

LAW ENFORCEMENT LEADERS AND THE RACIAL COMPOSITION OF ARRESTS

GEORGE BULMAN*

This paper introduces a novel avenue of study for understanding the mechanisms behind racial discrimination in law enforcement. I exploit a new 25-year panel history of the race of every U.S. sheriff to shed light on the potentially important role of managers who make hiring decisions and set departmental priorities. Comparing agencies that experience racial transitions to agencies with overlapping jurisdictions reveals that the ratio of Black-to-White arrests is significantly higher under White sheriffs. Heterogeneity analysis indicates that the effects are driven by arrests for less-serious offenses and by targeting Black crime types. (JEL J15, K42, M54, H76)

I. INTRODUCTION

There is a great deal of research and policy interest in the role of race in policing. While an extensive economics literature examines discrimination among officers at the incident level, little is known about the potentially important role of law enforcement leaders. These leaders make hiring decisions, provide oversight, and establish policing priorities, and thus may affect discrimination in ways that are not captured by incident-level analyses. To shed light on this question, I estimate the effect of the race of county sheriffs on the racial composition of arrests made by their offices.¹ Sheriffs are a compelling institution to examine as their deputies account for one-quarter of all law

enforcement personnel in the United States, state constitutions endow them with a great deal of autonomy, and Black sheriffs are significantly underrepresented.

To conduct the analysis, I construct a new panel data set with the race of every sheriff in each of 3,100 counties between 1991 and 2015. The sudden nature of transitions between Black and White sheriffs over time lends itself to credible, within-agency identification. In a standard difference-in-differences design, sheriffs' offices that experience transitions can be compared to those that did not but that serve counties with similar baseline characteristics. Alternatively, the sample can be restricted to affected sheriffs' offices to exploit the staggered timing of transitions across counties. However, these approaches are subject to potential endogeneity issues. Years during which a county has a Black sheriff may be characterized by differences in demographic composition, economic conditions, the status of Blacks, or unobservable factors that affect the crime rate. To address this issue, I exploit the overlapping jurisdictions of local law enforcement agencies to create within-county counterfactuals for contemporaneous changes in the composition of crimes. Jurisdictions are overlapping in two important ways.

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Bulman: Assistant Professor, Department of Economics, University of California, Santa Cruz, CA 95064. Phone 650-521-1603, Fax 831-459-5077, E-mail gbulman@ucsc.edu

1. The negative economic effects of arrests and subsequent incarceration, especially for minorities, are well-documented in the literature. In addition to the mechanical loss of income associated with incarceration, research has examined the effect of arrests and incarceration on subsequent employment (e.g., Grogger 1992, 1995; Holzer, Offner, and Sorensen 2005; Kling 2006; Waldfogel 1994; Western, Kling, and Weiman 2001) and educational attainment (e.g., Aizer and Doyle Jr 2015; Hjalmarsson 2008).

ABBREVIATIONS

COPS: Community Oriented Policing Services
 DUI: Driving Under the Influence
 FBI: Federal Bureau of Investigation
 UCR: Uniform Crime Reporting
 U.S. DOJ: U.S. Department of Justice

First, all residents of a county, including those residing in areas served by a municipal police department, play an equal role in selecting the county sheriff. Thus, in expectation, unobserved characteristics of a population that selects a sheriff of a given race are equally represented across all residents. Second, sheriffs typically have jurisdiction throughout a county, so there is overlap in the populations served by police departments.²

Sheriffs are a disproportionately White institution, as only 4% of counties had a Black sheriff in any year between 1991 and 2015.³ Nonetheless, the 25-year panel history reveals 102 counties that experienced at least one transition between a White and a Black sheriff. These discrete changes in leadership provide sufficient variation to generate precise estimates, and there is no evidence that years during which there is a Black sheriff are characterized by differences in demographics or economic conditions. Each law enforcement agency is linked to Federal Bureau of Investigation (FBI) Uniform Crime Reporting (UCR) Program arrest records by race and crime type. The estimates reveal that years during which a county has a Black rather than a White sheriff are associated with a reduction in the arrest rate of Blacks relative to Whites of 6% to 8%. These results are similar across specifications that use within-state-matched sheriffs, within-county local law enforcement agencies, or that restrict attention to treated sheriffs' offices. Further, the magnitudes are robust to the inclusion of demographic and economic controls, allowing for differential trends across agencies, and to measure changes in Black arrests using the arrest rate, the natural log of arrests, and the ratio of arrests.

Heterogeneity analysis reveals that the effects are driven primarily by less-serious crimes for which there may be greater discretion on the part of law enforcement, and by smaller offices in rural counties where a sheriff may have greater control over hiring and policing strategies.

To shed light on the mechanism by which law enforcement leaders shape the racial composition of arrests, I note that discrimination can occur at the incident level and through which crimes are targeted. To highlight the potential importance of targeting, I replicate the design after classifying crimes as being predominantly Black or White based on who is typically arrested for the offense. The estimates reveal a disproportionately large reduction in arrests of Blacks for predominantly Black crime types. Perhaps more telling is that there is also a reduction in arrests of Whites for predominantly Black crime types. Thus, the analysis reveals that much of the change in the racial composition of arrests is driven by which crime types are targeted, suggesting that incident-level analyses may overlook the potential for larger changes that stem from higher-level policing strategies.

The paper contributes to the literature in several ways. First, it is unique in focusing on the role that law enforcement leaders have in shaping law enforcement outcomes. Second, to account for changes in unobserved characteristics of counties that experience sheriff race transitions, a novel control group is constructed using within-county local law enforcement agencies. And third, a method is developed to identify if leaders affect the racial composition of arrests by targeting different types of crimes. The estimates are consistent with studies that find that the racial composition of a police force affects the racial composition of arrests.⁴ For example, Donohue III and Levitt (2001) find that an increase in the proportion of White officers in metropolitan police departments results in more arrests of minorities. McCrary (2007) exploits court mandated increases in the fraction of new officers who are Black and finds an effect on the racial composition of arrests. A large literature has focused on the extent to which police officers exhibit taste-based or statistical discrimination at the incident level when they make decisions to stop and search vehicles, enforce driving infractions, stop and

2. This provides compelling identification in a context in which the data necessary to implement a regression discontinuity design is rarely available. Specifically, data on the results of county sheriff elections are poorly maintained relative to elections for more prominent positions. Further, data on the race of candidates for sheriff who did not win are rarely maintained.

3. Among counties that are evenly split between Black and White residents (e.g., those with between 40% and 60% Black residents), only 19% of sheriffs are Black. Further, even in counties that have a Black majority, 61% of sheriffs are White.

4. A rich literature estimates the effects of police force size: Levitt (1997) exploits surges in officers during election years, Di Tella and Schargrodsky (2004), Klick and Tabarrok (2005), and Draca, Machin, and Witt (2011) consider changes in policing due to terror threats, Evans and Owens (2007) estimate the effects of federal community oriented policing services (COPS) grants, Mello (2018) exploits a change in the COPS program to implement a regression discontinuity design, and Cook and MacDonald (2011) examine the effect of private security on crime reduction in business districts. For a review of earlier empirical work, see, for example, Levitt and Miles (2006).

frisk pedestrians, or use force.⁵ The estimates in this study also relate to a literature that considers the effects of managers and political leaders on firm and government policies and performance.⁶

The paper is organized as follows. Section II introduces the role of sheriffs in law enforcement, the construction of the panel data set of sheriff race, and the arrest data and county characteristics used to measure the racial composition of arrests. Section III discusses the primary empirical strategy and tests of the validity of the design. Section IV presents the baseline results and heterogeneity analyses. Section V tests crime targeting as a potential mechanism. Section VI concludes and discusses natural extensions.

