Reducing Racial Disparities in Crime Victimization

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Abstract

Despite what many argue to be the overpolicing of black neighborhoods, black Americans are less safe than white Americans, with persistently higher risks of crime victimization. One possible cause of persistent racial disparities in crime victimization may lie in persistent racial disparities in police force composition. Using data from the National Crime Victimization Survey between 1979 and 2004, and leveraging idiosyncratic variation in the timing of post-litigation affirmative action plans imposed on law enforcement agencies between 1970 and 1986, we show that post-litigation affirmative action not only increased black officer shares, but also substantially reduced racial disparities in crime victimization. We explore possible causal mechanisms, finding that post-litigation decreases in relative black victimization were likely due not to relative increases in reporting by black victims, but rather to relative increases in police responsiveness to black victimization.

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A Introduction

Considerable recent attention has been devoted to racial disparities in the policing of crime. Numerous studies have documented racial disparities in enforcement, including in rates of stops, arrests, and the use of force [Gelman et al., 2007, Goel et al., 2016, Edwards et al., 2019]. Yet despite the disproportionate enforcement effort devoted to policing nonwhite neighborhoods, nonwhite Americans are in fact less safe than white Americans. In the 2018 National Crime Victimization Survey (NCVS), for example, black respondents were 22% more likely to experience a serious violent crime, and 41% more likely to experience a serious violent or property crime, relative to non-Hispanic white respondents.[1] As reported in Figure 4 in the Appendix, black victimization rates have been persistently higher than white victimization rates in the 40 largest metropolitan statistical areas (MSAs) since the 1970s.

Racial disparities in victimization rates are unlikely to be due to racial disparities in rates of reporting crime to law enforcement. Residents of neighborhoods with more nonwhite residents are more likely to call 911 to report victimization, conditional on levels of neighborhood crime, relative to residents of neighborhoods with more white residents [Desmond et al., 2016, Hagan et al., 2018].

Racial disparities in victimization may, however, be related to the racial composition of police forces. As reported in Figure 5 in the Appendix, black officer shares have persistently lagged black population shares in the 40 largest MSAs between 1990 and 2013. White police officers may be less interested in and/or less effective at policing crime experienced by nonwhite victims, relative to crime experienced by white victims. Decreasing racial racial disparities in police force composition may decrease racial disparities in crime victimization.

Prior studies have estimated the impacts of changes in the racial composition of police forces on average crime and arrest rates, finding few effects [Lott, 2000, McCrary, 2007]. No study to date has sought to estimate the impacts of changes in the racial composition of police forces on racial disparities in crime victimization.

Using victimization data from the National Crime Victimization Survey between 1979 and 2004, and leveraging idiosyncratic variation in the timing of post-litigation affirmative action plans imposed on law enforcement agencies between 1970 and 1986, we find that post-litigation affirmative action plans imposed on policing agencies substantially reduced racial disparities in crime victimization. In MSAs with agencies that would eventually be treated with post-litigation affirmative action, pretreatment victimization rates are 20% and 13% for black and non-Hispanic white respondents, respectively. In our preferred event study specification, post-litigation affirmative action eliminates the pretreatment 7 percentage point racial gap in victimization rates in treated MSAs. The elimination of the racial gap in victimization rates in treated MSAs does not

[1]The 2018 NCVS reports black victimization rates of 1% for serious violent crime, and 2.21% for serious crime, relative to non-Hispanic white victimization rates of 0.82% and 1.57%, respectively (Bureau of Justice Statistics, National Crime Victimization Survey, 2018). Serious violent crime is defined as rape, sexual assault, robbery, and aggravated assault; serious crime adds the categories of burglary and motor vehicle theft.

come at the expense of higher white victimization rates; post-litigation affirmative action decreases both white and black victimization rates in treated MSAs, with relatively larger decreases in black victimization rates. Estimates are generally consistent across a series of alternative samples and specifications, including two-way fixed effect difference in differences (2WFE DD) models. Using Goodman Bacon decomposition, we show that the somewhat smaller magnitudes of the effect estimates in the 2WFE DD models are likely due to bias introduced by treatment effects that increase over time.

We also explore causal mechanisms that could be generating the large post-affirmative action decreases in racial disparities in victimization. Using data on officer demographics from the LEMAS surveys, we show that the post-litigation affirmative action plans in our sample increased black officer shares and decreased white officer shares between 1987 and 2013. We find no evidence that changes in reporting behavior contributed to decreases in racial disparities in victimization. However, we find suggestive evidence that police officers became relatively more responsive to reports of black victimization after the imposition of post-litigation affirmative action, with both immediate increases in responsiveness to black victimization, and more gradual increases in responsiveness to both white and black victimization over time. Our findings suggest that affirmative action plans imposed on law enforcement agencies improve agencies' performance in reducing victimization rates, suggesting a strong justification for the use of affirmative action in law enforcement.

B Estimating the Impacts of Police Force Racial Composition

Estimating the impacts of the variation in police agency racial composition on policing outcomes is complicated by the likely endogeneity of agency personnel decisions to factors that may also affect those outcomes. Seeking a more exogenous source of variation in agency racial composition, some studies have leveraged variation in the incidence and timing of litigation over race-based discrimination in agency hiring and promotion decisions, and in the imposition of post-litigation affirmative action plans in hiring and/or promotion. To the extent that idiosyncratic variation in the incidence and/or timing of race-based employment discrimination litigation, and in the imposition of post-litigation affirmative action plans, increased the shares of black law enforcement officers, this variation may provide a more credible strategy to estimate the impacts of police agency racial composition.

For example, Lott [2000] estimated the impacts of 19 consent decrees over law enforcement hiring practices, signed by the Department of Justice and a city's policing agency and still in force by 1987, on annual rates of per capita reported violent and property crime between 1987 and 1994 for a sample of 495 cities. He found that crime rose more post-1987 in the cities with consent decrees, relative to the cities without consent decrees.

Using more complete litigation data, McCrary [2007] estimated the impacts of whether a police department was ever litigated for race-based employment discrimination on annual per capita crime

rates between 1960 and 1999, for a sample of 314 large municipal police departments, 92 of which faced litigation. He found that litigation reduced the black representation gap, or the difference between the percent of police employment that is black and the percent of the local population served that is black, but had no effects on crime rates in either event study or difference in differences models.

Miller and Segal [2012] compiled the most extensive database to date on employment discrimination litigation aimed at law enforcement agencies. In a sample of 479 state and local law enforcement agencies observed between 1973 and 2005, 140 were litigated for employment discrimination. Among the set of cases imposing post-litigation affirmative action plans for which the target group could be identified, 96% involved black employees. Miller and Segal [2012] found that being subjected to a post-litigation affirmative action plan significantly decreased the black representation gap, as defined in McCrary [2007], and that, compared to departments never litigated for employment discrimination, there were no increases in the black representation gap in the 15 years after the termination of a court-imposed affirmative action plan.

Miller and Segal [2018] explored the impacts of increases in female officer shares on the reporting and incidence of violence against women. Using victimization survey data from the 40 largest MSAs in the National Crime Victimization Survey (NCVS) between 1979 and 2004, as well as county per capita rates of intimate partner homicide sourced from the UCR Supplemental Homicide Reports, Miller and Segal [2018] found that both increases in female officer shares, and increased years of exposure to a post-litigation affirmative action plan, increased rates of reporting of domestic violence victimization, and decreased rates of intimate partner homicide and violent crimes against women.

McCrary [2007] and Miller and Segal [2012] have established that the litigation of law enforcement agencies over race-based employment discrimination has had significant effects on the racial composition of those agencies. However, there is little evidence that the litigation-driven changes in agency racial composition have had any effects on policing or crime outcomes. We explore the impacts of post-litigation affirmative action plans imposed on law enforcement agencies on racial disparities in crime victimization.

There are several pathways through which affirmative action plans in law enforcement hiring and/or promotion might decrease racial disparities in crime victimization. White officers may possess less background information about patterns of criminal behavior existing in largely nonwhite neighborhoods, relative to crime in largely white neighborhoods. White officers may simply care more about detecting and deterring crime experienced by white victims, relative to that experienced by black victims. Increasing the share of black police officers may lead to better information about the patterns of criminal behavior affecting black victims, and a larger share of officers who are more motivated to reduce black crime victimization. We would expect these effects to manifest only gradually, and also to increase over time, as a function of increasing black officer shares.

Post-litigation affirmative action plans may also have direct effects on racial disparities in crime victimization, independently of their indirect effects through agency racial composition. As a result of increased monitoring of agencies subjected to such plans, white officers in these agencies may be directed, or may even be self-motivated, to increase effort to detect and deter crime experienced by black victims. These effects may manifest immediately after the onset of an affirmative action plan, before changes in the racial composition of officers have been realized.

Affirmative action plans may also have spillover effects on white victimization rates. Increased responsiveness to reports of nonwhite crime victimization may decrease the police response to white victimization. Or, increased law enforcement effort devoted to responding to reports of victimization, as opposed to serving other agency goals, may contribute to decreases in both nonwhite and white victimization.

C Data

C.1 National Crime Victimization Survey

We source data on crime victimization between 1979-2004 from the MSA-level release of the National Crime Victimization Survey (NCVS). The NCVS has been conducted annually since 1973 by the U.S. Census Bureau on behalf of the Bureau of Justice Statistics (BJS). The standard NCVS releases do not contain identifiers for geographic units smaller than region. However, one NCVS release reported victimization data for the core counties of the forty largest MSAs in the United States between 1979 and 2004. This release is available through the National Archive of Criminal Justice Data (United States Department of Justice, Bureau of Justice Statistics, 2007).

Between 1979 and 2004 the NCVS was conducted on a nationally representative sample of about 50,000 housing units. Household members aged 12 years and older were interviewed regarding crime incidents twice a year for three consecutive years.[2] Participants were asked screening questions to determine if they were victimized during the six-month period preceding the first day of the month of the interview. Screening questions covered the following types of crimes, including attempts: robbery, burglary, theft, assault, and rape. Positive responses led to additional questions that gathered details about the nature of the incident, including whether it was reported to the police.

C.2 Affirmative Action Data

We source data on litigation alleging race-based employment discrimination by law enforcement agencies from Miller and Segal [2012] and Miller and Segal [2018]. To create a database of af-

[2]Each month during our sample period the U.S. Census Bureau selected respondents for the NCVS using a "rotating panel" sample design. Households were randomly selected and all age-eligible individuals became part of the panel. Once in the sample, respondents were interviewed every six months for a total of seven interviews over a three-year period. The first and fifth interviews were face-to-face; the rest were by telephone. After the seventh interview the household left the panel and a new household was rotated in to the sample.

firmative action plans, Miller and Segal [2012] first collected employment data from confidential EEO-4 reports on 479 of the largest U.S. state and local law enforcement agencies between 1973 and 2005.[3] They then searched the Lexis-Nexis and Westlaw federal databases for employment discrimination cases involving these agencies, finding 140 cases brought by private plaintiffs or the U.S. Department of Justice (DOJ) between 1969 and 2000. They further identified cases among this set that resulted in court orders or settlement agreements imposing affirmative action plans in hiring and/or promotion. Cases were dated by the year in which the litigation was filed.[4] Among the set of cases imposing such plans for whom the target group could be identified, 96% involved black employees.

Following Miller and Segal [2018], we retain from the litigation sample collected by Miller and Segal [2012] only those county and municipal law enforcement agencies located within a core county of one of the forty largest MSAs in the National Crime Victimization Survey sample. There are 167 such agencies. Each of the forty MSAs in the NCVS sample includes at least one department from the Miller and Segal [2012] litigation database, and these departments are the major employers of officers in their areas [Miller and Segal, 2018].

As in Miller and Segal [2018], treatment is defined at the MSA level. We characterize an MSA as having been subject to a post-litigation affirmative action plan in law enforcement if any of the agencies in our litigation sample for that MSA were subject to such a plan between 1969 and 2000. For those MSAs with core county agencies subjected to post-litigation affirmative action plans, litigation date is defined as the earliest year in which any agency in an MSA core county experienced litigation resulting in an affirmative action plan. Of the 40 MSAs in the NCVS sample, 11 contain no law enforcement agencies that were litigated for race-based employment discrimination between 1969 and 2000. Three MSAs contain only agencies that were never litigated, or agencies that were litigated for race-based employment discrimination, but the litigation did not result in an affirmative action plan in hiring or promotion. The remaining 26 MSAs contain at least one law enforcement agency that was litigated for race-based employment discrimination, and the litigation resulted in a post-litigation affirmative action plan in hiring or promotion.

