)
Black Target(s)	13,830 (28.1 percent)	35,427 (71.9 percent)	49,257 (100 percent)
White Target(s)	18,075 (32.1 percent)	38,163 (67.9 percent)	56,238 (100 percent)
Any Reporter	23,679 (14.0 percent)	145,682 (86 percent)	169,361 (100 percent)
Black Reporter(s)	3,866 (21.4 percent)	14,201 (78.6 percent)	18,067 (100 percent)
White Reporter(s)	15,627 (15.7 percent)	83,890 (84.3 percent)	99,517 (100 percent)
Black/White Target(s) and Reporters (s)	11,670 (22.4 percent)	40,374 (77.6 percent)	52,044 (100 percent)
Black/White Suspect(s)/ Arrestee(s) and Reporter(s)	7,536 (19.3 percent)	31,554 (80.7 percent)	39,090 (100 percent)
All Incidents	37,432 (19.5 percent)	154,172 (80.5 percent)	191,604 (100 percent)

and many subjects—their information is recorded based on officer perceptions. If an individual's identification is examined and linked to an existing entry in the RMS system or other official database—as is the case for arrestees—their demographic data are obtained from preexisting records. When police do not make contact with a target, demographic characteristics are recorded only if a reporter provides information. While this means the race-ethnicity data for some participants is likely inaccurate, our primary interest is in differences in reports to the police and their resolution based on race as *perceived* by reporters and officers. If race is perceived inaccurately by these parties, it seems likely that this inaccurate perception would be the basis for differential treatment rather than the unobserved racial identification of involved individuals.

With this in mind, we limit our analyses to incidents with one or more reporters and targets who are black and/or white because (1) these two racial categories may be more reliably assigned by police officers and reporters than other ethno-racial categories (Herman 2010), and (2) the vast majority of cases with identified reporters and targets include black and/or white individuals (89.3 percent). This produces a sample of 52,044 incidents—the *Black/White Target Sample*—and 39,090 in which police determined that there was probable cause—the *Black/White Suspect/Arrestee Sample*. Table 1 depicts counts and row percentages of incidents of each crime type by reporter and target race. Note the *Black and White Target(s) and Reporter(s)* and *Black and White Suspect(s)/Arrestee(s) and Reporter(s)* rows correspond to our analytical samples.

NEIGHBORHOOD DATA, TRAJECTORIES, AND VARIABLE OPERATIONALIZATION

Demographic data for Seattle's 132 census tracts come from the Geolytics Neighborhood Change Database (GeoLytics 2015) and the Minnesota Population Center IPUMS National Historical Geographic Information System (Manson et al. 2017), both datasets are derived from U.S. Census data, and neighborhood geographies are operationalized using U.S. Census 2010 tract boundaries. To identify contextual change in Seattle census tracts, we use a multivariate latent class mixed-effect model (MLCMM) to classify common trajectories in concentrated disadvantage and racial composition

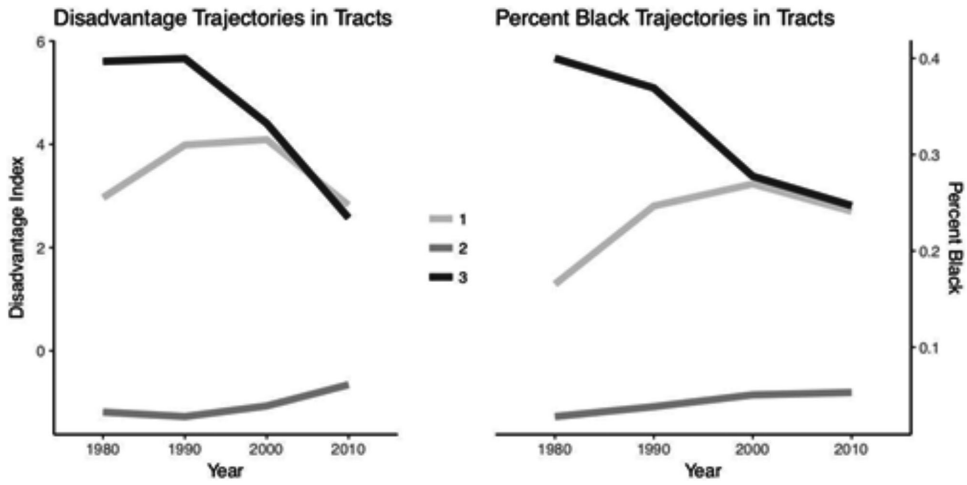

FIG. 1. Tract temporal trajectories for percent black and concentrated disadvantage.

from 1980 to 2010.[4] The MLCMM approach allows us to treat neighborhood change as a multidimensional concept by estimating latent classes of multiple longitudinal outcomes: proportion non-Latinx black, proportion other nonwhite race, and concentrated disadvantage. We operationalize Sharkey's (2014) definition of concentrated disadvantage, which includes proportions of neighborhood residents receiving welfare, living below the poverty line in the last 12 months, in the labor force and unemployed, female-headed households, and children under eighteen years of age. Tract-level *z*-scores of these proportional measures are calculated and then summed, with large index values indicating high levels of neighborhood disadvantage. Three MLCMM classes[5]—the optimal number as determined by Bayesian information criterion (BIC)—capture neighborhood change in Seattle: (1) "Disadvantaged" neighborhoods with increasing non-Latinx black populations and stable, moderate concentrated disadvantage (seven tracts), (2) "Stable white" neighborhoods with enduring low disadvantage and mostly white populations (105 tracts), and (3) "Changing" neighborhoods with declining non-Latinx black populations and disadvantage (20 tracts). Figure 1 shows group means for concentrated disadvantage and proportion black for decennial census years between 1980 and 2010 for each trajectory group. Current measures of neighborhood demographic composition and concentrated disadvantage are omitted from our analyses as they are (1) less predictive than our trajectories, and (2) moderately correlated with the trajectories, which results in inflated standard errors. See Appendix B for models including these current context measures.