II. BACKGROUND AND DATA

Sheriffs are mandated by most state constitutions and serve in nearly all of the more than 3,100 counties and parishes in the United States. This section describes the role of sheriffs in law enforcement, how the 25-year panel history of sheriffs' races was constructed, and the data used to measure changes in arrest rates.

A. Sheriff Responsibilities and Autonomy

Most states have laws stipulating that sheriffs are the chief law enforcement officers of each county and have jurisdiction in municipalities as well as unincorporated areas.⁷ In practice, sheriffs frequently provide primary patrol in

unincorporated areas and incorporated areas that contract for their services instead of having their own police departments. In a number of states, sheriffs have additional responsibilities such as operating the county jail.

Unlike police chiefs who oversee a department within local government, sheriffs have independent offices with autonomy in hiring, allocating resources, and establishing priorities in accordance with each state's laws. Indeed, a primary justification for mandating that counties have a sheriff is to create a check for city officials who otherwise supervise local police departments. Removal of a sheriff typically requires either an election or action by a superior court judge. The disconnect between sheriffs and local leaders aids in the interpretation of the estimates in this study, as transitions in the race of the sheriff are not a function of changes in the race or priorities of mayors or county commissioners. Perhaps the most complicated aspect of sheriffs' offices is the manner in which they are funded. Sheriffs' budgets primarily rely on county taxes and must be approved by commissioners, requiring an iterative process of requests, appeals, and approvals. Appeals that cannot be settled at the local level may be escalated for arbitration by state governors. Sheriffs' offices in many states derive additional funding from the collection of fees and fines (e.g., for evictions, writs, and levies), and from contracted law enforcement patrol services provided to municipalities.

B. Sheriff Race Transitions

To conduct the analysis, I construct a 25-year panel data set of the race of every county sheriff in the country. This is done using publicly available photo directories published by state sheriffs' associations. State directories are supplemented with searches of archived news articles to verify the years served by each Black sheriff. In some cases, one or more Black sheriffs served continuously in a county during the sample period and thus there is no transition.⁸ The data reveal that sheriffs are predominantly White, with White sheriffs outnumbering Black sheriffs even in counties with a majority of Black residents. As shown in Figure 1, the probability of having a Black sheriff is strongly increasing

5. For examples of the stop and search literature, see Knowles, Persico, and Todd (2001), Dharmapala and Ross (2004), Hernandez-Murillo and Knowles (2004), Anwar and Fang (2006), Grogger and Ridgeway (2006), Persico and Todd (2006), Close and Mason (2007), Antonovics and Knight (2009), Sanga (2009), and Horraine and Rohlin (2016). Incident-level evaluations of driving infractions include Anbarcia and Leeb (2014), Horn, McCluskey, and Mittelhammer (2014), and West (2018). Gelman, Fagan, and Kiss (2007) consider the effect of stop and frisk policies, while Fryer Jr. (2018) examines the use of force by police officers.

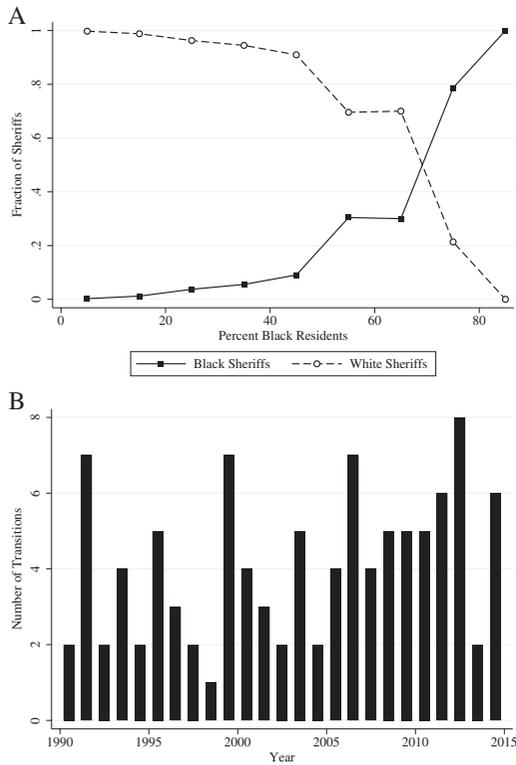
6. Studies have considered the theoretical and empirical effects of manager quality and characteristics on the priorities of private firms (e.g., Bertrand and Schoar 2003; Rotemberg and Saloner 2000; Van den Steen 2005), of Black managers on hiring (e.g., Giuliano, Levine, and Leonard 2009), and of Black mayors on hiring and local policies (e.g., Hopkins and McCabe 2012; Nye, Rainer, and Stratmann 2014).

7. Several states either do not have sheriffs or have sheriffs whose responsibilities are restricted to functions other than regular law enforcement patrol, including Alaska, Connecticut, Delaware, DC, Hawaii, Massachusetts, Pennsylvania, and Rhode Island. Similarly, sheriffs for counties located in some cities primarily perform court functions rather than patrol.

8. The importance of accurately measuring law enforcement as an explanatory variable is highlighted by Chalfin and McCrary (2018), who find that sworn officer levels reported in the UCR data are measured with substantial error that attenuates estimates.

FIGURE 1

County Demographics, Black Sheriffs, and Race Transitions: 1991–2015



Notes: The figure on the top presents the fraction of sheriffs who are Black or White as a function of the fraction of county residents who are Black. The figure on the bottom presents the number of counties that experience a transition from having a White sheriff to a Black sheriff in each year. Counties that experience multiple White to Black transitions are included multiple times. The panel history of Black sheriffs was constructed from state websites and databases as well as archived newspaper reports. Data on county demographics come from the U.S. Census Bureau.

in the fraction of Black residents, but they only become the majority in counties that have 70% or more Black residents.

The panel reveals 126 counties had at least one Black sheriff between 1991 and 2015 and, more importantly, 102 counties that experienced at least one transition between a Black and White sheriff. These transitions are spread over the sample period as shown in Figure 1 and across states as shown in Table 1, with the majority occurring in the south.⁹ The demographics of

9. Though there were a number of Black sheriffs during Reconstruction, this was followed by a period with essentially

counties that experience sheriff race transitions are quite stable. Among counties that transition from a White sheriff to a Black sheriff, the fraction of Black residents increased from 41% to 44% over 25 years, while counties with the same baseline racial composition but no transition saw an increase from 41% to 43%.

C. Arrests and Demographic Data

The panel history of sheriffs is linked to agency-level annual arrest data from the FBI UCR Program (U.S. Department of Justice [U.S. DOJ], Federal Bureau of Investigation 1991).¹⁰ Annual arrest totals are reported by crime type, whether the arrestee is an adult or youth, and whether the arrestee is Asian, American Indian, Black, or White. The FBI classifies the most serious crimes as Part 1 offenses (e.g., murder, assault, burglary) and less-serious crimes as Part 2 offenses (e.g., drug possession, driving under the influence [DUI], fraud) as shown in Table 2.¹¹ This provides a natural distinction for estimating the effect of sheriff transitions on arrests for crimes for which there is likely to be more or less discretion about whether or not an arrest is pursued. Each agency is also linked to data on officer employment levels collected by the FBI.¹²

no Black sheriffs until the late 1960s and the Civil Rights Movement (Foner 1982; Moore 1997). Increases after that time, as evident in current levels, have been gradual. The underrepresentation of Blacks as sheriffs, and as local political leaders more broadly, may be due to various factors, including White voting blocs, lower rates of voter registration and turnout among Blacks, the costs associated with running for office, and the small fraction of Blacks accruing the experience necessary to be a viable candidate (Bullock III 1975, 1984; Hajnal 2009; Moore 1997; Shah 2014).