Miller and Segal [2012] find that agencies that were litigated, but not subjected to post-litigation affirmative action plans in hiring/promotion, had higher rates of post-litigation nonwhite hiring, relative to agencies that were never litigated, but lower rates of post-litigation nonwhite hiring, relative to agencies that were both litigated and subjected to externally-imposed affirmative action plans. We initially exclude the three MSAs containing only never litigated or litigated-only agencies; in later analyses we report estimates including these MSAs.[5]

[3]Departments were included in the sample if they had at least 200 full-time workers at some point in the sample period, had at least 200 protective and professional workers at some point in the sample period, and appeared in the sample for at least 10 years.

[4]Miller and Segal [2012] find that reductions in the black representation gap among departments with externally-imposed affirmative action plans began immediately after litigation was filed.

[5]The law enforcement agencies in our litigation sample located in Dallas, TX and Oakland, CA were either never

Miller and Segal [2012] also find that agencies whose post-litigation affirmative plans were terminated did not experience post-termination decreases in the racial representation gap, relative to never treated agencies. Following Miller and Segal [2018], we initially code all post-litigation years as treatment years for treated agencies. In later analyses we report estimates that incorporate date of plan termination.

In the set of 108 agencies located in the 26 treated MSAs, namely MSAs containing at least one agency subject to both litigation and post-litigation affirmative action, the first litigation onset date is 1970; the last is 1986. Figure 1 reports the variation in timing of litigation onset for these 26 treated MSAs.

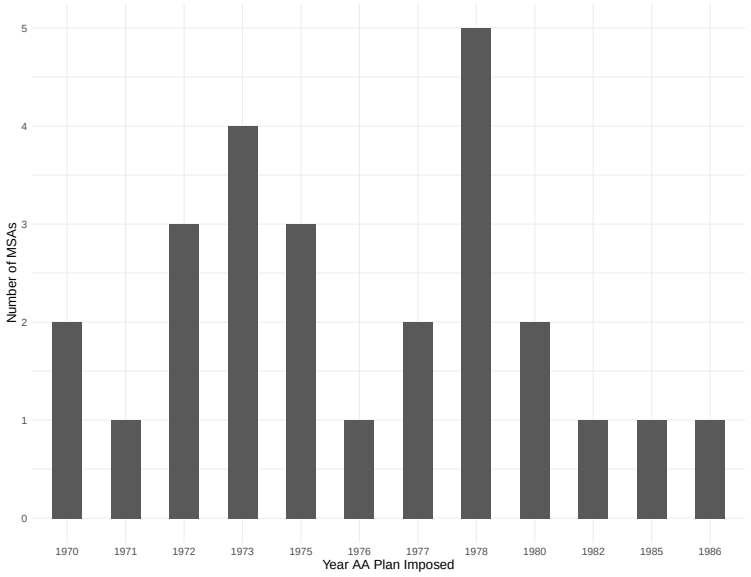

Figure 1: Timing of Affirmative Action Onset in Treated MSAs, 1970-1986

D Methods

D.1 Assessing Treatment Exogeneity

MSAs containing law enforcement agencies that were both litigated for race-based employment discrimination, and subjected to post-litigation affirmative action plans in employment, may have been different on any number of dimensions, relative to MSAs containing no law enforcement agencies that were ever even litigated for race-based employment discrimination. These differences

litigated or litigated-only. The Tampa, FL MSA contains four agencies that were never litigated, one agency that was litigated with no resulting affirmative action plan (the St. Petersburg Police Department in 1975), and one agency that was litigated in 1980 with a post-litigation affirmative action plan (the Pinellas County Sheriff's Department). Coding Tampa as a treated MSA results in a pre-treatment year in the NCVS survey that is post-litigation; we exclude Tampa from our initial analyses.

may have affected the evolution of racial disparities in victimization across treated and never treated MSAs.

Among the set of MSAs containing law enforcement agencies that were both litigated for race-based employment discrimination, and subjected to post-litigation affirmative action plans in employment, however, the assumption of as-if random variation in the timing of litigation is perhaps more plausible. The employment discrimination cases brought against law enforcement agencies, many of which involved multiple parties and multiple actions, typically had lengthy and complex histories. The precise date of litigation onset for that part of a litigation effort resulting in a post-litigation affirmative action plan may in many cases have been plausibly exogenous [Johnson, 2015, Deshpande and Li, 2019].

We first explore the plausible exogeneity of both the presence and the timing of post-litigation affirmative action plans in the 149 law enforcement agencies in our sample of treated and never treated MSAs using county-level demographic measures sourced from the 1970 Census. We estimate both the probability of treatment and, conditional on treatment, the year of treatment, as a function of 1970 covariates, including log population, percent black, median age, median family income, median years of school, and percent urban. Models and results are reported in the Appendix.

In 1970, MSAs containing at least one law enforcement agency that will eventually be subjected to post-litigation affirmative action over the next sixteen years have larger populations, larger percentages of black residents, higher median family incomes, and are located in counties whose residents have fewer years of schooling, relative to MSAs containing no agencies that will ever subjected to litigation. By contrast, among the set of MSAs containing at least one agency that will eventually be subjected to post-litigation affirmative action, year of litigation is unrelated to all 1970 county-level demographic characteristics.

We can also use the NCVS data to compare respondents in never treated MSAs with those in treated MSAs that have not yet been subjected to treatment between 1979 and 1985. Table 1 reports these descriptive statistics. White respondents are defined as those respondents who self-identify as white and do not also self-identify as Hispanic. Black respondents are defined as those respondents who self-identify as black, either alone or in combination with other race/ethnicity categories. Victimization is defined as whether a respondent reported being the victim of any crime during the six months prior to their NCVS interview.

Table 1 also suggests that MSAs containing only law enforcement agencies that were never litigated for racial discrimination in employment are unlike MSAs containing agencies that were subjected to post-litigation affirmative action plans in hiring/promotion. Among other differences, never treated MSAs between 1979 and 1985 have on average fewer NCVS respondents per year, smaller proportions of black respondents, and smaller racial disparities in homeownership, residence in single-family homes, and marital status, relative to MSAs that will eventually experience post-litigation affirmative action. Perhaps of greatest concern, never treated MSAs have substantially

smaller racial disparities in victimization rates, reporting rates, and reported victimization rates, relative to treated MSAs pretreatment.

Table 1: Descriptive Statistics
Never Treated and Treated MSAs Pretreatment

	Never Treated 1979-1985		Treated Pretreatment	
	White	Black	White	Black
Avg # Respondents/Yr	1,129	82	2,205	462
Proportion Black/White	0.80	0.06	0.83	0.12
Homeownership	0.70	0.55	0.81	0.61
Single Family Home	0.74	0.71	0.83	0.63
Household Income 30K+	0.26	0.11	0.28	0.12
Some College	0.44	0.29	0.35	0.22
Age 18-29	0.26	0.30	0.25	0.27
Married	0.56	0.39	0.56	0.34
Victimization Rate	0.14	0.15	0.13	0.20
Reporting Rate	0.35	0.34	0.34	0.40
Reported victimization	0.05	0.05	0.05	0.08
N	86,909	6,304	49,623	7,399

Cells report NCVS means between 1979-1985 for all never treated MSAS, and for treated MSAs during pretreatment years only, by race of respondent.

The observable pretreatment differences across never treated and treated MSAs may not have affected trends in racial disparities in crime victimization. Nonetheless, as in Johnson [2015] and Deshpande and Li [2019], we initially restrict our initial analyses to only the 26 treated MSAs, using the idiosyncratic variation in the timing of affirmative action to estimate effects. We also report analyses that include the never treated MSAs as controls.

D.2 Analysis

D.2.1 Event Study Models

We first estimate event study models of changes in racial disparities in crime victimization in MSAs that will at some point be subject to post-litigation affirmative action plans, before and after litigation, conditioning on fixed differences across MSAs and national trends. Our event study model is specified in Equation 1:

$$Victimization_{imt} = \sum_{\substack{y=-7 \\ y\neq -1}}^{y=24} \beta_y I(t - t_m^* = y) + \beta_b Black_{imt} + Black_{imt} \times \sum_{\substack{y=-7 \\ y\neq -1}}^{y=24} \beta_y I(t - t_m^* = y) + \boldsymbol{\beta_t} + \boldsymbol{\beta_m} + \epsilon_{imt}, \quad (1)$$

In Equation 1, $Victimization_{imt}$ is a binary indicator for whether a respondent i in MSA m interviewed in year t reported having been a victim of a crime in the previous six months. Indicator variables $I(t - t_m^* = y)$ denote pre- and post-treatment years relative to affirmative action plan implementation year t_m^*. The omitted category is $y = -1$, the year immediately prior to plan implementation. $Black_{imt}$ is an indicator for whether a respondent is black (1) or white (0). When $Black_{imt} = 1$, the estimates of β_y report the changes in black victimization in treated MSAs, relative to white victimization, relative to the year immediately prior to plan implementation. If relative black victimization rates were trending similarly prior to treatment, relative to the year immediately prior to plan implementation, we expect that our estimates of β_y associated with event times $y = -7$ to $y = -2$ will be small and not statistically significant for $Black_{imt} = 1$. $\boldsymbol{\beta_t}$ are calendar year fixed effects, and $\boldsymbol{\beta_m}$ are MSA fixed effects. We estimate Equation 1 with a linear probability model, and report heteroskedasticity-robust standard errors that are clustered at the MSA level.

Figure 2 reports the estimates of β_y from Equation 1 when $Black_{imt} = 1$, along with 95% confidence intervals.

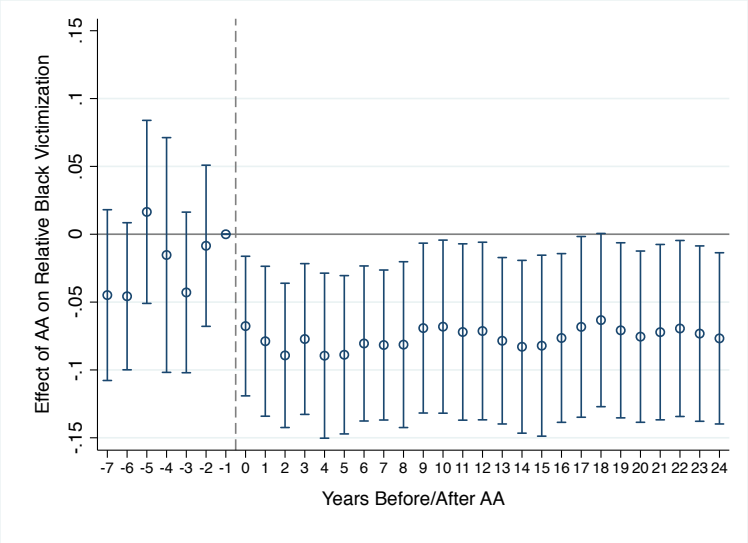

Figure 2: Estimated Effects of Affirmative Action on Changes in Racial Disparities in Victimization, 1979-2004

Figure 2 indicates that racial disparities in victimization rates were not trending differently in treated MSAs pretreatment, relative to the last year prior to treatment. Pretreatment estimates of β_y consistently are not significant at the 95% threshold. By contrast, post-litigation affirmative action appears to have had a substantively large negative impact on relative black victimization rates. Post-affirmative action estimates of the changes in racial disparities in victimization rates, relative to the last year prior to treatment, range between 6.3 and 8.9 percentage point decreases over the 25 years after litigation onset. These estimates are all significant at the 95% threshold. The average of the post-affirmative action estimates is a 7.6 percentage point decrease in the relative black victimization rate, after the imposition of post-litigation affirmative action in law enforcement. As reported in Table 1, the average pretreatment racial gap in victimization between 1979 and 1985 is 7 percentage points, indicating that post-litigation affirmative action essentially eliminated the pretreatment racial gap in crime victimization.

The estimates reported in Figure 2 also reveal that relative black victimization dropped immediately after the onset of litigation leading to post-litigation affirmative action, suggesting a response that occurred before substantial changes to black officer shares.