To control for neighborhood variation in the base crime rate, we include *Serious Crime Rate*, calculated as the yearly average number of all incidents with serious crimes divided by tract population. Serious crimes are used as they are more reliably reported across varying contexts (Hart and Rennison 2003; Baumer and Lauritsen 2010).

Because *Serious Crime Rate* is based on police incident data, it is a function of the underlying crime rate, citizen reporting, and the allocation of police resources.

METHODS

We model how neighborhood and incident characteristics relate to two outcomes of discretionary decisions by police in incidents originating from reporters: (1) the odds officers determine that there is probable cause an individual committed a crime (*Black/White Target Sample*), and (2) the odds an incident with probable cause results in an arrest (*Black/White Suspect/Arrestee Sample*). Since these outcomes are binary events, we use logistic regression to estimate the linear relationship between parameters and the log-odds of observing a given binary outcome (Long 1997). We include neighborhood-level random effects to account for the possibility that errors are correlated between incidents in the same census tract (Gelman and Hill 2007). Estimates are exponentiated and presented as odds ratios, where values >1.00 signify positive associations with outcome variable and values <1.00 representing negative associations.

These models include measures of both neighborhood and incident context.

Recorded race of reporters and targets involved in each police contact are used to capture the interpersonal context of an incident. As incidents may involve multiple reporters or targets, the reference categories are black reporter(s) and white target(s):[6] Any incident with at least one white reporter takes a value of 1 for *White Reporter* (a value of 0 indicates that only black reporters were recorded), and any incident with at least one black target takes a value of 1 for *Black Target* (a value of 0 indicates only white suspects/arrestees were reported). *Reporter Count* and *Target Count* are included to control for differences attributable to the number of individuals involved in an incident.

Incident severity is operationalized through a *Nuisance Crime* dummy where serious crimes serve as the referent. Trajectories of neighborhood change are captured with dummy variables for *Changing* and *Disadvantaged* neighborhoods; the reference category is stable white neighborhoods. We also include the *Serious Crime Rate*—which has been standardized to facilitate model convergence—to control for local crime context. Finally, we include dummies for the year in which the incident was initiated to control for variation over time in police procedure or reporting behavior, including that related to SPD's consent decree investigation.

RESULTS

Table 2 presents results from multilevel logistic regressions on the odds police to determine that there is probable cause for at least one target in an incident. Model 2A is a simple noninteractive model, while model 2B introduces the following interactions drawn from our hypotheses: (1) *Black Target* and *White Reporter*, (2) *Disadvantaged* or *Changing* neighborhood and *Black Target*, and (3) *Disadvantaged* or *Changing* neighborhood and *Nuisance* crime. Results from model 2A indicate nearly all covariates are related to the likelihood of officers finding probable cause. In particular, probable cause is strongly associated with a *Black Target* (OR = 1.98) and a reporter being a *Victim* (OR = 1.80). *White Reporter* (OR = 1.07) and a reporter being a *Witness* (OR = 1.11) are weakly positively associated with probable cause. *Reporter Count* (OR = 1.24) and *Target Count* (OR = 1.43) are both associated with a higher likelihood of probable cause. As expected, probable cause is found less often for *Nuisance* crimes (OR = 0.62) and in *Changing* neighbor-