10. Note that there are two FBI UCR data sets that report arrests by race. One is monthly while the other is annual. An examination of these sources reveals that the annual data is less complete, with data missing for some agencies in some years that are included in the monthly reports. Thus the analysis is based on the monthly data reports aggregated to the yearly level. Not every law enforcement agency reports arrest data in every year. Among sheriffs' offices that ever report arrest data, the average rate of reporting is 22.4 years out of 25 years.

11. Arrests for crimes that are not classified appear to be problematic in the data. For example, reporting varies dramatically from year-to-year and has within-county variance that is double that of all other offenses. Thus the baseline estimates are based on arrest totals that exclude unclassified crimes, and the effect of including them is examined as a robustness check.

12. Data on the racial composition of officers is collected once every 3 years by the U.S. Department of Justice in the Law Enforcement Management and Administrative Statistics survey. Unfortunately, only law enforcement offices with at least 100 sworn officers are included in each wave, resulting in data for only 15 sheriffs' offices that experienced a race transition.

TABLE 1
Counties with Black Sheriffs and Race Transitions between 1991 and 2015

State	Total Counties	Black Sheriff	Transitions	State	Total Counties	Black Sheriff	Transitions
Alabama	67	10	6	Mississippi	82	19	11
Arkansas	75	4	4	New Jersey	21	1	1
Florida	67	3	3	New York	62	1	1
Georgia	159	19	19	North Carolina	100	17	14
Illinois	102	3	3	Ohio	88	2	2
Indiana	92	2	2	South Carolina	46	10	7
Louisiana	64	5	5	Tennessee	95	1	1
Maryland	24	4	3	Virginia	133	21	16
Massachusetts	14	2	2	Wisconsin	72	1	1
Minnesota	87	1	1	Total	1,450	126	102

Notes: This table presents the number of counties in each state, the number of counties that ever had a Black sheriff between 1991 and 2015, and the number of sheriff race transitions in each county during this period. States that did not have a county with a sheriff race transition are excluded from this table and the empirical analysis. The panel history of Black sheriffs was constructed from state websites and databases as well as archived newspaper reports.

TABLE 2
Distribution of Arrests: Part 1 and Part 2 Crimes

Part 1 Crimes	Percent	Part 2 Crimes	Percent
Assault	14.49	Drugs—sale, possession	15.96
Larceny—theft	8.93	DUI	14.27
Aggravated assault	5.64	Fraud	7.16
Burglary	4.25	Drunkenness	5.26
Motor vehicle theft	1.20	Liquor laws	5.08
Robbery	0.74	Disorderly conduct	4.29
Forcible rape	0.36	Offenses against family	3.53
Murder and manslaughter	0.23	Vandalism	2.63
Arson	0.20	Weapons crimes	1.72
		Stolen property crimes	1.31
		Forgery and counterfeiting	1.14
		Sex offenses	1.07
		Prostitution and vice	0.18
		Embezzlement	0.16
		Vagrancy	0.14
		Gambling	0.07

Notes: This table presents a list of Part 1 and Part 2 crimes as classified by the FBI's UCR Program. Part 1 crimes are considered more serious and Part 2 crimes are considered less serious. Each local law enforcement agency reports data on the number of arrests for crimes of each type. Percent refers to the percent of all arrests that are made for each crime type, with approximately 30% of arrests occurring for Part 1 crimes and 70% for Part 2 crimes.

Annual estimates of county population by race are merged from Census data in order to construct the arrest rate per 1,000 Black residents and arrests of Whites per 1,000 White residents. Alternative outcome measures presented in the analysis include the natural log of arrests of Blacks and the ratio of Black arrests to total arrests. I also examine whether the race of a sheriff affects the type of crimes that are pursued for arrests. To do this, crimes are ranked based on the fraction of total arrestees for that crime that are Black, revealing which crimes are “predominantly Black” and which are not. The details of this classification are discussed in Section V.

Census data are also used to construct county-by-year-level demographic controls, including the total population, the fraction of residents of each race, and average household income. Table 3 presents summary statistics for counties that did and did not experience a race transition. The primary factor unique to affected counties is racial composition: counties that experienced a sheriff race transition are 43% Black and 54% White, while the average across all counties in the same states is 22% Black and 76% White. Small counties are also overrepresented, as 44% of counties with a transition had populations of less than 25,000, exceeding the average of 34%. However, counties with transitions are similar to

TABLE 3
Summary Statistics for All Counties and Transition Counties: 1991–2015

	All Counties		Transition Counties	
	Mean (1)	Standard Deviation (2)	Mean (3)	Standard Deviation (4)
County sheriffs				
Fraction years with Black sheriff	0.06	0.24	0.42	0.49
Average number officers	68.00	99.29	74.51	127.44
Average civilian employees	37.81	76.46	36.07	70.21
County population				
Population 50,000 or more	0.43	0.49	0.36	0.48
Population 25,000 to 50,000	0.24	0.42	0.21	0.40
Population 25,000 or less	0.34	0.47	0.44	0.50
Average population	91,588	154,882	96,089	198,720
County demographics				
American Indian	0.01	0.02	0.02	0.05
Asian	0.01	0.02	0.01	0.02
Black	0.22	0.18	0.43	0.17
White	0.76	0.18	0.54	0.17
Average household income (2,000\$)	26,239	5,437	26,434	6,408
Arrests per 1,000 Black residents				
All crimes	22.07	20.26	22.56	17.02
Part 1 crimes	8.76	9.04	10.21	8.58
Part 2 crimes	13.32	13.45	12.35	10.35
Arrests per 1,000 White residents				
All crimes	11.27	8.52	11.76	8.47
Part 1 crimes	4.21	3.36	5.08	4.30
Part 2 crimes	7.06	6.15	6.68	5.37

Notes: This table presents summary statistics about county sheriffs' offices, population, racial composition, and arrests between 1991 and 2015. Columns 1 and 2 present summary statistics for all counties in states affected by at least one sheriff race transition, while columns 3 and 4 restrict attention to counties that experience a transition. The panel history of Black sheriffs was constructed from state websites and databases as well as archived newspaper reports. Data on county populations and demographics comes from the U.S. Census Bureau, Population Division. Data on county earnings comes from the U.S. Bureau of Labor Statistics. Data on agency arrests by race and crime type is from the FBI's UCR Program.

other counties in terms of average income and the Black and White arrest rates. The arrest rates for sheriffs' offices are about 22 arrests of Blacks per 1,000 Black residents and 11 arrests of Whites per 1,000 White residents. This 2-to-1 ratio of Black-to-White arrest rates is nearly identical to the national average for sheriffs, but is lower than the 2.6-to-1 average across all law enforcement agencies and the 3.5-to-1 incarceration ratio (U.S. DOJ 2018).¹³

III. EMPIRICAL STRATEGY

This section describes the empirical strategy used to estimate the effect of sheriff race on

13. The lower Black-to-White arrest rate for sheriffs is likely to stem from the fact that their offices are generally not the primary law enforcement agencies for towns and cities, which is where a high fraction of the Black population lives. The high rate of incarceration for Blacks is driven in part by the higher rate of Black arrests for serious and violent crimes. Specifically, the Black arrest rates for serious and violent crimes are 3.6 and 4.0 times higher than for Whites, respectively.

the relative arrest rate of Blacks and Whites. I introduce approaches to selecting a control group from among within-state sheriffs, within-county local law enforcement agencies, and by restricting attention to affected sheriffs' offices that experience race transitions in different years.