Figure 6 in the Appendix replicates these estimates, but includes a vector of time-varying respondent-level covariates from Table 1, including homeownership, residence in single-family home, annual household income above $30,000, age between 18 and 29, marital status, and whether the respondent has some years of college education. Estimates are of nearly identical magnitudes but are somewhat more precisely estimated after the inclusion of covariates. In the causal mechanism section we explore whether these covariates themselves could have been affected by treatment, with potential implications for post-treatment bias, but find no treatment effects on racial disparities in respondent socioeconomic characteristics.

Figure 7 in the Appendix replicates the estimates reported in Figure 2, but restricts the sample to a balanced panel of 5 treated MSAs and 20 years (one pretreatment year, 19 posttreatment years) for which NCVS data are available in all periods for all MSAs. Covariates are included. The estimates, while noisier than those reported for the full unbalanced samples, continue to indicate that racial disparities in victimization dropped immediately after litigation, and remained below pretreatment levels for the duration of the posttreatment period.

Figure 8 in the Appendix also replicates the estimates reported in Figure 2, but includes never treated MSAs in the control group.[6] Estimates are essentially unchanged.

Figure 9 in the Appendix replicates the estimates reported in Figure 8 (including never treated MSAs in the control group), but allows treated MSAs to exit the sample if and when their affirmative action plan terminates. Estimates are again essentially unchanged.

Finally, Figure 10 in the Appendix replicates the estimates reported in Figure 8 (including never

[6]For this analysis, the indicator variables in Equation 1 are multiplied by AA_m, a binary variable equal to one for the 26 MSAs subjected to post-litigation affirmative action between 1970 and 1986, and equal to zero for the 11 never treated MSAs. Event indicator variables are zero for all never treated MSAs.

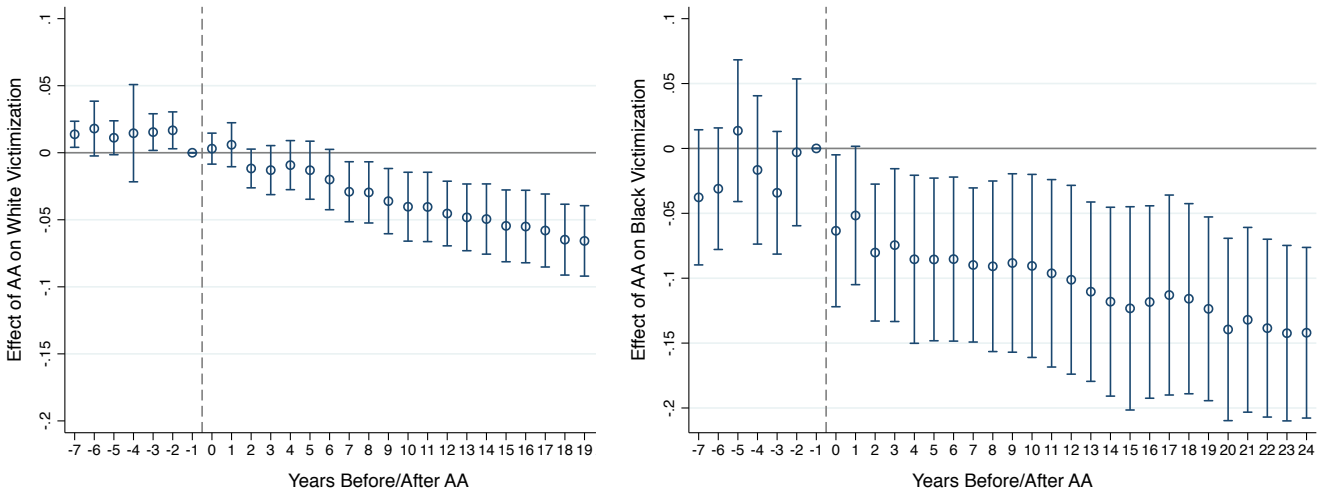

Figure 3: Estimated Effects of Post-Litigation Affirmative Action on White and Black Victimization Rates, 1979-2004

treated MSAs in the control group), but also includes the three litigated-only MSAs (including Tampa, FL) in the treatment group. Estimates are once again essentially unchanged.

Knowing that post-litigation affirmative action resulted in decreases in racial disparities in crime victimization does not tell us about the nature of the trends in post-affirmative action victimization for white and black respondents. We can estimate these trends separately for white and black respondents using Equation 2, which replicates Equation 1, minus the indicator for black respondents and the interaction term:

$$Victimization_{imt} = \sum_{\substack{y=-7 \\ y\neq -1}}^{y=24} \beta_y I(t - t_m^* = y) + \boldsymbol{\beta_t} + \boldsymbol{\beta_m} + \epsilon_{imt} \tag{2}$$

Figure 3 reports the estimates of β_y for $y = -7$ to $y = 24$, separately for white and black NCVS respondents, along with 95% confidence intervals.

Both white and black victimization rates decline post-treatment, relative to pretreatment baseline rates, even after removing common time trends through year fixed effects. However, black victimization rates decline substantially more than do white victimization rates. White respondents experience on average a 4.3 percentage point reduction in crime victimization, following the imposition of post-litigation affirmative action. Black respondents see on average a 10.4 percentage point reduction in crime victimization, following the imposition of post-litigation affirmative action.

The estimates reported in Figure 3 suggest that post-litigation affirmative action plans imposed on law enforcement agencies, while reducing both racial disparities in crime victimization rates, and black victimization rates, did not have a zero-sum effect on white victimization rates. White victimization rates also decline after the imposition of post-litigation affirmative action plans in

law enforcement agencies.

We can also see that treatment effects appear immediately for black respondents, yet do not appear until approximately 8 years after treatment for white respondents. As treatment effects begin to appear for white respondents, and as they grow over time, we see treatment effects begin to grow in magnitude for black respondents. These patterns are consistent with an immediate change in behavior by existing officers in response to reports of black victimization, as a function of litigation leading to affirmative action, followed by gradually increasing reductions in both black and white victimization, likely induced by gradually increasing black officer shares.

Figure 11 in the Appendix replicates Figure 3, but includes never treated MSAs as controls. Including never treated MSAs as controls shifts estimated post-treatment coefficients in a positive direction for both white and black victimization rates. In these models, white respondents experience on average a 1.2 percentage point increase in crime victimization following the imposition of post-litigation affirmative action, although the annual estimates are not themselves significant at the 95% threshold. Black respondents see on average a 4.3 percentage point reduction in crime victimization following the imposition of post-litigation affirmative action. Although many of the annual changes in black victimization are no longer significant at the 95% threshold after including never treated MSAs as controls, the post-affirmative action decreases in the racial gap in victimization remain large and significant after the inclusion of never treated MSAs as controls, as reported in Figure 8 in the Appendix.

D.2.2 2WFE Difference in Differences Models

We can also estimate average posttreatment effects using two-way fixed effects difference in differences (2WFE DD) models. These estimates, along with Goodman-Bacon decomposition of the weights used in these models, are reported in the Appendix. Estimates are consistent with estimates from the event study models, although effect sizes are slightly smaller. The Goodman-Bacon decomposition exercise indicates that the smaller effect sizes estimated in the 2WFE DD models are likely due to treatment effects that increase over time.

We also use a series of 2WFE DD models to estimate the effects of placebo treatments on the 11 never treated MSAs. We assign a placebo litigation year between 1970 and 1986, with replacement, to each never treated MSA; we iterate this random assignment 10 times. For each set of randomly assigned placebo years, we estimate the 2WFE DD interaction model specified in the Appendix. Figure **??** in the Appendix reports the coefficients on the interaction terms; none are significant.

E Causal Mechanisms

E.1 Agency Racial Composition

The pattern of observed treatment effects reported above is consistent with an immediate post-litigation increase in responsiveness to black victimization by existing officers, followed by more gradual reductions in both black and white victimization, possibly induced by more gradual changes in officer racial composition.

We can explore the plausibility of effects driven by changes in officer racial composition using the Law Enforcement Management and Administrative Statistics (LEMAS) survey, conducted by the Bureau of Justice Statistics periodically since 1987. The LEMAS survey reports demographic personnel data for a sample of local law enforcement agencies, including all agencies that employ 100 or more full-time sworn officers, and a nationally representative sample of smaller agencies. We matched the agencies in our sample to the agencies in the LEMAS survey for the years 1987, 1990, 1993, 1997, 2000, 2003, 2007, and 2013. All agencies in our litigation sample are also represented in the LEMAS survey. We aggregated agency-level LEMAS data on the numbers of black and white sworn officers and the total numbers of sworn officers to the MSA level, weighting the MSA means by the sizes of the populations served by each agency. For each MSA/year, we constructed the proportions of sworn officers that are black and white.

Because the LEMAS data are only available as of 1987, they record only post-treatment variation in agency racial composition. To estimate the effects of post-litigation affirmative action using only these post-treatment data, we constructed the treatment variable $AA\ Duration_{mt}$, which records the number of years a treated MSA has been subjected to a post-litigation affirmative action plan.

Figure 13 in the Appendix reports the scatterplots and bivariate relationships between affirmative action duration and the proportions of black and white officers, for the 26 treated MSAs. Plan duration is positively correlated with the proportion of sworn officers that are black, and negatively correlated with the proportion of officers that are white.

We then estimate Equation 3 separately for the proportions of sworn officers that are black and white:

$$Pct\ Black/White\ Officers_{mt} = \alpha + \beta AA\ Duration_{mt} + \lambda AA\ End_{mt} + \theta_m + \gamma t + \epsilon_{mt} \qquad (3)$$

Equation 3 includes a covariate $AA\ End_{mt}$, which is 1 if MSA m had an affirmative action plan AA that terminated after year t, and is 0 otherwise. θ_m are MSA fixed effects; γ_t are year fixed effects. Robust standard errors are clustered on the MSA level.

Table 8 in the Appendix reports these estimates. The post-litigation affirmative action plans in our sample have clear effects on agency racial composition. We see an average 0.2 percentage point increase in the proportion of black officers per year post-treatment, and an average 0.8 percentage

point decrease in the proportion of white officers per year post-treatment; both estimates are significant at the 95% confidence level. These estimates are consistent with gradually increasing reductions in both black and white victimization rates driven by gradually increasing black officer shares.

E.2 Racial Disparities in Socioeconomic Indicators

As reported in the second two columns of Table 1, sizable racial disparities in a variety of socioeconomic characteristics are evident in treated MSAs during pretreatment years. Black respondents in these MSAs are less likely to own homes, to live in single family residences, to have household incomes of at least $30,000, to have some college, and to be married, relative to white respondents; a higher proportion of black respondents in these MSAs are also in the 18-29 year age cohort, relative to black respondents. These pretreatment racial disparities in socioeconomic attributes may have contributed to pretreatment racial disparities in crime victimization. One possibility is that post-litigation affirmative action may have caused decreases in the racial disparities in socioeconomic characteristics observed in treated MSAs pretreatment, leading to decreases in racial disparities in victimization.

We estimate Equation 1 using the respondent-level outcomes of homeownership, residence in a single-family home, age 18-29, household income of at least $30,000, some college, and marital status, using only the 26 MSAs that will eventually become subject to treatment. Figures 14-19 in the Appendix report the results. There is no evidence of post-treatment changes in racial disparities in socioeconomic characteristics.

Figures 14-19 also reveal no pretreatment trends in respondent socioeconomic characteristics in the 26 MSAs that will eventually be treated. The lack of pretreatment trends in respondent socioeconomic characteristics further supports the premise that the timing of litigation leading to post-litigation affirmative action was as-if random among these MSAs.

E.3 Types of Crime

We can also explore whether the impacts of post-litigation affirmative action on relative black victimization are heterogeneous by kind of crime, which may provide insight into causal mechanisms. Table 9 in the Appendix reports victimization means, by race and category of crime, for treated MSAs during pretreatment years only.[7] Black respondents report higher pretreatment victimization rates, relative to white respondents, for nearly all categories of crime. The exceptions are assault without a weapon (simple assault), both with and without injury, for which white respondents report slightly higher victimization rates during the pretreatment period. Most victimization during the pretreatment period, for both white and black respondents, occurs in the category of

[7] Crime categories are reported as defined by the NCVS.

burglary/theft, where there is approximately a 5 percentage point (50 %) racial gap in victimization (11 % victimization rate for white respondents; 16% victimization rate for black respondents).