TABLE 2. Multilevel Logistic Regression of Odds of Probable Cause

Prabable Cause						
	Model 2A			Model 2B		
	OR	*CI*	*p*	*OR*	*CI*	*p*
Intercept	0.69	0.61–0.78	**<0.001**	0.83	0.72–0.97	**0.017**
White Reporter	1.07	1.00–1.15	**0.048**	0.87	0.78–0.98	**0.019**
Black Target	1.98	1.89–2.08	**<0.001**	1.77	1.54–2.03	**<0.001**
Caller Type						
Complainant	–	–	–	–	–	–
Witness	1.11	1.01–1.21	**0.032**	1.10	1.00–1.20	**0.049**
Victim	1.80	1.67–1.94	**<0.001**	1.79	1.66–1.92	**<0.001**
Reporter Count	1.24	1.20–1.27	**<0.001**	1.24	1.20–1.27	**<0.001**
Target Count	1.43	1.38–1.48	**<0.001**	1.43	1.38–1.48	**<0.001**
Incident Crime Type						
Serious	–	–	–	–	–	–
Nuisance	0.62	0.58–0.67	**<0.001**	0.43	0.37–0.50	**<0.001**
Neighborhood Trajectory						
Stable White	–	–	–	–	–	–
Disadvantaged	0.97	0.86–1.10	0.620	0.88	0.75–1.03	0.114
Changing	0.92	0.84–0.99	**0.035**	0.91	0.81–1.02	0.105
Serious Crime Rate	1.09	1.04-1.13	**<0.001**	1.09	1.04-1.14	**<0.001**
Year						
2008	–	–	–	–	–	–
2009	3.44	3.19–3.71	**<0.001**	3.45	3.20–3.72	**<0.001**
2010	3.21	2.95–3.50	**<0.001**	3.22	2.95–3.51	**<0.001**
2011	0.25	0.23–0.26	**<0.001**	0.25	0.23–0.26	**<0.001**
2012	1.62	1.50–1.75	**<0.001**	1.62	1.50–1.75	**<0.001**
Interactions						
W. Reporter × B. Target		1.11	0.97–1.28	0.134		
W. Reporter × Nuisance		1.59	1.37–1.84	**<0.001**		
Disadvantaged × B. Target		1.15	0.96–1.37	0.131		
Changing × B. Target		1.12	0.98–1.28	0.095		
Disadvantaged × Nuisance		1.10	0.91–1.35	0.327		
Changing × Nuisance		0.84	0.72–0.97	**0.017**		
Observations		52,044			52,044	
$\tau 2$		0.01			0.01	
Log-Likelihood		−22,546			−22,514	

Note: Bold indicated $p < 0.05$.

hoods (OR = 0.92). It is noteworthy that probable cause dropped precipitously in 2011 and rebounded somewhat in 2012, which aligns with SPD's consent decree.

Estimates from model 2B reveal that probable cause is positively associated with *Nuisance* crimes for *White Reporters* (OR = 1.59) and negatively associated with *Nuisance* crimes in *Changing* neighborhoods (OR = 0.84). The interactive model is a better fit to the data as indicated by highly significant ANOVA ($p < 0.001$).

To assist in interpretation of these complex interaction effects, Figure 2 depicts plots of the estimated probability and 95 percent confidence interval of officers finding probable cause in different conditions. These plots indicate that incidents with *Black Target* are universally more likely to result in probable cause than those with only white targets.

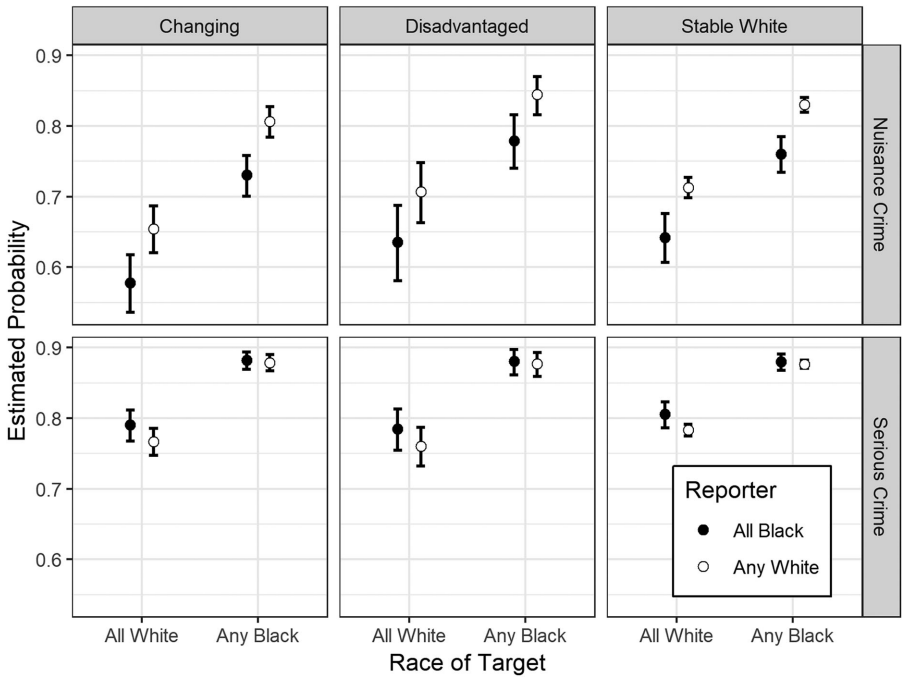

FIG. 2. Estimated probability of probable cause by reporter and target race, neighborhood, and crime type.

Incidents with a *White Reporter* and a *Nuisance* crime display a higher likelihood of probable cause than those with *Black Reporters,* and probable cause is almost always found in incidents with a serious crime and *Black Target.* Also visible is the lower overall probable cause for *Nuisance* crimes in *Changing* neighborhoods. Note that as these are point estimates of probabilities that take into account error in all parameters, confidence intervals that overlap may still indicate significant differences. Tabular results should be used to evaluate small differences in point estimates.