A. Baseline Specification

The outcome of interest is the relative arrest rate of Blacks and Whites, and identification is based on within-agency variation over time in having a Black or White sheriff. Examining the effect of the race of law enforcement leaders has the empirical advantage that the changes are sudden, easy to measure accurately, and some counties experience multiple transitions.¹⁴ For example, Hardeman County in Tennessee had a Black sheriff from 1978 to 1994, a White sheriff from 1995 to 2001, a Black sheriff from 2002

14. Draca, Machin, and Witt (2011) highlight the importance of a significant and well-measured law enforcement shock for generating accurate and relevant point estimates.

to 2010, and a White sheriff from 2011 to 2015. Further, sheriffs have a great deal of autonomy in hiring deputies and shaping policing strategies relative to police chiefs who answer to mayors.

The baseline specification estimates the effect of a Black sheriff on the Black arrest rate.

$$(1) \quad \text{ArrestRate}_{a,c,y}^{\text{Black}} = \alpha_a + \alpha_y + \delta X_{c,y} \\ + \gamma \text{ArrestRate}_{a,c,y}^{\text{White}} + \beta \text{BlackSheriff}_{a,y} \\ + \varepsilon_{a,c,y}.$$

The indicator for having a Black sheriff ($\text{BlackSheriff}_{a,y}$) in a given year varies over time for each agency that experiences a transition. The coefficient of interest (β) represents the change in the Black arrest rate when there is a Black sheriff. Estimates are based on within-agency variation over time through the inclusion of agency fixed effects (α_a). Year fixed effects (α_y) account for changes in the Black arrest rate from year-to-year and depend on the control agencies. The estimates are presented with and without including county-by-year population, racial composition, and average income ($X_{c,y}$).¹⁵ Controlling for the White arrest rate for the same law enforcement agency accounts for changes in officer staffing levels and local crime trends that affect both Blacks and Whites.¹⁶ The standard errors are estimated using two-way clustering at the county and year levels in order to account for correlation in errors within counties over time and within years across counties.

In the ideal scenario, the researcher would have data on each crime committed, the characteristics of the crimes, the number of police interactions with potential suspects, and arrests for each subgroup of the population. This would allow a direct measure of, for example, the ratio of arrests per crime, police-suspect interactions per crime, and arrests per police interaction. In practice, complete information on crimes committed and their characteristics is inherently unobservable for all but the most serious offenses, and FBI UCR data do not include each police

15. A number of studies have examined the relationship between socioeconomic factors and crime (e.g., Burdett, Lagos, and Wright 2004; Lochner 2004), highlighting the potential benefits of including controls for generating more precise and less biased estimates.

16. Note that the relative magnitude of the Black and White arrest rate varies across counties, which reduces the predictive power of the White arrest rate in this specification. To address this issue, the White arrest rate is scaled at the agency level to be equal, on average during the sample period, to the Black arrest rate.

interaction. Because of these limitations, much of the literature focuses on methods of identifying animus and statistical discrimination at the interaction level in the absence of data on the underlying nature of crimes committed.¹⁷ This study focuses on aggregate changes in the arrest rates of Blacks and Whites over time and develops methods of selecting control groups to account for potential changes in the underlying crime rate. Using aggregate arrest data in this manner will reflect both changes in arrests per police-suspect interaction and changes in the number of police-suspect interactions that occur due to the types of crimes that are targeted for enforcement.

The primary outcome of interest is the annual number of arrests of Black people per 1,000 Black residents by each county sheriff's office. In addition to the arrest rate, I present two alternative methods of measuring changes in the composition of arrests. The first is the natural log of Black arrests while controlling for the natural log of White arrests. This measures the percent change in Black arrests and gives relatively less weight to agencies with high arrest rates. The second is the ratio of Black arrests to total arrests, which mechanically accounts for changes in arrest rates that are common to Blacks and Whites.¹⁸

Several dimensions of heterogeneity are considered that shed light on the underlying mechanisms and provide natural tests of the validity of the design. First, I examine if Black-to-White transitions generate estimates that are similar to those generated by White-to-Black transitions. This reveals if there are asymmetric effects and provides an indirect test of whether the results

17. One strand of this literature uses aggregate data to conduct outcome tests by which discrimination is inferred from differential "success" rates for stops and searches of vehicles or individuals. Outcome tests were proposed by Becker (1957), while the seminal application to vehicle searches was introduced by Knowles, Persico, and Todd (2001). A substantial body of research has expanded this approach on a number of dimensions, including differentiating between Black and White officers and stops made during daylight and nighttime hours (e.g., Antonovics and Knight 2009; Anwar and Fang 2006; Close and Mason 2007; Dharmapala and Ross 2004; Grogger and Ridgeway 2006; Hernandez-Murillo and Knowles 2004; Horn, McCluskey, and Mittelhammer 2014; Horrow and Rohlin 2016; Persico and Todd 2006; Sanga 2009). Another strand of the literature attempts to isolate outcomes for Blacks and Whites involved in what appear to be identical police stops. For recent examples of this approach, see Anbarcia and Leeb (2014), Fryer Jr. (2018), and West (2018).

18. Section VII in Appendix S1 presents the specifications used for these alternative measures, their potential shortcomings, and the resulting estimates.

are driven by a downward trend in the Black arrest rate common to all transition counties. Second, the specification is replicated separately for crimes that are classified as serious (Part 1) and less serious (Part 2). This reveals if sheriffs have a larger effect on the composition of arrests when there is greater opportunity for discretion. Finally, the sample is split into counties with sheriffs' offices of differing size, as sheriffs with fewer deputies may have greater power to determine who is hired and which crimes are targeted for arrests.

B. *Alternative Control Groups*

The primary challenge to identification is that years during which a county has a Black sheriff may have relatively lower Black arrest rates due to changes in unobservable factors, such as the social standing of Blacks in the community. This section outlines potential methods of selecting law enforcement agencies to act as controls that may accurately capture counterfactual changes in the racial composition of arrests.

A standard approach to constructing a control group is to select sheriffs' offices that did not experience a transition but that serve similar counties. Each sheriff's office is assigned a propensity to experience a transition based on baseline county population, demographics, average income, and the office's ratio of Black to White arrests. In practice, Black sheriffs serve almost exclusively in counties with a high fraction of Black residents and this is the dominant predictor of experiencing a transition. Baseline results are presented for matching weights based on an Epanechnikov kernel, which results in transition and control counties that are similar in terms of sociodemographic characteristics and preexisting trends in the crime rate.¹⁹ Matching to within-state sheriffs' offices accounts for changes in Black arrest rates that are common throughout the state, but may not account for relevant changes in unobservable characteristics of counties that switch between a Black and a White sheriff, such as the status of Black residents.

The overlapping jurisdictions of local law enforcement in the United States provide a unique opportunity to account for the unobservable characteristics of counties that experience transitions. Specifically, counties served by sheriffs are also served by police departments with

jurisdiction in individual cities and towns. As a result, the population that selects a sheriff is also served by, in most cases, multiple municipal police departments.²⁰ Aggregating police department arrest data at the county level (excluding the sheriff's office) provides a counterfactual measure of contemporaneous changes in the underlying composition of crimes within the population of interest.

Local law enforcement agency arrest rates are a potentially desirable control for changes driven by unobservable characteristics of the county population for two reasons. First, since all residents of a county are equally responsible for selecting the sheriff, any unobservable characteristics of the population that makes them inclined to select a Black sheriff should be equally evident among those served primarily by the sheriff or a police department. Second, there is significant overlap in the populations served by sheriffs and municipal police departments. This stems from the fact that sheriffs provide law enforcement within many municipalities and because residents frequently pass in and out of the small jurisdictions served by local law enforcement.²¹ A potential shortcoming of this approach occurs if sheriffs' offices significantly crowd out or coordinate with local law enforcement. Crowd out would inflate estimated effects, while coordination would attenuate effects.²² Likewise, if changes in the race of the sheriff are positively correlated with changes in the race

20. Nationally, sheriffs account for approximately 24% of all law enforcement officers, while municipal police departments account for 60% (where the latter is largely driven by large cities). In counties that experience a change in sheriff race, there are an average of four police departments, and sheriffs' offices and police departments each account for about half of sworn officers.