Because there are fewer incidents within each crime category, relative to the full sample, to achieve greater precision we report the pooled 2WFE DD estimates from Equation 6 of the effects of post-litigation affirmative action on racial disparities in victimization, by type of crime. We report estimates for the 26 MSAs eventually subjected to treatment, exploiting only the variation in treatment timing.

Tables 10 and 11 in the Appendix report the results. Effects are largely consistent across crime categories. Post-litigation affirmative action decreases racial disparities in victimization for robbery with serious injury, robbery with no injury, robbery with no contact (e.g., pickpocketing), all categories of robbery pooled together, burglary, attempted forcible entry, motor vehicle theft, other theft, all categories of burglary and theft pooled together, aggravated assault, and all categories of assault pooled together. For all of these categories of crime, black respondents were also significantly more likely to be victimized during pretreatment years, relative to white respondents.

We see no negative effects of post-litigation affirmative action on racial disparities in robbery with minor injury, simple assault with no injury, simple assault with injury, and rape. However, these categories account for few crimes, for both white and black respondents.

The largest reduction in the racial gap in crime victimization is realized in the pooled category of burglary/theft, or property crimes committed without the personal involvement of the victim. In the overall 2WFE DD estimates for all incidents reported in Table 4, we see an overall 6 percentage point reduction in the racial gap in victimization after the imposition of post-litigation affirmative action. As reported in Table 10, 4.5 percentage points of this 6 percentage point reduction in the racial gap in victimization, or 75% of the total reduction, is realized in the category of burglary/theft.

E.4 Reporting Effects

The NCVS asks respondents whether, conditional on having experienced a crime, that crime was reported to the police. One possible mechanism by which post-litigation affirmative action might have reduced racial disparities in crime victimization is by encouraging increased reporting of crime by black victims, relative to the reporting of crime by white victims [Miller and Segal, 2018].

However, the pretreatment reporting rates reported in Table 1 cast some doubt that the pretreatment racial gap in victimization was due to underreporting by black victims. During the pretreatment period, black NCVS respondents in MSAs that would eventually experience post-litigation affirmative action in law enforcement have a victimization rate of 20%, a rate that is 54% higher than the baseline white victimization rate of 13%. Yet black respondents in these yet-to-be-treated MSAs are also 18% more likely to *report* crime victimization, relative to white respondents,

with a pretreatment reporting rate of 40%, relative to the white reporting rate of 34%.[8]

The higher relative reporting rates by black victims imply that the racial gap in crime known to law enforcement in treated MSAs pretreatment was even larger than the racial gap in victimization. Looking only at reported victimization, 8% of black respondents reported experiencing any type of crime in treated MSAs pretreatment, a rate 60% higher than the white reported victimization rate of 5%. The racial gap in victimization in treated MSAs pretreatment does not appear to be a function of a lack of law enforcement knowledge about this racial gap.

We can nonetheless estimate the effects of post-litigation affirmative action on the racial gaps in reporting rates, reported victimization, and unreported victimization using Equation 1. For reporting rates, we restrict the sample to NCVS respondents who reported having experienced a crime in the six months prior to their interview. In this model, the outcome of interest is $Reported_{imt}$, which is 1 if the respondent reported the crime to law enforcement, and 0 otherwise. For reported and unreported victimization, the outcomes of interest are $Reported_{imt}$ and $Unreported_{imt}$ ($Unreported_{imt}$ = 1 if respondent experienced a victimization that was not reported to law enforcement, and 0 otherwise), but we use the full sample of respondents to estimate Equation 1.

Figure 20 in the Appendix reports the estimates of β_y when $Black_{imt} = 1$, for the set of 26 treated MSAs, for reporting rates. Figure 21 in the Appendix reports estimates for reported and unreported victimization.

Post-litigation affirmative action plans appear to have no effect on racial disparities in reporting rates. Prior to the imposition of these plans, black reporting rates in yet-to-be-treated MSAs appear to be dropping, relative to white reporting rates, relative to the last year prior to plan implementation. There do not appear to be further changes in reporting rates after plan implementation. Post-treatment increases in the reporting of black victimization do not appear to be a cause of post-treatment decreases in racial disparities in crime victimization.

Trends in the racial gaps in both reported and unreported victimization, by contrast, look very similar to trends in the racial gap in overall victimization. There are no pretreatment trends in the racial gaps in either reported or unreported victimization. Post-treatment, there is an average 2.7 percentage point reduction in the racial gap in reported victimization, relative to a pretreatment racial gap in reported victimization of 3 percentage points. Post-treatment annual changes in the racial gap in reported victimization are generally significant at the 95% level. Likewise, there is an average post-treatment 4.9 percentage point reduction in the racial gap in reported victimization, relative to a pretreatment racial gap in reported victimization of 3.3 percentage points. Post-treatment annual changes in the racial gap in reported victimization are again generally significant at the 95% level.

[8]Other work has also documented higher relative rates of reporting among nonwhite crime victims [Hagan et al., 2018, Desmond et al., 2016].

E.5 Police Response

Although changes in reporting rates do not appear to account for the post-affirmative action decreases in racial disparities in victimization, we may nonetheless be able to learn from the reasons given by respondents for not reporting their victimization to law enforcement. Conditional on experiencing a victimization, and not reporting that victimization to law enforcement, the reasons given by black respondents for not reporting their victimization to law enforcement may have changed post-treatment, relative to the reasons given by white respondents for not reporting.

Table 12 in the Appendix reports pretreatment means for the reasons given for not reporting victimization to law enforcement, by race, for the treated MSAs during pretreatment years only, using only respondents who experienced victimization that was not reported to law enforcement. During this pretreatment period, black respondents were less likely to say that their victimization was too minor to report to law enforcement, or that they had reported to a different official, and more likely to say that their victimization would not be important to the police, or that the police would not be able to recover their property, relative to white respondents.

Because there are many fewer respondents in this sample, relative to the full sample, we report the pooled 2WFE DD estimates from Equation 6 of the effects of post-affirmative action on racial disparities in reasons for not reporting. We report estimates for the 26 MSAs eventually subjected to treatment, exploiting only the variation in treatment timing, using only respondents who experienced victimization that was not reported to law enforcement. Table 13 reports these estimates.

Table 13 confirms that there are significant pretreatment racial gaps in the reasons giving for not reporting victimization: black respondents are significantly more likely to say that their victimization would not be important to the police, or that the police would not be able to recover their property, and significantly less likely to say that their victimization was too minor to report to law enforcement, or that they had reported to a different official, relative to white respondents. However, these racial disparities in the reasons given for not reporting change after the imposition of post-litigation affirmative action. Black respondents become 3.1 percentage points less likely to not report their victimization because they believe that their victimization will not be important to the police, and 3.3 percentage points less likely to not report victimization because they believe that the police will not be able to recover their property, relative to white respondents, relative to pretreatment racial gaps in these reasons for not reporting of 6.3 percentage points and 4.5 percentage points, respectively. The reductions in the racial gaps in these reasons for not reporting are significant at the 0.01 threshold.

Likewise, black respondents become 4.1 percentage points more likely to not report their victimization because they have reported to a different official, and 4.5 percentage points more likely to not report victimization because they believe that the crime was too minor to warrant reporting, relative to white respondents, relative to pretreatment racial gaps in these reasons for not reporting

of -4.2 percentage points and -10.6 percentage points, respectively. The reductions in the racial gaps in these reasons for not reporting are also significant at the 0.01 threshold.

These changes in the reasons given for not reporting crime victimization suggest that black respondents became more confident in the nature of the police response they could expect after reporting, after the imposition of post-litigation affirmative action, relative to white respondents.

We can further explore the nature of the police response to black and white victimization using a series of questions about this response that were first asked in 1987. Beginning in this year, the NCVS asked respondents about the nature of the police response to a reported victimization, conditional on the respondent having reported the victimization to law enforcement. Respondents were asked whether the police came when notified, took a report, searched, took evidence, interviewed witnesses, promised surveillance, promised to investigate, made an arrest, or had some other response.

Because we have only post-treatment variation in the nature of the police response to a victimization, we estimate effects using Equation 3, used earlier to estimate the effects of post-litigation affirmative action on post-treatment variation in agency racial composition. Using the NCVS sample for the years 1987-2004, we estimate the effects of $AA\ Duration_{mt}$, or the number of years a treated MSA has been subjected to a post-litigation affirmative action plan, on racial disparities in police response. Positive coefficients indicate an increased police response to crimes reported by black victims, relative to crimes reported by white victims, after post-litigation affirmative action. We use only the sample of respondents who reported a victimization in the 26 treated MSAs.

Table 14 in the Appendix reports the results. Coefficients for the effect of post-litigation affirmative action on racial disparities in the police response to reported crime are positive for the overall police response, and for eight of nine subcategories of police response, but are generally not significant at conventional thresholds. There is nevertheless some suggestive evidence of a change in the nature of police response after post-litigation affirmative action. For every year after the imposition of post-litigation affirmative action, black respondents become 0.1 percentage point more likely to report that the police promised to investigate their victimization, relative to white respondents; the difference is significant at p.10. Likewise, for every year after the imposition of post-litigation affirmative action, black respondents become 0.3 percentage points more likely to report a police response uncategorized by the NCVS, relative to white respondents; the difference is significant at p.01.

These post-affirmative action changes in the nature of the police response, conditional on reported victimization, are consistent with the post-affirmative action changes in respondents' reasons for not reporting, conditional on unreported victimization. In the latter case, black respondents appear to become more confident that their local law enforcement agency will believe that their victimization was important, and will be able to help them recover their property, relative to white respondents, after the imposition of post-litigation affirmative action. In the former case, police

officers do in fact appear to become more responsive to victimization reported by black victims, relative to victimization reported by white victims, after the imposition of post-litigation affirmative action.

F Discussion

Black Americans are disproportionately the focus of criminal justice enforcement effort in the United States. Black Americans are disproportionately stopped, arrested, charged, convicted, and incarcerated, relative to white Americans. The disproportionate effort devoted to policing black Americans has led some to argue that black Americans, and disproportionately black neighborhoods, are being overpoliced [Gelman et al., 2007, Goel et al., 2016].

Yet black Americans are also less safe than white Americans, consistently experiencing higher rates of crime victimization, relative to their white neighbors (Bureau of Justice Statistics, National Crime Victimization Survey, 1993-2018). Some might argue that, given the higher relative risk of crime victimization faced by black Americans, black crime victimization may in fact be underpoliced [Chalfin and McCrary, 2018].

Yet it is also possible that black crime victimization is being less *effectively* policed, relative to white crime victimization. Police forces tend to be largely white, even in cities with sizable black populations. White police officers may be less good at and/or less interested in policing crime experienced by nonwhite victims, relative to crime experienced by white victims. Decreasing the racial gap in police force composition may decrease the racial gap in crime victimization. Yet estimating the effects of police force racial composition on the racial gap in crime victimization is complicated by the likely endogeneity of agency personnel decisions to factors that may also affect the racial gap in crime victimization.

We leverage the idiosyncratic variation in the timing of post-litigation affirmative action plans imposed on law enforcement agencies in 26 of the largest MSAs between 1970 and 1986. We find that post-litigation affirmative action increased the shares of black officers, and substantially reduced both racial disparities in crime victimization, and rates of black crime victimization, without increasing rates of white crime victimization.

Our estimates may have implications for the constitutional status of affirmative action in law enforcement. Since Richmond v. Croson (1989), the Supreme Court has held that affirmative action plans in public sector hiring must survive strict scrutiny, and will be invalidated by courts unless they serve a "compelling" governmental interest. One governmental interest that might be particularly compelling is the performance of an agency's core function. In the case of policing agencies, if affirmative action hiring plans contribute to decreases in crime victimization, they might be more likely to pass the strict scrutiny test [Lott, 2000].

No prior studies have found that race-based affirmative action plans in law enforcement in fact help agencies to perform their core mission, namely to reduce crime [Lott, 2000, McCrary, 2007].

The estimates reported here challenge this received wisdom, and indicate the potential for renewed support of efforts to increase black representation in law enforcement.