Table 3 presents results from multilevel logistic regressions of the odds police to make an arrest of a suspect once probable cause has been established. Model 3A is a simple noninteractive model, while model 3B introduces the interactions from the prior probable cause model. Note that the large intercept in this model indicates that arrest is quite likely in all incidents once probable cause has been established. In model 3A, we again see that most covariates are associated with the outcome. In this case, both *White Reporter* (OR = 1.61) and *Black Target* (OR = 1.67) are strongly associated with arrest. *Reporter Count* (OR = 1.03), *Target Count* (OR = 1.12), and the *Serious Crime Rate* (OR = 1.14) are positively associated with arrests, though less strongly. Incidents with a *Victim* (OR = 0.86) appear to yield arrests less often than those with only complainants, and incidents with *Nuisance* crimes (OR = 0.47) have much lower rates of arrest. This may be due to probable cause being more likely for incidents with victims; if an incident with a complainant is found to have probable cause, the incident may be particularly severe or the evidence clear. The neighborhood trajectories appear to have little to no direction relationship with arrest. As in the probable cause model, there is a large decline in the likelihood

TABLE 3. Multilevel Logistic Regression of Odds of Arrest

Arrest						
	Model 3A			Model 3B		
	OR	*CI*	*p*	*OR*	*CI*	*p*
Intercept	9.59	8.04 – 11.44	**<0.001**	15.50	12.44–19.32	**<0.001**
White Reporter	1.61	1.48–1.76	**<0.001**	0.84	0.71–0.99	**0.036**
Black Target	1.67	1.57–1.79	**<0.001**	0.77	0.64–0.92	**0.005**
Caller Type						
Complainant	–	–	–	–	–	–
Witness	0.95	0.83–1.08	0.433	0.98	0.86–1.11	0.729
Victim	0.86	0.77–0.96	**0.006**	0.88	0.79–0.98	**0.022**
Reporter Count	1.03	1.00–1.06	**0.043**	1.04	1.01–1.07	**0.020**
Target Count	1.12	1.07–1.16	**<0.001**	1.12	1.07–1.17	**<0.001**
Incident Crime Type						
Serious	–	–	–	–	–	–
Nuisance	0.47	0.43–0.51	**<0.001**	0.59	0.48–0.72	**<0.001**
Neighborhood Trajectory						
Stable White	–	–	–	–	–	–
Disadvantaged	0.94	0.79–1.11	0.454	1.27	1.00–1.61	**0.050**
Changing	0.93	0.83–1.05	0.238	1.26	1.06–1.49	**0.008**
Serious Crime Rate	1.14	1.07–1.22	**<0.001**	1.12	1.05–1.19	**0.001**
Year						
2008	–	–	–	–	–	–
2009	0.69	0.62–0.76	**<0.001**	0.70	0.63–0.77	**<0.001**
2010	0.40	0.36–0.45	**<0.001**	0.41	0.37–0.46	**<0.001**
2011	0.07	0.07–0.08	**<0.001**	0.08	0.07–0.09	**<0.001**
2012	0.17	0.15–0.19	**<0.001**	0.17	0.16–0.19	**<0.001**
Interactions						
W. Reporter × B. Target			3.06		2.54–3.70	**<0.001**
W. Reporter × Nuisance			0.73		0.60–0.89	**0.002**
Disadvantaged × B. Target			0.58		0.45–0.74	**<0.001**
Changing × B. Target			0.57		0.48–0.69	**<0.001**
Disadvantaged × Nuisance			0.98		0.75–1.28	0.891
Changing × Nuisance			1.16		0.95–1.42	0.140
Observations		39,090			39,090	
$\tau 2$		0.02			0.02	

Note: Bold indicated $p < 0.05$.

of arrest in 2011 and a small rebound in 2012. Model 3B introduces interactions based on our hypotheses. From this model, we see that arrest probabilities are much higher in incidents with a *White Reporter* and *Black Target* (OR = 3.06). On the other hand, they appear to be lower for *Nuisance Crimes* with a *White Reporter* (OR = 0.73), and in both *Disadvantaged* (OR = 0.58) and *Changing* neighborhoods (OR = 0.57) when a *Black Target* is present. Interestingly, the interaction between neighborhood type and *Nuisance* crimes in the probable cause model appears absent here. The interactive model is again a better fit to the data as indicated by significant ANOVA ($p < 0.001$).

Figure 3 depicts estimated probabilities of arrest with 95 percent confidence intervals stratified by the same covariates as before. The most striking feature of this plot is the substantially lower estimated probability of arrest for a *Black Target* when there is a *Black*