21. This approach will at least partially account for any endogenous changes in the crimes that are committed or reported in response to the race of the sheriff. As noted in Donohue III and Levitt (2001), the number of crimes committed by Blacks and Whites could change as a result of changes in law enforcement. Alternatively, residents may be more or less likely to report crimes as a function of the race of law enforcement officers (Iyer et al. 2012).

22. Specifically, if a Black sheriff pursuing fewer Black arrests results in an increase in Black arrests by local police

departments, then the estimated reduction in Black arrests will be overstated. Conversely, if sheriffs' offices target crimes in coordination with local police departments (e.g., through a joint task force), then the change in Black arrests would be positively correlated, and the estimates would understate the reduction. Empirically, there is a strong correlation in total arrests between sheriff's office and local law enforcement over time, but not in the types of crimes that are pursued. This suggests that the bias generated by crowd out and coordination may be limited.

19. Estimates based on nearest neighbor matching, radius caliper matching, and a Gaussian kernel are presented in Section VIII in Appendix S1.

of local law enforcement leaders, it would also attenuate the estimates. Nonetheless, making within-population comparisons represents a valuable opportunity to account for unobservable changes in the underlying crime rate.

A third empirical approach is to restrict the sample to sheriffs' offices that experienced a transition. Identification is possible due to differences in the timing of when transitions between White and Black sheriffs took place. This approach is appealing to the extent that affected counties share unobserved characteristics that are correlated with trends in the composition of arrests. For example, exploiting differential timing will account for long-term trends in the status of Blacks that are common to counties that experience transitions in the race of sheriffs. This approach will not, however, provide an adequate counterfactual if sheriff race transitions stem from very rapid changes in unobservables.

C. Design Validity

Estimates are presented for counterfactuals based on within-state, within-county, and within-treated agency control groups, with each addressing different potential concerns. For example, estimates generated by within-county local law enforcement will reveal bias generated by unobserved changes in the status of Blacks and Whites in transition counties, while within-state matched sheriffs will account for bias due to unobserved factors that are common to counties with a high fraction of Black residents. If each approach produces similar estimates, then it provides evidence that the effects are driven by changes within the affected sheriffs' offices.

The fundamental identification assumption is that control agencies experience changes in arrest rates that parallel what would have been experienced by affected sheriffs' offices in the absence of a transition. The validity of the parallel trends assumption is examined in several ways.²³ First, the specification is replicated for the observable county and agency characteristics, revealing that transition agencies experience nearly identical changes in racial composition, income, population, and number of deputies as their control agencies. Second, within-state sheriffs and within-county local law enforcement exhibit statistically similar pretrends in the Black arrest rate prior to the transition. Likewise, the

years prior to a race transition are characterized by statistically similar pretrends in officer and civilian staffing levels, suggesting that changes in financial resources are not correlated with sheriff race.²⁴ Third, the baseline specification is replicated while including separate time trends for transition sheriffs and control agencies, which produces very similar estimates.

IV. THE COMPOSITION OF ARRESTS

This section examines the effect of sheriff race on the racial composition of arrests. Estimates are presented for within-state, within-county, and within-treated agency control groups, and with and without controls for demographics and economic conditions. The results are differentiated by crime severity and agency size.

A. Black Sheriffs and Relative Arrest Rates

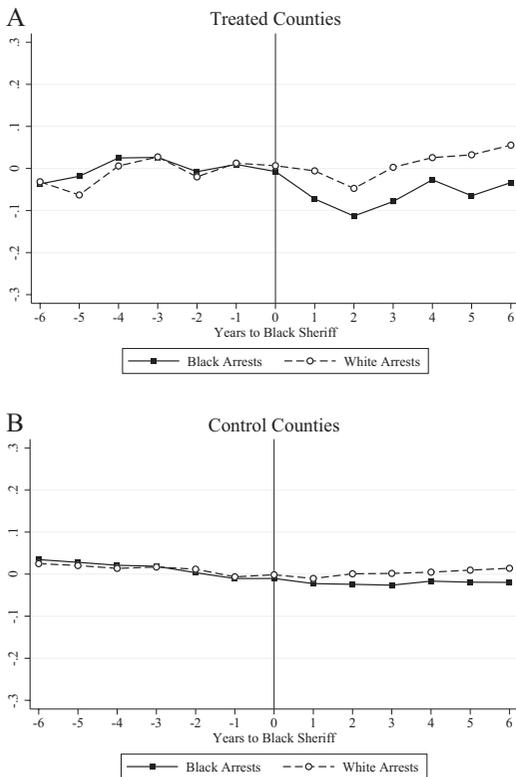
Figure 2 presents graphical evidence of the change in the number of arrests of Blacks and Whites after a transition from a White sheriff to a Black sheriff (the most common type of transition observed in the data). Prior to the transition, the trends in arrests for Blacks and Whites track each other closely. After the transition, arrests of Blacks fall relative to Whites. There is little evidence of a similar change in the arrest rates for matched control sheriffs. The estimates presented in Table 4 are consistent with Black sheriffs reducing arrests of Blacks relative to Whites. The within-county estimates reveal that, during years in which a Black sheriff is in office, there are approximately 1.6 fewer arrests of Blacks per 1,000 Black county residents. This approach controls for year-to-year variation in the relative arrest rate using law enforcement agencies operating in the same counties. Restricting attention to treated sheriffs' offices and thus exploiting variation in the timing of sheriff race transitions generates a nearly identical estimate of 1.7 fewer arrests. Likewise, estimates based on comparisons to sheriffs' offices in similar counties also results in an estimated reduction of 1.7.²⁵ Specifications

24. Differential trends in staffing levels leading up to a race transition could indicate that financial factors cause a county to elect a Black sheriff. This would be problematic for identification, as financial shortfalls may alter the types of crimes pursued due to officer shortages or the need to generate additional revenue through the collections of fines and fees.

25. Estimates presented in Section VIII in Appendix S1 reveal that the results are robust to nearest neighbor, radius caliper, and Gaussian kernel matching methods.

23. The details of each validity test are presented in Section IX in Appendix S1.

FIGURE 2
White to Black Sheriff Transitions: Arrests
by Race



Notes: This figure presents the natural log of arrests of Blacks and Whites before and after transitions from a White to a Black sheriff. The values are normalized to have an average value of zero in the years prior to the transition. Year 0 corresponds to the year of transition. The figure on the top presents Black and White arrests for transition counties. The figure on the bottom presents Black and White arrests for matched sheriffs in the same state, where weights are based on an Epanechnikov kernel. The panel history of Black sheriffs was constructed from state websites and databases as well as archived newspaper reports. Data on agency arrests by race and crime type is from the FBI's UCR Program.

that include demographic and economic controls for each county and the number of officers in each agency result in slightly larger estimated reductions of 1.7 to 1.9 fewer arrests per 1,000 Black residents. Across specifications, the estimated effect sizes correspond to reductions in arrests of Blacks relative to Whites of 6%–8%.²⁶

26. An alternative method of computing the arrest rate involves first estimating the fraction of the county population served by the sheriff's office. Scaling county populations to reflect each sheriff's share of local law enforcement officers

Table 5 presents separate estimates for sheriffs' offices that switch from having a White to a Black sheriff and from having a Black to a White sheriff. This exercise may reveal evidence of asymmetric effects between the two types of transitions, and separating these estimates may reveal if there are fundamental problems with the empirical design. For example, if sheriffs in counties with a high fraction of Black residents experienced steeper reductions in the Black arrest rate relative to local law enforcement agencies, then this would reveal itself in the form of a negative coefficient for White to Black transitions and a positive coefficient for Black to White transitions. In practice, the estimates are similar in magnitude across the two types of transitions. Specifically, the average magnitude is -1.6 for counties with White-to-Black transitions and -1.4 for counties with Black-to-White transitions.