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G Appendix

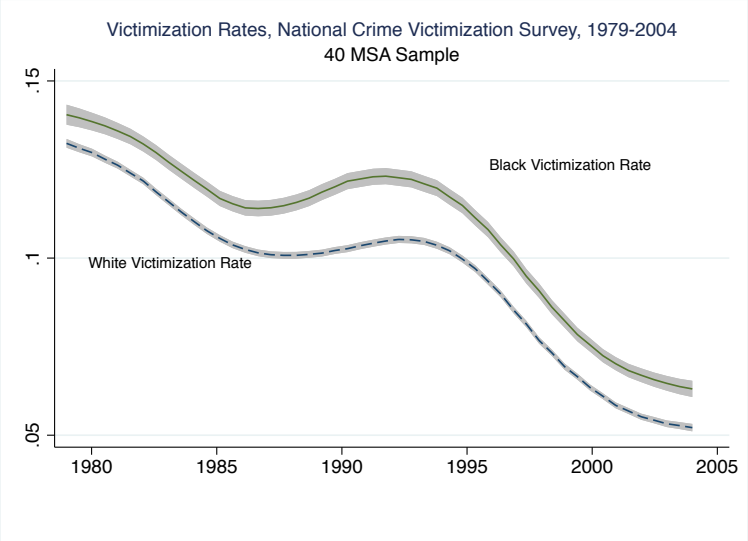

Figure 4

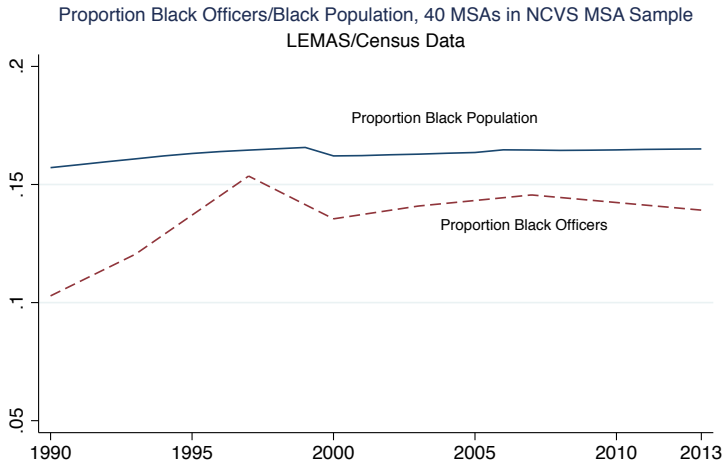

Figure 5

G.1 Treatment Exogeneity

To estimate the probability of externally-imposed affirmative action, we implement Equation 4

$$Treatment_i = \alpha + \beta \boldsymbol{Pretreatment}_i + \epsilon_i \tag{4}$$

where the vector $\boldsymbol{Pretreatment}_i$ includes pairs of uncorrelated pretreatment demographic variables sourced from the 1970 census. To estimate the timing of externally-imposed affirmative action, we implement Equation 5

$$Treatment\ Year_i = \alpha + \beta \boldsymbol{Pretreatment}_i + \epsilon_i \tag{5}$$

using only those agencies that will eventually be subjected to treatment, where the vector $\boldsymbol{Pretreatment}_i$ again includes pairs of uncorrelated pretreatment demographic variables sourced from the 1970 census. We report estimates at three levels of aggregation: agency, county, and MSA. Standard errors are clustered on MSA for estimates reported at the agency and county level.

Tables 2 and 3 report the results.

Table 2: Predicting Presence of Externally Imposed Post-Litigation Affirmative Action

	Agency	County	MSA	Agency	County	MSA	Agency	County	MSA
Log Population	0.08	0.05	0.16**						
	(0.05)	(0.06)	(0.08)						
Pct Black	0.01***	0.01**	0.02**						
	(0.01)	(0.00)	(0.01)						
Median Age				0.03	0.01	0.03			
				(0.02)	(0.02)	(0.02)			
Median Fam Income				0.0000	0.0001	0.0001**			
				(0.0000)	(0.0000)	(0.0001)			
Median Yrs School							-0.18**	-0.14**	-0.25
							(0.08)	(0.07)	(0.15)
Pct Urban							0.00	0.00	0.01
							(0.00)	(0.00)	(0.01)
Constant	-0.49	-0.09	-1.70	-0.46	-0.17	-1.38	2.56**	2.26***	2.73
	(0.72)	(0.78)	(1.02)	(0.68)	(0.74)	(0.87)	(0.97)	(0.76)	(2.17)
N	149	81	37	149	81	37	149	81	37

* p<.10, ** p<.05, *** p<.01. Standard errors clustered on MSA for agency and county models.

Table 3: Predicting Timing of Externally Imposed Post-Litigation Affirmative Action

	Agency	County	MSA	Agency	County	MSA	Agency	County	MSA
Log Population	0.24	-0.29	0.21						
	(0.47)	(0.51)	(1.00)						
Pct Black	-0.06	-0.01	-0.09						
	(0.08)	(0.05)	(0.13)						
Median Age				-0.22	-0.24	-0.08			
				(0.22)	(0.18)	(0.24)			
Median Fam Income				-0.0005	-0.0002	-0.0001			
				(0.0004)	(0.0003)	(0.0007)			
Median Yrs School							0.92	0.48	1.35
							(0.74)	(0.69)	(1.97)
Pct Urban							0.02	0.01	0.08
							(0.03)	(0.03)	(0.09)
Constant	1973.6***	1979.7***	1974.4***	1988.0***	1984.6***	1979.8***	1963.2***	1969.1***	1952.4***
	(6.7)	(6.7)	(14.7)	(8.6)	(6.3)	(11.7)	(8.4)	(7.7)	(23.7)
N	108	60	26	108	60	26	108	60	26

* p<.10, ** p<.05, *** p<.01. Standard errors clustered on MSA for agency and county models.

G.2 Event Study Extensions

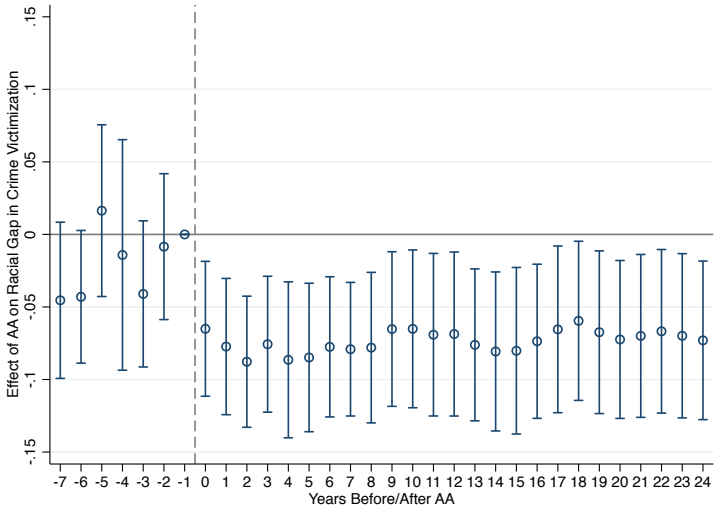

Figure 6: Estimated Effects of Affirmative Action on Changes in the Racial Gap in Victimization, 1979-2004; Including Covariates

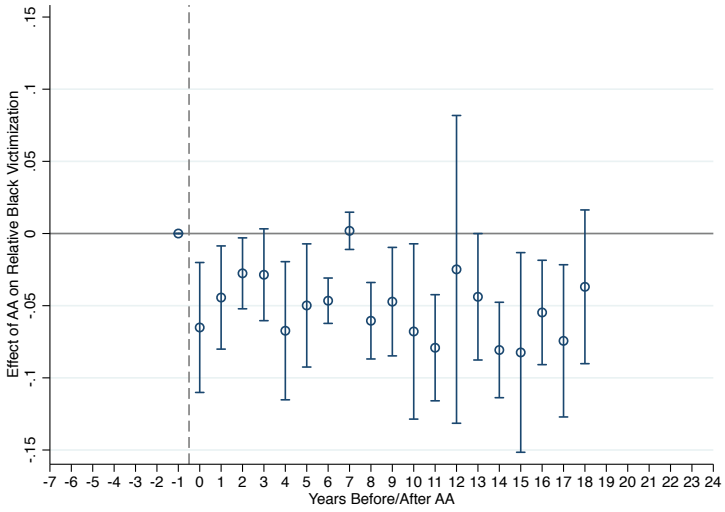

Figure 7: Estimated Effects of Affirmative Action on Changes in the Racial Gap in Victimization, 1979; Including Covariates
Balanced Panel of 5 Treated MSAs

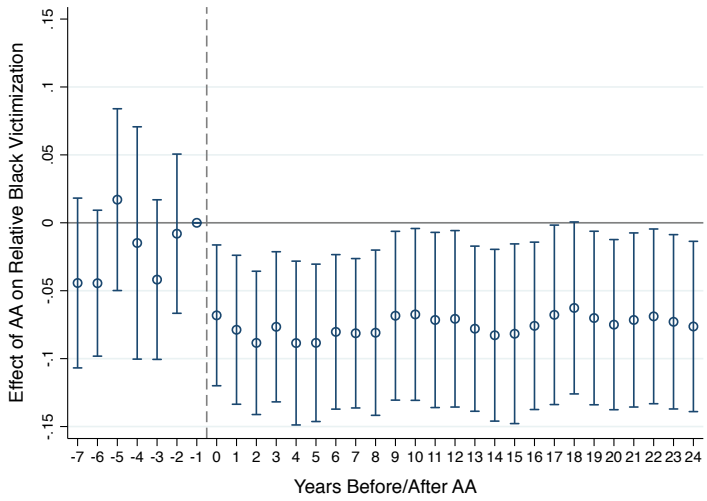

Figure 8: Estimated Effects of Affirmative Action on Changes in the Racial Gap in Victimization, 1979-2004; Including Never Treated MSAs

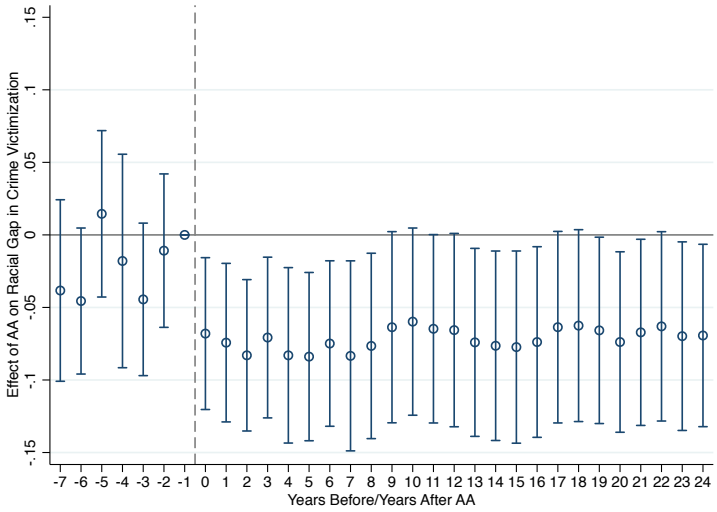

Figure 9: Estimated Effects of Affirmative Action on Changes in the Racial Gap in Victimization, 1979-2004; Including Never Treated MSAs
Treated MSAs Exit Sample if AA Terminates

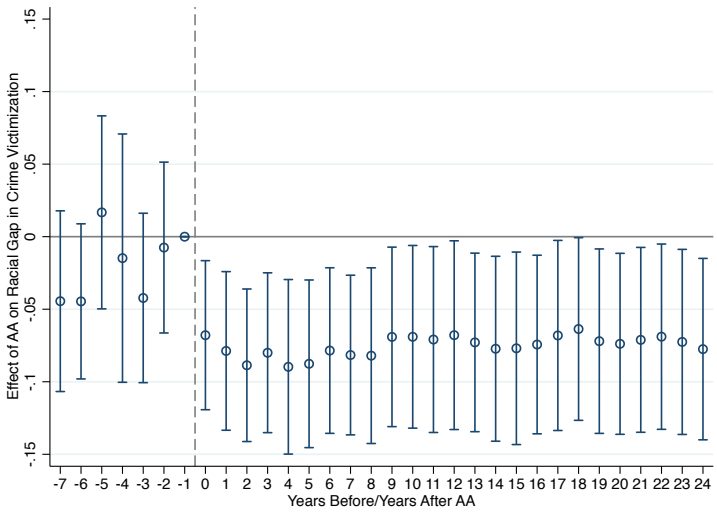

Figure 10: Estimated Effects of Affirmative Action on Changes in the Racial Gap in Victimization, 1979-2004; Including All MSAs