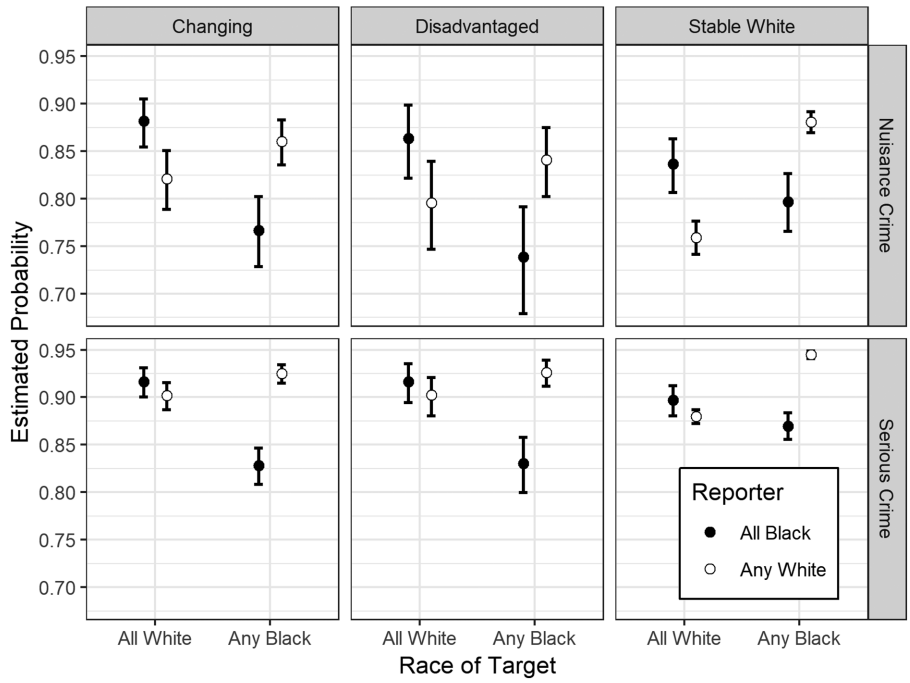

FIG. 3. Probability of arrest by reporter and target race, neighborhood, and crime type.

Reporter. Also interesting is the presence of heterophily in arrest probabilities for *Nuisance* crimes: Arrest probabilities are higher in incidents where reporter and target are of opposite race. Arrest probabilities for a *Black Target* are very high for serious crimes, and particularly so in stable white neighborhoods.

DISCUSSION

Findings from our probable cause and arrest models indicate that reactive police incidents in Seattle (1) have racialized implications for both reporters and targets, and (2) vary between types of neighborhoods in important ways. Our first set of hypotheses suggests that a finding of probable cause will be more likely for incidents with a black reporter or target, and less likely with white reporters, in particular white reporters in changing neighborhoods. Overall, we find some support for these proposed relationships, with the exception of nuisance crimes involving a white reporter.

Due to the assumed over-reporting of nuisance crimes by white individuals (as suggested by Schneider et al. 1976) and their increased trust in the police (Wu et al. 2009), we expect white reporters to be associated with lower probabilities of probable cause. Contrary to these expectations, we find that incidents including a white reporter and a nuisance crime are much *more* likely to feature probable cause. This finding is notable, as it suggests that the race of a reporter is consequential in the processing of these minor cases. While we cannot observe mechanisms, it is possible that white individuals may pro-

vide more comprehensive information about the situation to police, who, in turn, may have more evidence upon which to determine probable cause. Alternatively, police may take their complaints more seriously than those of black reporters for the same types of crime (Smith et al. 1984; Bobo and Johnson 2004).

As expected, we find that incidents involving black reporters and serious crimes have a higher likelihood of a probable cause; however, incidents with a black reporter and nuisance crime have a lower probability of probable cause. Bobo and Johnson (2004) find that only 35 percent of the black individuals they surveyed believed that their report would be taken seriously by the police (as compared to 60 percent of white respondents). It is possible that black individuals are more reluctant to contact the police and do so disproportionately in cases with stronger available evidence, which result in a higher likelihood of a probable cause finding. As suggested above, the decreased likelihood of a probable cause for nuisance crimes reported by a black individual may be due to the over-reporting of and stronger evidence provided for these types of cases by white individuals.

Figure 3 suggests that the likelihood of a probable cause finding is lower for nuisance crimes in changing neighborhoods, as compared to disadvantaged and stable white neighborhoods. Nuisance incidents in changing neighborhoods involving a white reporter have a higher estimated probability of probable cause (for both black and white targets) than similar cases with a black reporter. This may be partially explained by the fact that in these gentrifying areas, residential turnover may weaken the relationships and trust between neighbors (Guest et al. 2008); if white individuals are reluctant to informally resolve these types of problems with their black neighbors—due to greater social distance (Skogan 1986) or a perceived threat of violence (Sagar and Schofield 1980)—they may rely on contacting the police for even minor situations.

Our model also supports the hypothesis that incidents involving a black target are more likely to have a finding of probable cause. This finding is congruent with the broader body of literature on the increased risk for arrest for black individuals (Brown 2005; Kochel et al. 2011), increased levels of suspicion in black neighborhoods (Fagan and Davies 2000), and increased racial disparities in the outcomes of highly discretionary types of crimes (Ousey and Lee 2008). It is also possible that black individuals, who disproportionately experience poverty (Murnan and Park 2015:10; Seiler 2007) and homelessness in Seattle (Applied Survey Research 2017:11), are more frequently involved in nuisance crimes associated with poverty, such as trespassing.

Complimentary with prior findings that black individuals are more likely to be arrested in reactive policing incidents (Brown 2005), we find that once probable cause is established, black targets are generally more likely to be arrested than white targets. We also hypothesized that the increased likelihood of arrest in incidents involving a black target would be moderated by complainant race; in particular, incidents with a white reporter–black target pairing would have the highest likelihood of arrest. We find strong evidence for this hypothesis, supporting similar research from Brown (2005), Avakame et al. (1999), and Smith et al. (1984), who find that white victims experience higher clearance rates than black victims.

Serious incidents with a white reporter and black target that occur within a stable, white neighborhood have the highest expected probability of arrest, compared to all other contexts. It is possible that these types of incidents are rare and notable (Dunham et al. 2005) in highly segregated neighborhoods, garnishing higher levels of attention and

suspicion by reporters and police. The case of Henry Louis Gates, Jr., is a notable example of these types of incident. Gates, a Harvard professor living in Cambridge, Massachusetts, was reported to the police by his neighbor for a possible break-in after being locked out of his home and later arrested (Thompson 2009).