The reduction in the relative arrest rate of Blacks when there is a Black sheriff is confirmed by alternative methods of measuring the change and alternative specifications. Measuring the relative arrest rate using natural logs indicates that arrests of Blacks decrease by 8%, 11%, and 10% under a Black sheriff when using within-state, within-county, and the within-treated control groups. Similarly, the ratio of Black arrests to all arrests is estimated to decrease by 0.020, 0.027, and 0.026, which translates into reductions of 8%–10%.²⁷

A concern with the empirical design is that counties that experience a change in the race of their sheriff may have trends in the relative arrest rate. While it is hard to reconcile this with approaches that restrict attention to within-county comparisons or to treated agencies, we nonetheless replicate the specification for the within-state and within-county control groups while allowing affected and unaffected

approximately doubles the arrest rate per 1,000 and results in estimates that are about twice as large (and thus reflect the same percentage effect).

27. Additional evidence of the robustness of the estimates is presented in Section VII in Appendix S1. To ensure that outlier years do not carry disproportionate weight in the analysis, the estimates are replicated after winsorizing the outcome measures at the 5% level. Outliers are identified by comparing the ratio of arrests (Black and White) reported in each year to each agency's average number of arrests during the 25-year period. This process generates estimates that are nearly identical in magnitude to the unadjusted measure. Unclassified offenses are not included in the primary analysis, as arrests for these offenses do not appear to be consistently reported across years and exhibit double the year-to-year variance of other crime types. However, including these arrests does not fundamentally alter the estimates.

TABLE 4
All Classified Crimes: Arrests per 1,000 Black Residents

	Baseline Specification			With Socioeconomic Controls		
	Within State (1)	Within County (2)	Within Treated (3)	Within State (4)	Within County (5)	Within Treated (6)
Black sheriff	-1.713*** (0.546)	-1.631** (0.626)	-1.719*** (0.554)	-1.733*** (0.572)	-1.932*** (0.679)	-1.839*** (0.600)
R^2	.884	.921	.896	.886	.926	.900
Mean dep	22.943	26.052	22.558	21.943	26.052	22.558
Observations	17,270	2,960	1,511	17,270	2,960	1,511

Notes: This table presents estimates of the effect of a Black county sheriff on the number of arrests per 1,000 Black residents. The estimates in columns 1–3 are from a specification that includes agency fixed effects, year fixed effects, and the agency arrest rate per 1,000 White residents. Columns 4–6 add socioeconomic county controls including the fraction of residents of each race, the natural log of the population, the natural log of average household income, and the number of sworn officers in each law enforcement agency. The within-state specification includes matched county sheriffs' offices in states that had at least one county sheriff transition between 1991 and 2015. Matching weights are based on an Epanechnikov kernel and the probability of having experienced a transition. The within-county specification includes sheriffs' offices and municipal police departments operating in counties that experienced a sheriff race transition. The within-treated specification restricts attention to treated sheriffs' offices and exploits the differential timing of the transition. Standard errors are based on two-way clustering at the county and year levels.

*, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

TABLE 5
Arrest Rates: White to Black and Black to White Transitions

	White to Black Transitions			Black to White Transitions		
	Within State (1)	Within County (2)	Within Treated (3)	Within State (4)	Within County (5)	Within Treated (6)
Black sheriff	-1.678*** (0.565)	-1.569** (0.648)	-1.622** (0.583)	-1.393** (0.576)	-1.269 (0.783)	-1.708** (0.663)
R^2	.884	.922	.898	.898	.920	.933
Mean dep	21.921	25.969	22.368	23.97	27.171	26.124
Observations	17,224	2,865	1,465	15,974	567	285

Notes: This table presents estimates of the effect of a Black county sheriff on the number of arrests per 1,000 Black residents. Columns 1–3 present estimates when restricting attention to treated counties that experienced a transition from a White sheriff to a Black sheriff. Columns 4–6 present estimates when restricting attention to treated counties that experienced a transition from a Black sheriff to a White sheriff. The within-state specification includes matched county sheriffs' offices in states that had at least one county sheriff transition between 1991 and 2015. Matching weights are based on an Epanechnikov kernel and the probability of having experienced a transition. The within-county specification includes sheriffs' offices and municipal police departments operating in counties that experienced a sheriff race transition. The within-treated specification restricts attention to treated sheriffs' offices and exploits the differential timing of the transition. Each specification includes agency fixed effects, year fixed effects, and the agency arrest rate per 1,000 White residents. Standard errors are based on two-way clustering at the county and year levels.

*, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

agencies to have different time trends. The results remain similar in sign and magnitude for each outcome measure.²⁸ Estimating effects on a year-by-year basis reveals no significant reduction in Black arrests in the years prior to the election of a Black sheriff but a significant reduction in each of the 3 years after. Examining changes at the quarterly level suggests that the reduction in Black arrests becomes statistically

28. The estimates for this specification are presented in Section IX in Appendix S1. Accounting for differential trends appears to bring the estimates across the three methods of selecting control groups into closer alignment.

significant by the third quarter after the race transition.²⁹

B. Heterogeneity by Crime Severity and Agency Size

Of interest is whether the reduction in the Black arrest rate is being generated by changes for more- or less-serious crimes. Sheriffs may have discretion about whether or not to pursue arrests for less-serious offenses such as

29. Annual and quarterly estimates are presented in Section IX in Appendix C.

TABLE 6
Arrests by Crime Severity

	Part 1 Crimes (Serious)			Part 2 Crimes (Less Serious)		
	Within State (1)	Within County (2)	Within Treated (3)	Within State (4)	Within County (5)	Within Treated (6)
Black sheriff	-0.772 (0.480)	-0.419 (0.580)	-0.366 (0.433)	-0.941* (0.457)	-1.212** (0.493)	-1.353** (0.502)
R ²	.810	.862	.824	.837	.890	.848
Mean dep	9.494	11.470	10.206	12.450	14.582	12.352
Observations	17,270	2,960	1,511	17,270	2,960	1,511

Notes: This table presents estimates of the effect of a Black county sheriff on the number of arrests per 1,000 Black residents for Part 1 and Part 2 crimes. Crimes are classified according to the FBI's UCR Program. The within-state specification includes matched county sheriffs' offices in states that had at least one county sheriff transition between 1991 and 2015. Matching weights are based on an Epanechnikov kernel and the probability of having experienced a transition. The within-county specification includes sheriffs' offices and municipal police departments operating in counties that experienced a sheriff race transition. The within-treated specification restricts attention to treated sheriffs' offices and exploits the differential timing of the transition. Each specification includes agency fixed effects, year fixed effects, and the agency arrest rate per 1,000 White residents. Standard errors are based on two-way clustering at the county and year levels.

*, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

stolen property, gambling, and DUI. Consistent with this, several prior studies have found evidence of greater discrimination for less-serious incidents.³⁰ Serious crimes such as assault are more likely to be reported by third parties and to necessitate an investigation. The estimates in Table 6 reveal that the reduction in the Black arrest rate is driven primarily by less serious, Part 2 crimes. The estimated changes for more serious Part 1 crimes are negative but are smaller in magnitude and are not statistically significant for any of the three specifications. The reduction in arrests for less-serious offenses is statistically significant and large enough in magnitude to explain the majority of the overall reduction in the Black arrest rate.