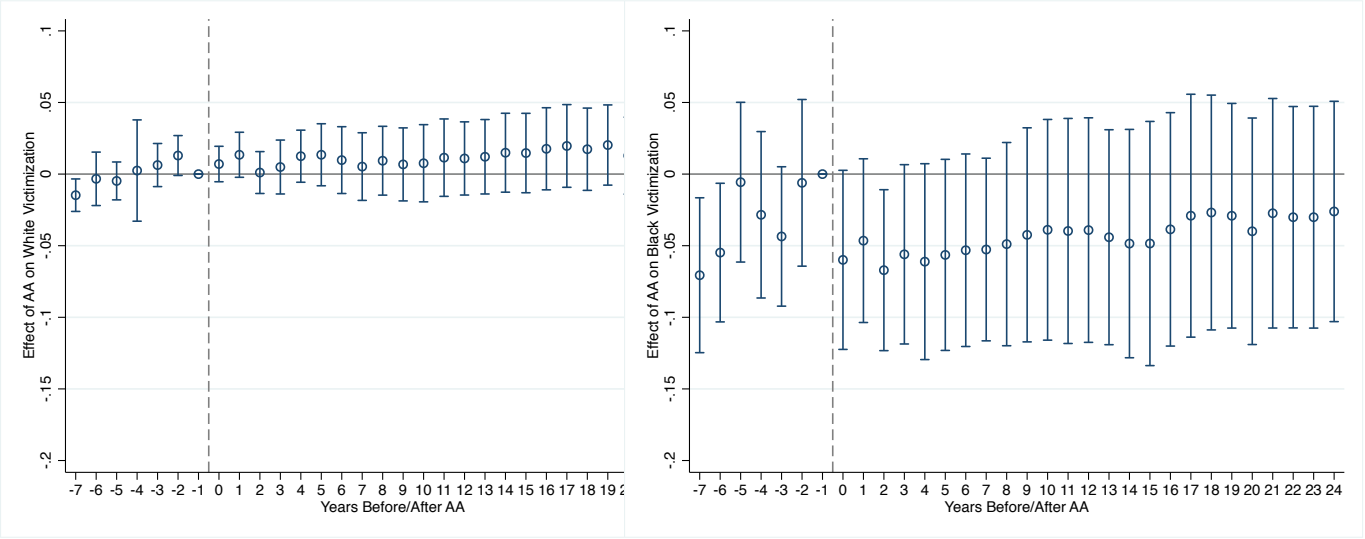

Figure 11: Estimated Effects of Post-Litigation Affirmative Action on White and Black Victimization, 1979-2004 Including Never Treated MSAs

G.3 2WFE Difference in Differences Models

We estimate average post-treatment effects using two-way fixed effects (2WFE) difference in differences models, as in Equation 6:

$$Victimization_{imt} = \beta_y Post\text{-}AA_t + \beta_b Black_{imt} + \beta_{by}(Black_{imt} \times Post\text{-}AA_t) + \boldsymbol{\beta_t} + \boldsymbol{\beta_m} + \epsilon_{imt} \quad (6)$$

In Equation 6, the indicator variables $I(t - t_m^* = y)$ from Equation 1 have been replaced by a single indicator variable denoting whether a treated MSA was post-treatment in year t ($Post\text{-}AA_t = 1$) or not ($Post\text{-}AA_t = 0$).

We can also estimate effects separately for white and black respondents, as in Equation 7:

$$Victimization_{imt} = \beta_y Post\text{-}AA_t + \boldsymbol{\beta_t} + \boldsymbol{\beta_m} + \epsilon_{imt} \quad (7)$$

In all 2WFE DD models we continue to estimate a linear probability model and cluster standard errors at the MSA level, initially using only the sample of MSAs containing law enforcement agencies subjected to post-litigation affirmative action plans between 1970 and 1986.

Table 4 reports the coefficients from Equation 6 and from Equation 7, estimated separately for white and black respondents. The 2WFE DD estimate for the interaction model is close to the average of the post-treatment event study estimates for the changes in the racial gap in victimization reported in Figure 2 (7.6 percentage points). In the DD interaction model, black victimization rates are estimated to be 7 percentage points higher than white victimization rates in yet-to-be-treated MSAs during the pretreatment period; post-treatment decreases in the racial gap in victimization are estimated to average 6 percentage points. The DD coefficients for separately estimated white and black victimization rates are, however, significantly smaller than the average post-treatment event study coefficients reported in Figure 3 (average decreases of 4.3 and 10.4 percentage points, respectively). In the separately estimated DD models, there are no average post-treatment changes in the white victimization rate, and an average 4 percentage point decrease in the black victimization rate. As noted earlier, the smaller coefficients in the separately estimated DD models are likely due to downward bias introduced by increasing treatment effects over time. We further explore this possibility below using DD decomposition.

Table 4: 2WFE DD Estimates of Effects of Post-Litigation Affirmative Action on Victimization, 1979-2004

	White Respondents	Black Respondents	Interaction Model
Post-AA	0.000	-0.04***	0.002
	(0.011)	(0.01)	(0.010)
Black			0.07***
			(0.01)
Post-AA X Black			-0.06***
			(0.01)
Constant	0.13***	0.17***	0.13***
	(0.01)	(0.01)	(0.01)
N	1,156,762	262,912	1,419,674
MSA FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes

* p<.10, ** p<.05, *** p<.01. Standard errors clustered on MSA.

Table 5 replicates the estimates reported in Table 4, but includes never treated MSAs. Magnitudes are smaller than those reported in Table 4, but are still significant at conventional thresholds. Black victimization rates are estimated to be 3 percentage points higher than white victimization rates in untreated MSAs; post-treatment decreases in the racial gap in victimization are estimated to average 2 percentage points. There are still no average post-treatment changes in the white victimization rate, and an average 4 percentage point decrease in the black victimization rate.

Table 6 replicates the estimates reported in Table 4, but restricted to a balanced panel of 5 treated MSAs and 20 years (1 pretreatment year and 19 posttreatment years) for which NCVS data are available in all years for all MSAs. Black victimization rates are estimated to be 9 percentage points higher than white victimization rates in yet-to-be-treated MSAs during the pretreatment period; post-treatment decreases in the racial gap in victimization are estimated to average 5 percentage points. In the separately estimated DD models, there are no average post-treatment changes in the white victimization rate, and an average 10 percentage point decrease in the black victimization rate.

Table 5: 2WFE DD Estimates of Effects of Affirmative Action on Victimization, 1979-2004
Including Never Treated MSAs

	White Respondents	Black Respondents	Interaction Model
Post-AA	0.002	-0.04***	-0.00
	(0.011)	(0.01)	(0.01)
Black			0.03***
			(0.01)
Post-AA X Black			-0.02*
			(0.01)
Constant	0.137***	0.17***	0.14***
	(0.007)	(0.01)	(0.01)
N	1,444,203	288,436	1,732,639
MSA FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes

* p<.10, ** p<.05, *** p<.01. Standard errors clustered on MSA.

Table 6: 2WFE DD Estimates of Effects of Affirmative Action on Victimization, 1979-2004
Balanced Panel

	White Respondents	Black Respondents	Interaction Model
Post-AA	-0.004	-0.10*	-0.01
	(0.009)	(0.04)	(0.01)
Black			0.09**
			(0.03)
Post-AA X Black			-0.05*
			(0.03)
Constant	0.128***	0.16***	0.12***
	(0.010)	(0.01)	(0.01)
N	162865	21239	184104

* p<.10, ** p<.05, *** p<.01. Standard errors clustered on MSA.

G.3.1 DD Decomposition

The 2WFE DD model captures average treatment effects on the treated, but may incorporate downward bias in the presence of treatment effects that increase over time. If outcomes are changing at a faster rate in earlier-treated units being used as controls for later-treated units, the 2WFE DD model may underestimate treatment effects in later-treated units (and may even produce sign reversals, relative to true treatment effects) [Goodman-Bacon, 2018].

We can use the difference in differences decomposition model developed by Goodman-Bacon [2018] to uncover the extent to which the 2WFE DD model may be underestimating treatment effects. The 2WFE DD estimates reported in Table 4 are composed of variance-weighted averages of treatment effects estimated from a series of 2x2 treatment/control groups, which themselves compare agencies treated at the same time to agencies treated at another time (earlier or later). The extent of the bias introduced into the DD estimates by time-varying treatment effects depends on the shares of the 2WFE DD estimates that are derived from comparisons of later to earlier treated agencies, which in turn depends on both group size and the variance of the treatment within each 2x2 comparison group [Goodman-Bacon, 2018].

The Goodman-Bacon decomposition model is currently only available for strongly balanced panels. To estimate the decomposition model we first collapse the NCVS data into MSA/year means. 2WFE DD estimates for the sample collapsed to MSA/year observations are reported in Table 7, along with the DD estimates and weights for the categories of treatment/control comparison groups from which the 2WFE DD estimates are derived. Estimates are weighted by the number of respondents in each MSA.[9]

The 2WFE DD estimates using NCVS data collapsed to MSA/year means are very similar to those reported in Table 4. We see no post-treatment changes in white victimization rates, post-treatment decreases in black victimization rates of 4 percentage points on average, and post-treatment decreases in the racial gap in victimization of 5 percentage points on average. The decomposition weights and betas reported in Table 7 reveal that almost all of the weight in the 2WFE DD estimates is being placed on comparisons between MSAS with agencies subjected to post-litigation affirmative action plans before 1979 (always treated), and those subjected to post-litigation affirmative action after 1979 (timing groups). Because of the increases in treatment effects over time evident in Figure 3, the treatment effects estimated for these later-earlier comparisons are consistently smaller than those estimated for the comparisons between MSAs subjected to post-litigation affirmative action between 1979 and 1986 (the timing group only comparisons). Given the evident downward bias introduced into the 2WFE models by time-varying treatment effects,

[9]For the 2WFE models we use *xtreg* in Stata 16; for the decomposition model we use the *bacondecomp* Stata 16 command developed by Goodman-Bacon et al. [2019]. To enable the use of weights in the decomposition model, we include a covariate indicating years after the termination of a post-litigation affirmative action plan. This covariate is insignificant in all models. To enable the use of decomposition for the interaction model, we create an outcome variable that is the difference in black and white victimization rates.

Table 7: 2WFE DD Estimates of Effects of Affirmative Action on Victimization, 1979-2004 Collapsed to MSA/Year

	White Respondents	Black Respondents	Interaction Model
Post-AA	0.002	-0.04***	0.001
	(0.012)	(0.01)	(0.006)
Black			0.07***
			(0.01)
Post-AA X Black			-0.05***
			(0.01)
Constant	0.13***	0.17***	0.12***
	(0.01)	(0.01)	(0.01)
N	672	670	1342
	Avg DD Decomp Estimates		
	Beta/Weight	Beta/Weight	Beta/Weight
Timing Groups	-0.013/0.07	-0.06/0.03	-0.04/0.03
Always v. Timing	0.003/0.92	-0.04/0.95	-0.02/0.95
Within	0.029/0.011	-0.06/0.02	-0.06/0.02
MSA FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes

* p<.10, ** p<.05, *** p<.01. Population-weighted OLS; standard errors clustered on MSA.

we believe the event study estimates are the most reliable estimates of the effects of post-litigation affirmative action on both the racial gap in victimization, and rates of white and black victimization.

G.3.2 Placebo Litigation Years

We also estimate Equation 6 on a set of placebo litigation years, using only the 11 never treated MSAs. We assign a placebo litigation year between 1970 and 1986, with replacement, to each never treated MSA; we iterate this random assignment process 10 times. For each set of randomly assigned placebo years, we estimate the 2WFE DD interaction model in Equation 6. Figure 12 reports the coefficients on the interaction terms; none are significant.