The lowest expected probability of an arrest outcome occurs for incidents with a black reporter, black target, taking place in a black neighborhood. This finding provides general support for our hypotheses and the notion that there may be underenforcement of serious crimes in these neighborhoods (Corsianos 2003). This result is particularly interesting considering that incidents involving black targets are more likely to have findings of probable cause; because our arrest models compare outcomes *after* probable cause has been found, the divergent findings suggest that neighborhood context may play a particularly important role worthy of further investigation.

It is important to note that this study faces a number of limitations related to selection and unobserved mechanisms. First, because we rely on official police records, we are unable to observe or comment on incidents that went unreported to police.

Consequently, we do not know whether variation in our outcomes is due to differential reporting in particular contexts or variation in the underlying rate of particular crimes (which is correlated with other incident and individual characteristics). Second, as we are unable to observe informal social control behavior, we cannot know if variation in reporting behavior is complemented by similar variation in informal control; it is possible that informal sanctioning takes the place of formal control where complaints are less likely or police choose not to pursue charges. Third, in a similar vein, we also do not know the motivations of reporters contacting the police or officers making discretionary decisions, and thus cannot adjudicate between competing mechanisms that may produce the observed disparities. Finally, while we focus our analyses on specific types of crime, adults, and on participants' race, several other important factors likely shape the outcome of these types of reactive police incidents. For example, we did not explore possible outcomes by age (e.g., juvenile targets) or gender (Brown 2005), where dynamics of power and threat may be more nuanced and interact with race and social context in a myriad of complicated ways. Nonetheless, even given these limitations, we feel that this study makes a significant contribution to the literature on race, neighborhoods, and formal social control, illuminating the consequential nature of reporter and target race, the ways reactive police incidents vary between different types of neighborhoods, and the role these contacts play in perpetuating persistent racial disparities in the criminal legal system.

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APPENDIX: SAMPLE AND SELECTION

This appendix discusses possible sources of selection bias due to sampling choices or missing data. When using police data some degree of selection bias is unavoidable due to the multistage discretionary process documented by general offense reports, which may also be inconsistently recorded by officers for unknown reasons; the generalizability of our later findings is limited by the degree to which these official police records accurately and systematically document incidents. As demographic data on reporters—particularly witnesses and complainants—is rarely available to researchers, we believe that these analyses are nonetheless important, so long as limitations are acknowledged. In our analyses, selection would be particularly problematic if police documentation of reporter and target race is correlated with neighborhood or incident characteristics of interest.

Figure 2 depicts the process by which the full population of police incidents was narrowed into our two focal samples: a Black/White Target Sample ($N = 52{,}044$) and a Black/White Suspect/Arrestee Sample ($N = 39{,}090$). It is notable that the largest declines in sample size occur due to removing incidents involving juveniles and nonfocal crimes and the absence of a reporter or target—whether because none exists, or they went unseen by any others involved—rather than values missing for individuals seen in the data. The actual absence of reporters or targets does not introduce selection issues as we are only interested in incidents that feature a reporter and a target observed by the reporter and/or officers.

The full sample contains a complete record of all incidents in the SPD RMS; however, our research questions are directed specifically at serious or nuisance criminal incidents involving adults within the city limits. We exclude incidents without focal crimes ($N = 251{,}691$), which are mainly noncriminal events (i.e., traffic stops) or criminal events likely to have unusual patterns of reporting or police responses. For example, shoplifting ($N = 19{,}231$) was omitted due to SPD, indicating that reporting is inflated due to insurance requirements (personal communication, September 5, 2018), and domestic violence ($N = 15{,}922$) was omitted due to mandatory arrest laws in Washington state (R.C.W. 10.99.030). Other omitted incidents include a wide range of noncriminal events such as mental health calls ($N = 10{,}724$), natural deaths ($N = 2{,}676$), and traffic collisions ($N = 27{,}034$). We then excluded 1,673 remaining focal crime incidents with only juveniles, and 2,224 incidents that occurred outside Seattle city limits—these incidents cannot be linked to Seattle neighborhood data and are likely to be unusual (e.g., involving other police agencies). These omissions result in the Focal Crime sample of 195,079 incidents. We are thus unable to generalize our findings to nonfocal crimes or juveniles, but we believe that our focal crimes are those of primary interest to researchers and poli-

cymakers. Patterns in probable cause and arrest for juveniles are worth examination but are outside the bounds of this study.

As our research questions focus on reactive police incidents—those initiated by reporters—we omit 23,494 incidents without a reporter (i.e., a victim, witness, or complainant). Of this reporter sample, we chose to limit our analysis to black or white reporters, omitting 41,271 incidents where all reporters are of unknown race and an additional 13,741 cases where reporters of known race are neither black nor white. Missing complainant race information occurs most frequently in auto- and truck-related thefts (70 percent of these incidents) and other thefts (24 percent). This narrowing of the sample raises possible concerns about selection. Model 5A in Table 5 depicts a multilevel logistic regression where the outcome is 1 if an incident with one or more reporters includes race data on at least one reporter, and 0 if reporter race data are missing. As can be seen, race data are most likely to be recorded for witnesses, followed by complainants. Race data are also more commonly recorded for nuisance crimes and slightly more likely to be recorded in changing neighborhoods. Together these findings indicate possible selection bias in estimates of the relationship between crime type and reporter type—a relationship driven primarily by thefts reported without direct police contact—and our outcomes of interest.