Sheriffs' offices vary considerably in their size and the number of people they serve. For example, the bottom quartile of offices average less than nine deputies and serve counties with a median population of less than 13,000 residents. Conversely, the top quartile of offices average more than 100 deputies and serve counties with a median population exceeding 130,000 residents. Sheriffs with smaller offices may replace a higher fraction of deputies with new hires, may have greater flexibility in revising policies such as which crimes to target, and may provide more

30. For example, Donohue III and Levitt (2001) find the strongest effect of the racial composition of a police force on the composition of who is arrested for minor offenses. At the level of individual interactions, Fryer Jr. (2018) finds that minorities are more likely to experience the use of force by police but not the use of lethal force.

direct oversight to law enforcement operations.³¹ Table 7 reveals a consistent pattern of larger changes in the racial composition of arrests when a sheriff is in charge of a smaller office. Specifically, there is no statistically significant change in the racial composition of arrests for the largest offices, while the changes for the smallest quartile are large and significant. Replicating this exercise for the within-county control group using the natural log of arrests generates reductions of 0%, 12%, and 18% for large, medium, and small offices, respectively. The corresponding arrest ratio estimates are 0.0, -0.023, and -0.062. A specification that interacts a continuous measure of office size with having a Black sheriff reveals statistically significant heterogeneity for the within-state, within-county, and within-treated control groups. However, it is important to note that, nationally, the majority of Black arrests occur in urban areas.³² Thus, while the estimates in this context indicate that a sheriff may exercise greater control over hiring and oversight in a small office, the potential role for law enforcement leaders (including police

31. Sheriffs responsible for operating large offices may face greater logistical difficulties if they choose to replace a significant fraction of their deputies upon election, and may rely on captains or lieutenants to oversee the day-to-day implementation of law enforcement priorities. That is, the direct effect of a sheriff on law enforcement outcomes may be attenuated for larger offices.

32. FBI UCR data indicate that the per-capita arrest rate of Blacks and Whites is similar in urban and rural counties. However, Blacks are much more likely to live in urban areas. For example, 77% of Blacks and 64% of Whites reside in counties with populations exceeding 200,000.

TABLE 7
Heterogeneity by Sheriff's Office Size

	Largest 25%			Middle 50%			Smallest 25%		
	Within State (1)	Within County (2)	Within Treated (3)	Within State (4)	Within County (5)	Within Treated (6)	Within State (7)	Within County (8)	Within Treated (9)
Black sheriff	-0.287 (0.993)	0.842 (1.896)	-0.151 (1.033)	-1.855** (0.809)	-2.069** (0.840)	-1.562* (0.788)	-2.235* (1.189)	-3.422** (1.316)	-2.398* (1.295)
R^2	.946	.956	.954	.870	.873	.867	.802	.822	.808
Mean dep	25.592	35.958	26.435	21.966	25.571	22.189	19.371	16.982	19.539
Observations	16,078	734	368	16,505	1,504	764	16,088	722	379

Notes: This table presents estimates of the effect of a Black county sheriff on the number of arrests per 1,000 Black residents for sheriffs' offices of varying sizes. Office sizes are measured by the average number of deputies employed during the sample period. The within-state specification includes matched county sheriffs' offices in states that had at least one county sheriff transition between 1991 and 2015. Matching weights are based on an Epanechnikov kernel and the probability of having experienced a transition. The within-county specification includes sheriffs' offices and municipal police departments operating in counties that experienced a sheriff race transition. The within-treated specification restricts attention to treated sheriffs' offices and exploits the differential timing of the transition. Each specification includes agency fixed effects, year fixed effects, and the agency arrest rate per 1,000 White residents. Standard errors are based on two-way clustering at the county and year levels.

*, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

chiefs, captains, lieutenants, and sergeants) to affect racial bias in policing on a national scale may be greatest in cities.

V. CRIME TYPE TARGETING

Of particular interest is the mechanism by which sheriffs alter the arrest rate of Blacks relative to Whites. A Black sheriff may alter the Black-White arrest rate by altering discrimination at the incident level or by changing the types of crimes that are targeted for enforcement. Specifically, a Black sheriff may reduce the Black arrest rate by deemphasizing the pursuit of crimes that are predominantly committed by Blacks. This could be achieved by setting different priorities or by hiring deputies who are less likely to prioritize predominantly Black crime types.³³

A. Identifying Targeting

We can write the baseline probability of an arrest for a White suspect and White crime type as a function of the characteristics of the crime $f(X_i)$. For simplicity, we can write the increased

probability of arrest for Black suspects and Black crime types as scaling factors.

$$P(\text{Arrest}_i | B_i, T_i) = f(X_i) (1 + rB_i) (1 + \theta T_i). \quad (2)$$

The probability that a crime results in an arrest depends on whether or not the person committing the offense is Black (B) and whether or not the crime is a predominantly Black type (T). While the literature has largely focused on estimating discrimination at the incident level (r), this paper examines the potentially important role of targeting Black crime types (θ). For example, a Black sheriff could allocate greater resources to pursuing DUI offenses (a predominantly White crime) rather than fraud offenses (a predominantly Black crime). Differences across Black and White sheriffs with respect to targeting crime types could stem, for example, from taste-based discrimination (e.g., a White sheriff could target fraud offenses because they are primarily committed by Blacks), or differing beliefs about the severity of specific offenses (e.g., a Black sheriff could be less likely to target fraud offenses because they believe them to be less important).

To shed light on the role of crime type targeting, I note that it should be evident in greater reductions in arrests of Blacks for Black crime types relative to White crime types under a Black sheriff. Because Blacks commit a higher fraction of Black crime types, such a change in targeting will reduce the relative Black-White arrest rate.

33. Giuliano, Levine, and Leonard (2009) present empirical evidence that Black managers are more likely to hire Black employees than are managers of other races, while Sharp and Johnson (2009) present cross-sectional evidence that Black police chiefs reduce distrust of police among Black residents, which is perhaps due to the perception of lower levels of discrimination.

TABLE 8
Arrests for Predominantly Black and White Crime Types

	Arrests of Whites			Arrests of Blacks		
	Within State (1)	Within County (2)	Within Treated (3)	Within State (4)	Within County (5)	Within Treated (6)
Predominantly Black crime types						
Black sheriff	-0.786*	-0.885**	-0.805*	-1.132***	-1.748***	-1.205***
	(0.404)	(0.402)	(0.393)	(0.370)	(0.393)	(0.416)
R^2	.603	.708	.658	.821	.888	.839
Mean dep	5.265	4.694	5.394	11.801	13.037	11.839
Observations	17,270	2,960	1,511	17,270	2,960	1,511
Predominantly White crime types						
Black sheriff	-0.095	0.342	-0.227	-0.610	0.016	-0.503
	(0.386)	(0.425)	(0.379)	(0.472)	(0.568)	(0.447)
R^2	.658	.709	.673	.812	.879	.827
Mean dep	5.976	6.178	6.283	10.028	12.732	10.582
Observations	17,270	2,960	1,511	17,270	2,960	1,511

Notes: This table presents estimates of the effect of a Black county sheriff on the number of arrests per 1,000 White residents for predominantly Black and White crime types. The top panel presents estimates for predominantly Black crime types while the bottom panel presents estimates for predominantly White crime types. Black and White crime types are classified by the ratio of arrests of Black and White people across all law enforcement agencies. The within-state specification includes matched county sheriffs' offices in states that had at least one county sheriff transition between 1991 and 2015. Matching weights are based on an Epanechnikov kernel and the probability of having experienced a transition. The within-county specification includes sheriffs' offices and municipal police departments operating in counties that experienced a sheriff race transition. The within-treated specification restricts attention to treated sheriffs' offices and exploits the differential timing of the transition. Each specification includes agency fixed effects, and year fixed effects. Standard errors are based on two-way clustering at the county and year levels.

*, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

The primary concern with this decomposition is that there may be greater opportunities for discrimination at the incident level for Black crime types (i.e. r may be larger for Black crime types). That is, discrimination at the incident level could be misclassified as targeting if predominantly Black offenses are especially conducive to discrimination. To abstract from the confounding effect of reduced discrimination against Blacks at the incident level, I note that crime type targeting should also alter the composition of arrests for Whites.³⁴ If there is evidence of larger reductions in arrests of Blacks and Whites for predominantly Black offenses, then it is compelling evidence that crime type targeting is a first-order mechanism. This result is important to the literature, as reductions in discrimination that occur through targeting will

be overlooked when identification is achieved through comparisons at the incident level.

B. Evidence of Crime Type Targeting

Predominantly Black crime types are identified by taking the ratio of Black to White arrests for each crime across all agencies. Predominantly Black crime types (in order from most to least) include robbery, gambling, offenses against family, murder, vagrancy, fraud, prostitution, weapons crimes, forgery and counterfeiting, embezzlement, stolen property crimes, larceny-theft, aggravated assault, drugs sales and possession, and forcible rape.³⁵ Predominantly White crime types (in order from most to least) include liquor law violations, DUI, drunkenness, sex offenses, manslaughter, arson, vandalism, motor vehicle theft, burglary, disorderly conduct, and other assaults. The differences across crimes are large. For example, 44% of robbery arrestees

34. In the model above, examining changes in the arrest rate of Whites renders r moot since $B = 0$, and the specification will isolate the effect of sheriff race on θ . In a more general model, Black sheriffs could exhibit discrimination against Whites, which would increase the White arrest rate. In this case, the effects of a Black sheriff on arrests of Whites for Black crime types would underestimate the magnitude of crime targeting.

35. Offenses against family includes several types of crimes, including child and spousal abuse that does not result in serious injury, abandonment, neglect, nonsupport, and failure to pay alimony. The category does not include offenses that can be categorized as assault or as sex offenses (U.S. DOJ 2004).

are Black, while 8% of DUI arrestees are Black. I classify predominantly Black crime types as those that comprise the top half of total crimes in terms of the Black to White arrest rate.³⁶

Table 8 presents changes in the arrest rate of Whites and Blacks for predominantly Black and White crime types when there is a Black sheriff. The top panel reveals a statistically significant reduction in the arrest rate of Whites for Black crime types across each of the specifications. The changes are large in magnitude, averaging a 16% reduction relative to the mean arrest rate for Whites. In contrast, the bottom panel reveals no significant change in the arrest rate of Whites or Blacks for White crime types.³⁷ A formal test that interacts Black crime type with having a Black sheriff reveals that the differential effect across crime types is statistically significant for the within-state and within-county control groups. Likewise, there is a significant reduction in the arrest rate of Blacks for predominantly Black crime types (while controlling for the White arrest rate) but not for White crime types. The role of the change in arrests for Black crime types is also evident in Figure 3. After the transition, arrests for predominantly Black crime types decrease substantially relative to arrests for White crime types, while a similar reduction is not observed across crimes for matched control sheriffs. The magnitude of the reductions for Black offenses is sufficient to explain nearly all of the change in the overall Black arrest rate. Thus the effect of the race of a sheriff on which crimes are targeted appears to be a primary explanation for difference in the composition of arrests.

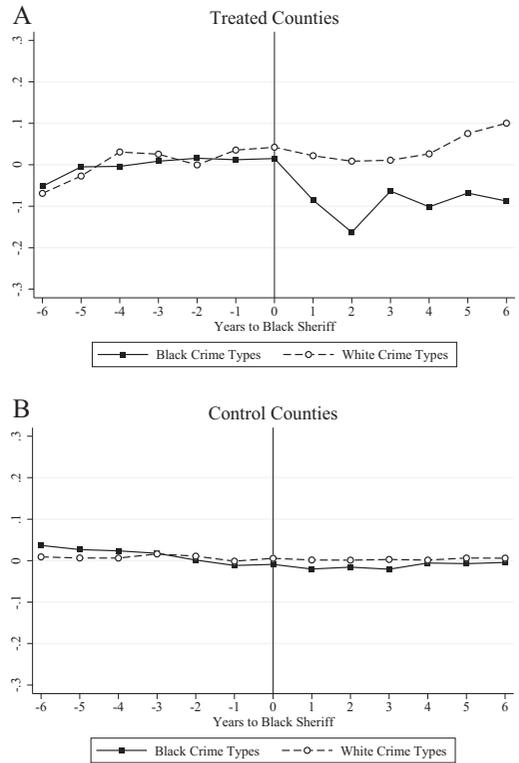
VI. CONCLUSION

Racial bias in policing and how to reduce it is of significant policy and research interest. A rich and interesting literature has focused on estimating if taste-based and statistical discrimination exist among police officers. This paper extends the literature to examine the potentially

36. The results are robust to defining predominantly Black crimes as those that comprise the top half in terms of number of crime categories. In practice, crime targeting could take on a number of forms, such as focusing on a small number of crimes that are known to be more common among Blacks or Whites.

37. A similar pattern is found when using the natural log of arrests. The reduction in arrests of Whites for predominantly Black crime types is approximately 15%, while the change in arrests for White crime types is insignificant.

FIGURE 3
Arrests of Blacks for Black and White Crime Types



Note: This figure presents the natural log of arrests of Blacks for Black and White crime types before and after transitions from a White to a Black sheriff. The values are normalized to have an average value of zero in the years prior to the transition. Year 0 corresponds to the year of transition. The figure on the top presents arrests for transition counties. The figure on the bottom presents arrests for matched sheriffs in the same state, where weights are based on an Epanechnikov kernel. Black and White crime types are classified by the ratio of arrests of Black and White people across all law enforcement agencies. The panel history of Black sheriffs was constructed from state websites and databases as well as archived newspaper reports. Data on agency arrests by race and crime type is from the FBI's UCR Program.

important role of law enforcement leaders for shaping racial dynamics. Focusing on county sheriffs, who serve over 3,000 counties throughout the country, I find compelling evidence that the race of the sheriff affects the race of arrestees, especially for less-serious offenses. Identification is based on an innovative counterfactual that exploits the fact that the constituents who select a sheriff are served by multiple local law enforcement agencies.

Of particular interest is understanding the mechanism by which law enforcement leaders may shape the role of race in policing. To examine this important question, the paper presents a new test by separating crimes that most commonly result in the arrest of Blacks. Examining arrests of Whites for these types of offenses reveals that arrests for predominantly Black crime types are more common under a White sheriff. That is, the targeting of crime types appears to be a primary mechanism by which sheriffs alter the composition of arrests. This result highlights that studying the role of race at the incident level, or for a specific class of crimes, may understate the role of race in shaping the aggregate arrest rate of Blacks and Whites.

The findings in this analysis introduce several potentially fruitful areas for additional research. First, the role of the race of law enforcement leaders in the context of urban police departments is a natural extension. This may take the form of considering whether serving under a Black or White chief or sergeant affects how officers make arrests. Understanding the role of law enforcement leaders for shaping racial bias in policing in cities is especially important in light of the concentration of the Black population in urban areas. Second, data that allows an analysis of heterogeneity by gender, or the effect of female law enforcement leaders, could shed light on additional forms of discrimination. Third, it highlights the need for additional research into how police departments determine which crimes to target at the aggregate level to fully understand the effect of race on arrest outcomes.

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SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section at the end of the article.
Appendix S1. Pretrends and Alternative Designs