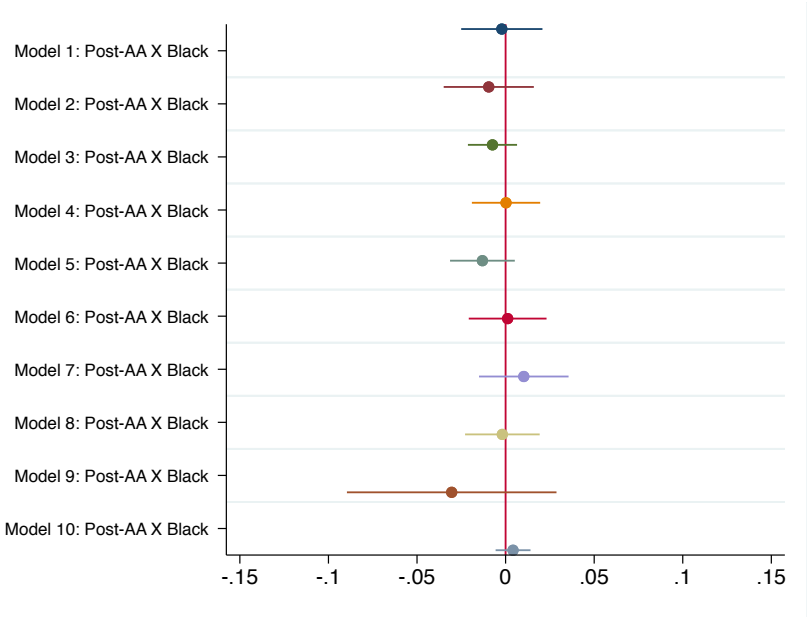

Figure 12: 2WFE DD Estimates of Effects of Affirmative Action on Victimization, 1979-2004
Placebo Litigation Years; Never Treated MSAs

G.4 Agency Racial Composition

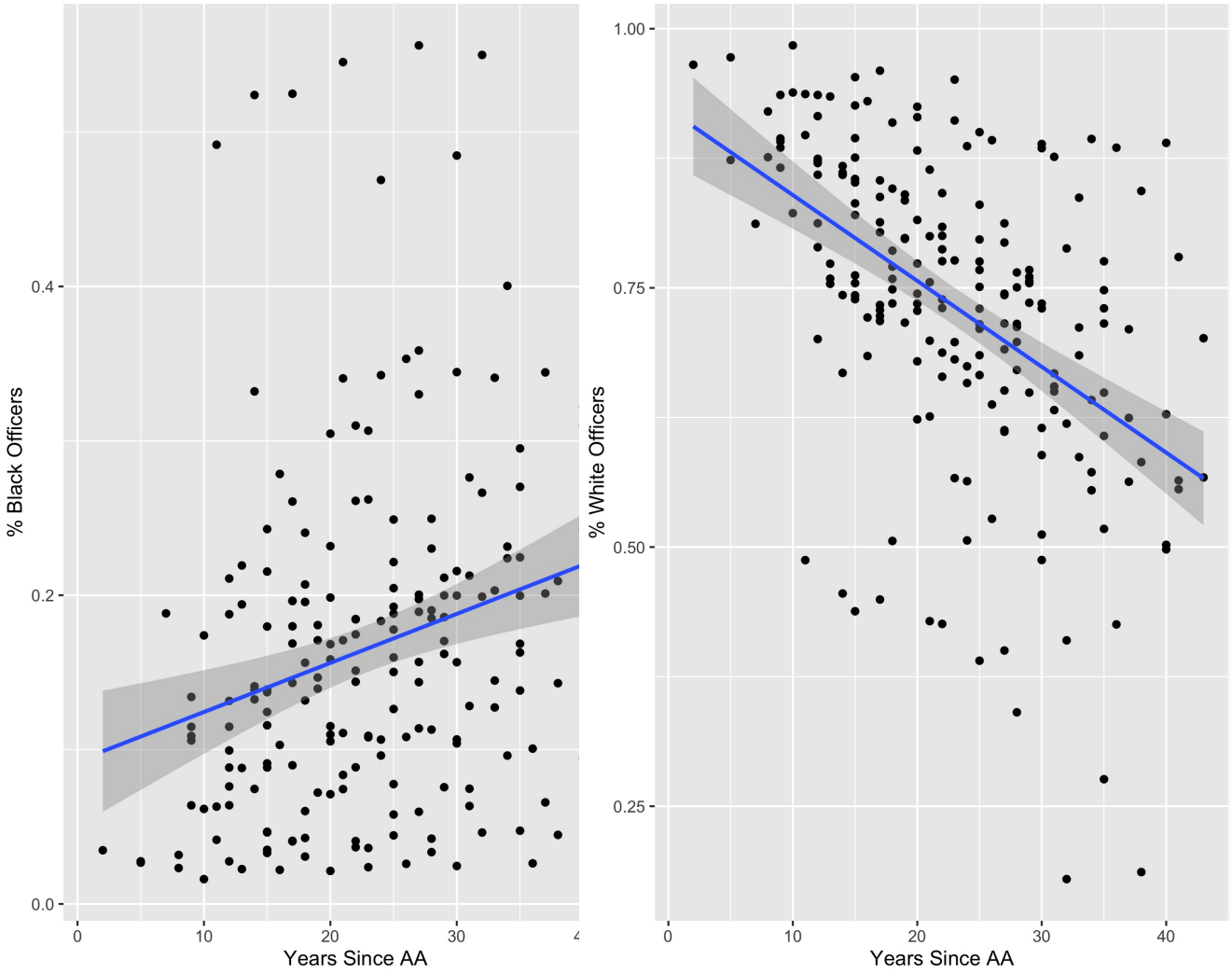

Figure 13: Affirmative Action Duration and Agency Racial Composition, 1987-2013

Table 8: 2WFE Estimates of Effects of Affirmative Action on Proportions of Black and White Officers, 1987-2013

	% Black Officers	%White Officers
AA Duration	0.002**	-0.008***
	(0.001)	(0.002)
Constant	0.31***	0.85***
	(0.02)	(0.04)
1987 Mean	0.12	0.87
N	200	200
MSA FE	Yes	Yes
Year FE	Yes	Yes

* p<.10, ** p<.05, *** p<.01. Standard errors clustered on MSA.

G.5 Racial Disparities in Socioeconomic Characteristics

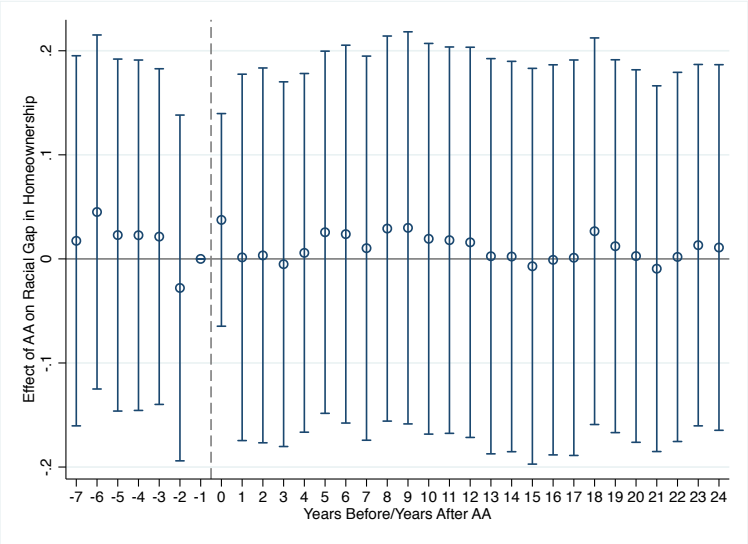

Figure 14: Estimated Effects of Affirmative Action on Changes in the Racial Gap in Homeownership, 1979-2004

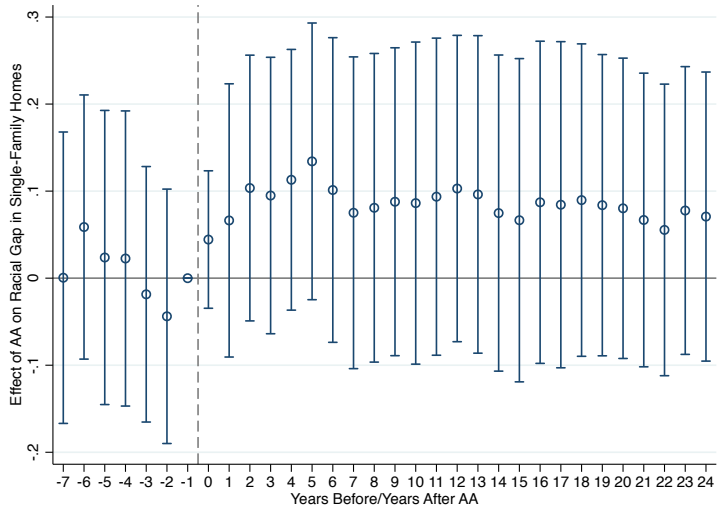

Figure 15: Estimated Effects of Affirmative Action on Changes in the Racial Gap in Single Family Homes, 1979-2004

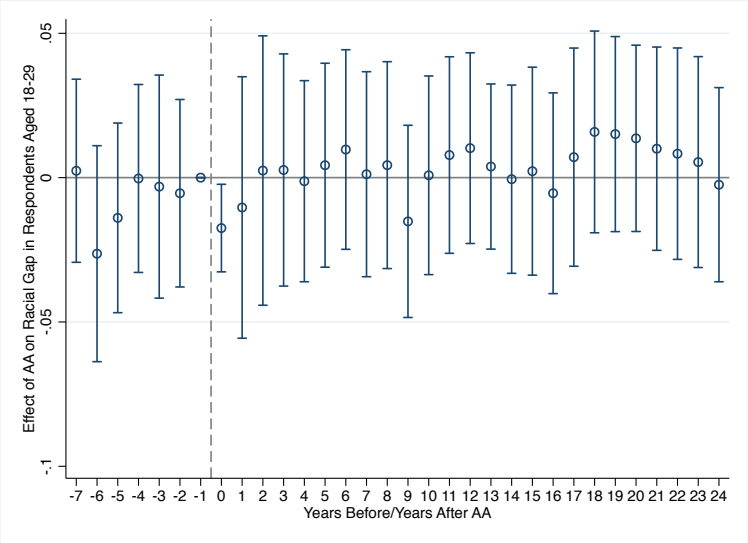

Figure 16: Estimated Effects of Affirmative Action on Changes in the Racial Gap in Presence of Respondents Aged 18-29, 1979-2004

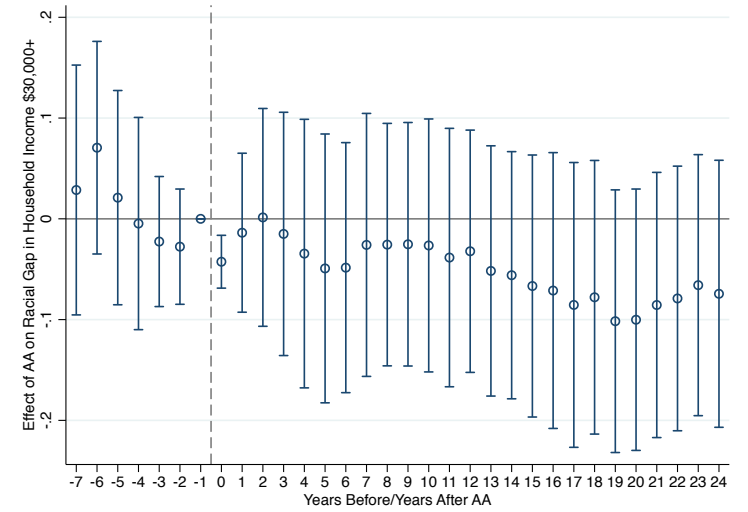

Figure 17: Estimated Effects of Affirmative Action on Changes in the Racial Gap in Respondents With Household Income $30,000+, 1979-2004

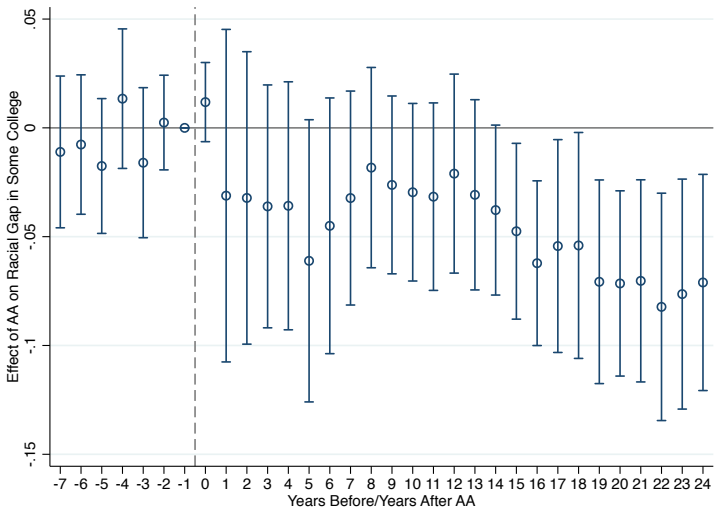

Figure 18: Estimated Effects of Affirmative Action on Changes in the Racial Gap in Respondents With Some College, 1979-2004