Our research questions focus on the associations between reporter and target race and incident outcomes. To facilitate this, our sample was further narrowed by removing 54,546 incidents without a target. Incidents with a reporter and no target are mainly those where a crime is believed to have occurred but neither a reporter nor police officer report observing a possible perpetrator. Exclusion of these events is only problematic if reporters or police selectively decline to indicate knowledge of a target (perhaps due to threat of retaliation); it is impossible, with our data, to know if this is the case. For targets existing in the data, only 3,485 are missing race/ethnicity information. Missing suspect/arrestee race data occur most frequently for building thefts, suspicious circumstances, and other thefts; however, fewer than 10 percent of these specific incident types have missing suspect/arrestee race information, leading us to believe that the omissions are idiosyncratic and unlikely to bias our results. Model 5B depicts a multilevel logistic regression where the outcome is 1 if an incident with a reporter and a target includes race information on at least one target, and 0 if target race data are missing.

This model indicates that race data are less likely to be recorded for subjects but—as one would expect—very likely to be recorded for arrestees and suspects; this may be a function of reporters being unable to identify the race of a target in certain situations. Target race data are also more reliably recorded when a witness is present. There also appears to be some systematic variation in target race recording across years, with these data recorded more frequently in 2008 and 2011. Overall, however, given the small number of missing values for target race, we believe that selection is unlikely to be a major issue for targets. The final analytical sample omits 4,274 incidents with only nonwhite and nonblack targets, and the arrest model subsample omits 12,954 subjects—individuals for whom no probable cause for a charge was found.

A last potential source of selectivity for the arrest model occurs within this Black/White Suspect/Arrestee Sample ($N = 39{,}090$): For individuals to be arrested, they must be physically located by police. It cannot be determined from SPD RMS data that, if any, individuals listed as suspects are those who would be arrested if police were able to locate them. This could introduce bias if there is a correlation between a covariate of interest (such

TABLE 4. Multilevel Logistic Regression with Neighborhood Context Measures

	Probable Cause			Arrest		
	Model 4A			Model 4B		
	OR	*CI*	*p*	*OR*	*CI*	*p*
Intercept	0.83	0.72–0.97	**0.018**	14.83	11.88–18.51	<0.001
White Reporter	0.87	0.78–0.98	**0.022**	0.82	0.70–0.97	**0.021**
Black Target	1.77	1.54–2.03	**<0.001**	0.77	0.64–0.93	**0.006**
Caller Type						
Complainant	–	–	–	–	–	–
Witness	1.10	1.00–1.20	**0.049**	0.98	0.86–1.11	0.726
Victim	1.79	1.66–1.93	**<0.001**	0.88	0.79–0.98	**0.021**
Reporter Count	1.24	1.20–1.27	**<0.001**	1.04	1.01–1.07	**0.018**
Target Count	1.43	1.38–1.48	**<0.001**	1.12	1.07–1.17	**<0.001**
Incident Crime Type						
Serious	–	–	–	–	–	–
Nuisance	0.43	0.37–0.50	**<0.001**	0.59	0.48–0.71	**<0.001**
Neighborhood Trajectory						
Stable White	–	–	–	–	–	–
Disadvantaged	0.87	0.73–1.05	0.145	1.53	1.17–1.99	**0.002**
Changing	0.91	0.77–1.06	0.232	1.57	1.25–1.97	**<0.001**
Neighborhood Context						
Percent Black	0.98	0.92–1.05	0.595	0.87	0.79–0.96	**0.004**
Percent Other	1.00	0.96–1.04	0.973	0.97	0.92–1.02	0.263
Conc. Disadvantage	1.04	0.99–1.09	0.120	1.07	1.01–1.15	**0.029**
Serious Crime Rate	1.08	1.04–1.13	**<0.001**	1.11	1.05–1.18	**0.001**
Year						
2008	–	–	–	–	–	–
2009	3.45	3.20–3.72	**<0.001**	0.70	0.63–0.77	**<0.001**
2010	3.22	2.95–3.51	**<0.001**	0.41	0.37–0.46	**<0.001**
2011	0.25	0.23–0.26	**<0.001**	0.08	0.07–0.09	**<0.001**
2012	1.62	1.50–1.75	**<0.001**	0.17	0.16–0.19	**<0.001**
Interactions						
W. Reporter × B. Target	1.11	0.97–1.28	0.134	3.05	2.53–3.68	**<0.001**
W. Reporter × Nuisance	1.59	1.37–1.84	**<0.001**	0.74	0.61–0.90	**0.002**
Disadvantaged × B. Target	1.15	0.96–1.37	0.132	0.58	0.46–0.74	**<0.001**
Changing × B. Target	1.12	0.98–1.28	0.088	0.58	0.48–0.69	**<0.001**
Disadvantaged × Nuisance	1.10	0.90–1.34	0.347	0.98	0.75–1.27	0.859
Changing × Nuisance	0.84	0.72–0.97	**0.016**	1.16	0.95–1.41	0.150
Observations		52,044			39,090	

Note: Bold indicated $p < 0.05$.

as target race) and the capability of police to locate and arrest a suspect. If, for instance, it is substantially harder for police to locate a black target, it would bias the coefficient for black target downward—proportionally, more black targets would be listed only as suspects rather than arrestees. Given the large positive magnitude of that coefficient in the arrest model, if this selection exists, it suggest one of two scenarios: (1) the black target coefficient is biased upward because it is harder to locate white targets—indicating a different form of disadvantage for black targets, or (2) the black target coefficient is biased downward because black targets are more difficult to locate, so the actual arrest probability for black targets found by police is even higher.