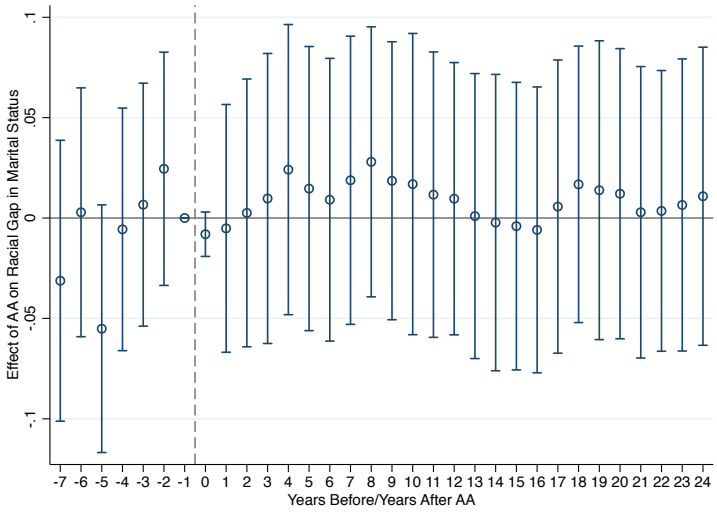

Figure 19: Estimated Effects of Affirmative Action on Changes in the Racial Gap in Respondents Who are Married, 1979-2004

G.6 Type of Crime

Table 9: Descriptive Statistics
Victimization by Race
Treated MSAs Pretreatment
By Type of Crime

	White Respondents	Black Respondents
Attptd/Cmpltd Robbery/Injury/Serious Assault	0.05	0.19
Attptd/Cmpltd Robbery/Injury/Minor Assault	0.08	0.11
Attptd/Cmpltd Robbery/No Injury	0.24	1.09
Attptd/Cmpltd Robbery/No Contact	0.10	0.30
All Robbery	0.47	1.69
Burglary	1.68	3.38
Attptd Forcible Entry	0.48	1.23
Attptd/Cmpltd Motor Vehicle Theft	0.51	1.93
Attptd/Cmpltd Theft	8.43	9.65
All Theft/Burglary	11.09	16.19
Attptd/Cmpltd Aggravated Assault	0.59	1.26
Simple Assault/Injury	0.28	0.19
Simple Assault/No Injury	0.99	0.88
All Assault	1.86	2.32
Attptd/Cmpltd Rape	0.06	0.12
N	49,623	7,399

Cells report NCVS means between 1979-1985 for treated MSAs during pretreatment years only.

Table 10: Estimated Effects of Affirmative Action on the Racial Gap in Victimization, 1979-2004
By Type of Crime

	Robbery Injury Serious	Robbery Injury Minor	Robbery No Injury	Robbery No Contact	Robbery All	Burglary	Attmptd Forcible Entry	Theft Motor Vehicle	Theft Attmptd/ Completed	Burglary/ Theft All
Post-AA	0.000	-0.000	0.001	0.001***	0.002**	-0.000	0.000	0.001	-0.000	0.001
	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.006)	(0.007)
Black	0.001***	0.000	0.008***	0.002***	0.012***	0.017***	0.007***	0.014***	0.015***	0.053***
	(0.000)	(0.000)	(0.001)	(0.000)	(0.002)	(0.001)	(0.001)	(0.001)	(0.002)	(0.003)
Post-AA X Black	-0.001***	0.000	-0.006***	-0.001**	-0.008***	-0.013***	-0.005***	-0.011***	-0.015***	-0.044***
	(0.000)	(0.000)	(0.001)	(0.000)	(0.002)	(0.001)	(0.001)	(0.001)	(0.003)	(0.004)
Constant	0.001***	0.001***	0.002***	0.002***	0.006***	0.015***	0.004***	0.004***	0.081***	0.104***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)	(0.000)	(0.001)	(0.004)	(0.005)
N	1,419,674	1,419,674	1,419,674	1,419,674	1,419,674	1,419,674	1,419,674	1,419,674	1,419,674	1,419,674
MSA FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

* p<.10, ** p<.05, *** p<.01. Standard errors clustered on MSA.

Table 11: Estimated Effects of Affirmative Action on the Racial Gap in Victimization, 1979-2004
By Type of Crime

	Assault Aggravated	Assault Simple Injury	Assault Simple No Injury	Assault All	Rape
Post-AA	0.000	-0.000	-0.001	-0.002	0.000
	(0.000)	(0.001)	(0.002)	(0.002)	(0.000)
Black	0.007***	-0.001***	-0.001	0.005***	0.001***
	(0.001)	(0.000)	(0.001)	(0.001)	(0.000)
Post-AA X Black	-0.005***	0.001***	0.001	-0.003***	-0.000
	(0.001)	(0.000)	(0.001)	(0.001)	(0.000)
Constant	0.006***	0.002***	0.009***	0.017***	0.001***
	(0.000)	(0.000)	(0.002)	(0.002)	(0.000)
N	1,419,674	1,419,674	1,419,674	1,419,674	1,419,674
MSA FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes

* p<.10, ** p<.05, *** p<.01. Standard errors clustered on MSA.

G.7 Reporting Rates

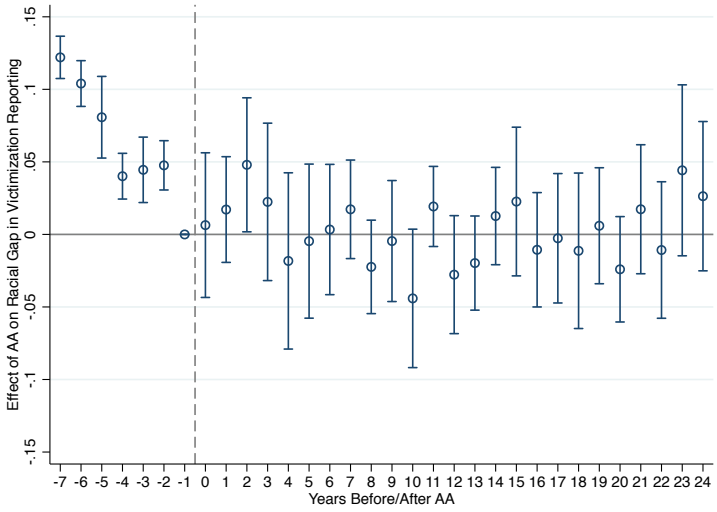

Figure 20: Estimated Effects of Affirmative Action on Changes in the Racial Gap in Reporting Rates, 1979-2004

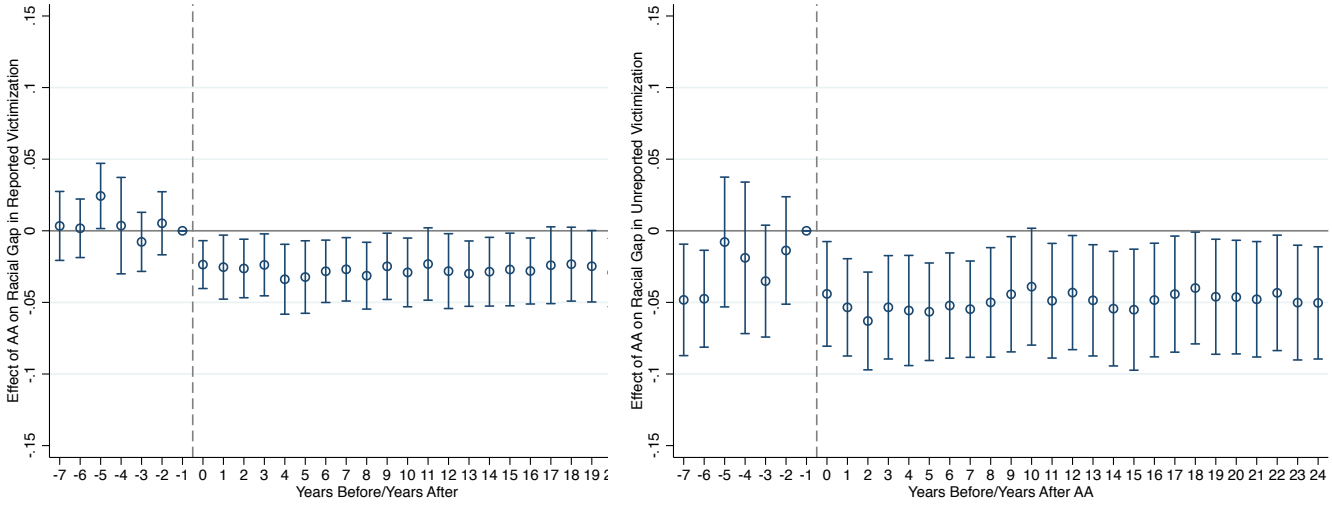

Figure 21: Estimated Effects of Affirmative Action on Changes in the Racial Gap in Reported and Unreported Crime, 1979-2004

G.8 Police Response

Table 12: Descriptive Statistics
Reasons for Not Reporting Victimization, by Race
Treated MSAs Pretreatment

	White Respondents	Black Respondents
Minor Crime, No Loss	0.40	0.29
Reported to Different Official	0.21	0.18
Other	0.17	0.15
Police Won't be Able to Recover Property	0.27	0.31
Not Important to Police	0.12	0.19
N	4403	903

Cells report NCVS means between 1979-1985 for treated MSAs during pretreatment years only.

Table 13: Estimated Effects of Affirmative Action on the Racial Gap in Reasons for Not Reporting Victimization, by Race, 1987-2004

	Minor Crime	Rptd to Diff Official	Other Reason	Police Can't Help	Not Impt to Police
Post-AA	-0.001	-0.022	-0.010	-0.007	0.005
	(0.018)	(0.018)	(0.036)	(0.010)	(0.005)
Black	-0.106***	-0.042**	-0.015	0.045***	0.063***
	(0.007)	(0.016)	(0.020)	(0.008)	(0.005)
Post-AA X Black	0.045***	0.041***	0.027	-0.033***	-0.031***
	(0.009)	(0.014)	(0.021)	(0.010)	(0.006)
Constant	0.391***	0.212***	0.184***	0.309***	0.128***
	(0.018)	(0.017)	(0.032)	(0.009)	(0.007)
N	85,675	85,675	85,675	85,675	85,675
MSA FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes

* p<.10, ** p<.05, *** p<.01. Standard errors clustered on MSA.

Table 14: Estimated Effects of Affirmative Action on the Racial Gap in Police Response, 1987-2004
Crimes Reported to Law Enforcement

	Police Response Any	Police Came	Police Took Report	Police Searched	Police Took Evidence	Police Intvwd Witnesses	Police Promised Surveill	Police Promised Investigate	Police Made Arrest	Police Response Other
Yrs Since AA	0.001	0.001	0.002	-0.001	0.001	0.002	0.000	0.003**	0.001	-0.000
	(0.002)	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Black	0.017	0.030	0.019	-0.004	-0.004	-0.006	-0.010	-0.016	-0.001	-0.036**
	(0.062)	(0.061)	(0.047)	(0.029)	(0.014)	(0.016)	(0.006)	(0.012)	(0.008)	(0.014)
Yrs Since AA X Black	0.002	0.002	0.001	0.001	-0.000	0.000	0.001	0.001*	0.000	0.003***
	(0.003)	(0.003)	(0.002)	(0.001)	(0.001)	(0.001)	(0.000)	(0.001)	(0.001)	(0.001)
AA End	-0.007	-0.011	0.001	0.009	-0.002	-0.010	0.005	0.011	0.011*	0.005
	(0.015)	(0.015)	(0.015)	(0.013)	(0.007)	(0.012)	(0.005)	(0.010)	(0.006)	(0.007)
Constant	0.697***	0.653***	0.567***	0.221***	0.075***	0.094***	0.019*	0.029*	0.023***	0.063***
	(0.029)	(0.032)	(0.027)	(0.023)	(0.013)	(0.022)	(0.010)	(0.016)	(0.007)	(0.011)
N	27,651	25,884	27,651	27,651	27,651	27,651	27,651	27,651	27,651	27,651
MSA FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

* p<.10, ** p<.05, *** p<.01. Standard errors clustered on MSA.