TABLE 5. Multilevel Logistic Regression of Known Race Data

	Known Reporter Race			Known Reporter Race		
	Model 5A			Model 5B		
	OR	*CI*	*p*	*OR*	*CI*	*p*
Intercept	2.23	2.10–2.36	**<0.001**	11.12	9.88–12.52	**<0.001**
Any Target	1.23	1.20–1.26	**<0.001**			
Reporter Type						
Complainant	–	–	–	–	–	–
Witness	2.26	2.09–2.44	**<0.001**	1.56	1.34–1.81	**<0.001**
Victim	1.18	1.13–1.23	**<0.001**	0.92	0.83–1.01	0.089
Subject				–	–	–
Suspect				1.76	1.59–1.95	**<0.001**
Arrestee				2.50	2.33–2.69	**<0.001**
Incident Crime Type						
Serious	–	–	–	–	–	–
Nuisance	2.00	1.91–2.09	**<0.001**	1.19	1.08–1.31	**<0.001**
Neighborhood Trajectory						
Stable White	–	–	–	–	–	–
Disadvantaged	1.05	0.95–1.17	0.327	1.02	0.92–1.14	0.693
Changing	1.10	1.03–1.18	**0.003**	1.08	1.00–1.16	0.065
Serious Crime Rate	1.02	0.98–1.06	0.394	1.01	0.98–1.04	0.395
Year						
2008	–	–	–	–	–	–
2009	0.85	0.83–0.88	**<0.001**	0.62	0.57–0.68	**<0.001**
2010	0.85	0.82–0.88	**<0.001**	0.65	0.59–0.71	**<0.001**
2011	1.06	1.02–1.10	**0.001**	0.84	0.77–0.92	**<0.001**
2012	1.10	1.06–1.14	**<0.001**	0.62	0.56–0.69	**<0.001**
Observations		169,361			85,203	
Log-Likelihood		−92,443	−19,064			

Note: Bold indicated $p < 0.05$.

Arrest selection may be similar for other covariates: For example, the negative coefficients for arrest on both disadvantaged and changing neighborhoods may, in part, indicate greater difficulty locating targets rather than simply a higher likelihood of arrest for those found. It is impossible to separate out this source of bias but, given the above, we feel that it is unlikely to severely compromise our main results. Overall, we believe that our results are likely to be generalizable for our focal crimes—though less reliably for thefts—to other locales where neighborhood contexts, reporter behavior, and discretionary decisions by police are similar.

APPENDIX: CURRENT CONTEXT MODELS

Table 4 depicts the interactive models from Tables 2 and 3 with added current context variables—the 2010 values for the measures used to determine neighborhood trajectories. These measures are *Percent Black*, *Percent Other* (nonblack, nonwhite), and *Concentrated Disadvantage*. All three are standardized, mean zero, and in standard deviation units. An insignificant ANOVA test ($p = 0.371$) indicates that model 4A is not an improvement over the model without current context measures: The current context variables

exhibit no direct relationships at all. The ANOVA for model 4B indicates that it somewhat improves over the model without current context variables ($p = 0.021$). In this model, *Percent Black* negatively predicts arrest (OR = 0.87) and *Concentrated Disadvantage* predicts more arrests (OR = 1.07). Results in both models are substantively identical to the models without current context variables, except where some trajectory effects are mildly strengthened in model 4B. As the omission of these variables results in no notable model changes and reduces the number of parameters, we prefer the more parsimonious models.

Notes

[1]Stephon Clark was killed by an officer responding to a 911 caller who reported a suspected car prowling (Winton et al. 2018), Gregory Hill was killed in his home by an officer after a neighbor filed a noise complaint (Lockhart 2018), and Tamir Rice was killed by police responding to a report of a person in a park with a "probably fake" gun (Los Angeles Times Staff 2014).

[2]Other possible incident roles included bicyclist, pedestrian, driver, missing person, owner, passenger, property finder, victim/arrestee, and victim/suspect. Incidents that only include individuals in these roles (i.e., incidents without a complainant, witness, or victim) were excluded.

[3]Some cases in our data may be open; however, there is no way to determine if this is the case with the data we were provided. SPD has indicated that more recent cases (2012) are more likely to be ongoing (personal communication, September 5, 2018).

[4]Measurements from the 10 contiguous tracts bordering Seattle were used in calculating trajectories to capture spatial contexts.

[5]Mean posterior probabilities of class membership exceed 90% for all three categories.

[6]A total of 67.1% of incidents in the Black/White Target Sample feature only one reporter, and 89.1% feature two or fewer. A total of 64.1% feature only one target, and 88.9% feature two or fewer. And 4.2% feature black and white reporters, and 13.6% feature black and white targets.

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