The Determinants of Declining Racial Disparities in Female Incarceration Rates, 2000-2015

Samuel L. Myers, Jr.[1] William J. Sabol,[2] and Man Xu[3]

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Abstract

In *The Growth of Incarceration in the United States*, the National Research Council documents the large and persistent racial disparities in imprisonment that accompanied the more than quadrupling in the U.S. incarceration rate since the 1980s. But since the turn of the 21st century, an unprecedented decrease in the number of African American women incarcerated has occurred at the same time that the number of white women in prison grew to new heights. The result of these changes is a near convergence in the black-white female incarceration rates from 2000-2015. In some states, the changes occurred abruptly and almost instantaneously. In other states, the convergence has been gradual. But, overall, the wide gaps in black-white female incarceration rates evident at the end of the last century have diminished considerably by the first decades of the 21st century.

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[1] Hubert H. Humphrey School of Public Affairs, University of Minnesota
[2] Department of Criminology, Andrew Young School of Public Affairs, Georgia State University
[3] Hubert H. Humphrey School of Public Affairs, University of Minnesota

Introduction

The conventional wisdom has it that there is an overconcentration of African Americans in America's prisons. Popular media and other outlets have emphasized the wide racial disparities in incarceration, particularly between black women and white women. Somewhat surprisingly, since 2000, the numbers of black women incarcerated in state prisons has declined while the number of white women incarcerated in state prisons has increased and the racial disparity in black-white female imprisonment rates has dropped from 6 to 1 to 2 to 1 since 2000.

This paper explores the underlying patterns and trends in changes in black vs. white female incarceration and the corresponding convergence in black vs white female incarceration rates. We detail the mechanisms that plausibly may be behind these changes. One of those mechanisms is the state's response to the opioid crisis that disproportionately has affected white women. We then specify and estimate a fixed-effects multi-period model designed to test the hypothesis that white female drug-overdoses resulted in a differential impact on incarceration than did black female drug overdoses. The paper then concludes with caveats and implications for policy making.

Patterns and Trends

Since national statistics on U.S. prison populations have been collected, they have consistently shown that black Americans have been overrepresented among prisoners in comparison to their representation in the general population, with the exception of southern states during slavery (Sellin 1976). Historically, the disproportionate representation of blacks has been greater in northern than southern states (DuBois 1899; Myers and Sabol 1987). U.S. Census Bureau historical statistics on incarcerated populations show that over the century since 1870, the racial disparity in black-white incarceration rates did not dropped below 5 to 1, and following the Second World War it increased (Sabol 1989).

The more recent and well-documented quadrupling of incarceration rates in the U.S. that began in the early 1970s and did not abate until the mid-2000s has been characterized by National Academy of Sciences (NAS) as "historically unprecedented and internationally unique" (Travis et al. 2014: 2). During the 1980s and 1990s, state prison populations grew by an average 8% to 9% annually, more than tripling the historic annual rate of increase. The rate of prison incarceration, which had remained relatively stable at about 100 persons per 100,000 population (or less than 0.1% of the population) reached 500 per 100.000 by the peak of the prison growth in 2008 (or 0.5% of the general population) (figure 1)

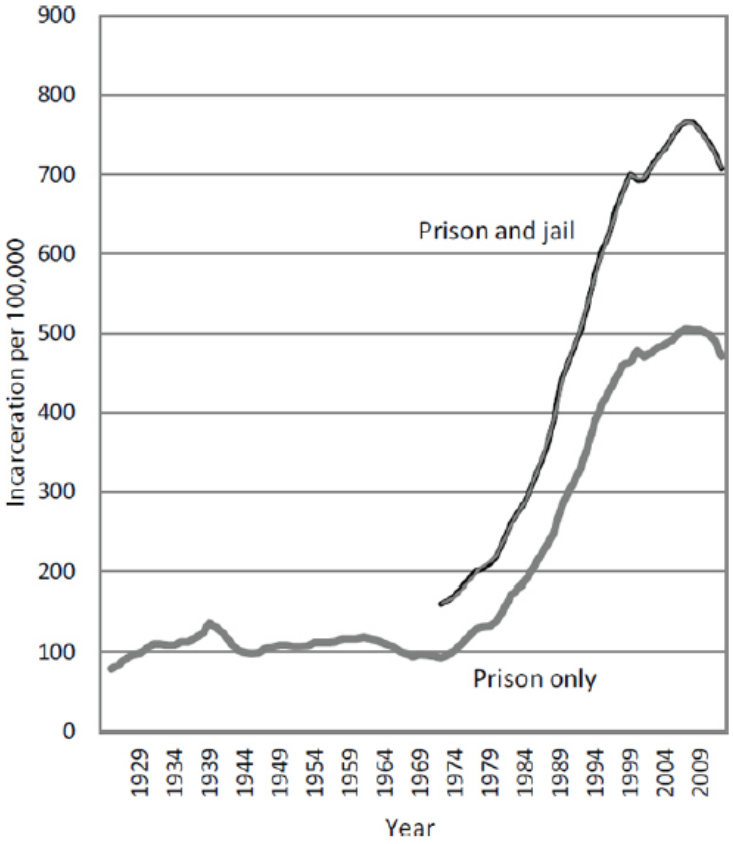


Figure 1: Souce: Travis et al. 2014.

That same NAS report points out that this growth has been characterized by a large racial disparity in incarceration, with the impacts of the prison expansion falling predominantly on poor, minority men. And it points out that crime trends alone do not explain the growth in the U.S. prison population. Rather, to understand why so many Americans, particularly black Americans are in prison, the growth of the prison population has to be understood in terms of the policy response to crime (Raphael and Stoll 2013).

Figures 2 and 3, the number of male and female prisoners, respectively, under jurisdiction of state correctional authorities, show both the familiar story of the increases in state prison populations from 1980 through 2008, and the more recent declines. The number of black men in state prisons more than doubled from 1980 to 2000, before leveling off somewhat and then declining after 2008. The number of black men in prison still exceeds the number of white men in prison.[4]

[4] The prison statistics reported herein differ from those reported by the Bureau of Justice Statistics because the BJS data on imprisonment rates by race are based on the sentenced prisoner population whereas the data in this paper are based on all prisoners.

Beginning around the late 1990s, the trends for women differ from men. From 1980 through the late 1990s, growth in the number of black women was rapid, as occurred for black men, and the number of black women exceeded the number of white women in state prisons. In 1999, the number of black women in state prisons peaked, and since then it has declined by more than one-third (from about 36,800 to about 24,000). Over roughly the same period, the number of white women in state prison nearly doubled (from 32,200 in 1998 to 60,200 in 2016). As a percent of all female prisoners, black women declined from about half in 1995 to 24% in 2016 while white women increased from about 41% in 1995 to 61% in 2016.

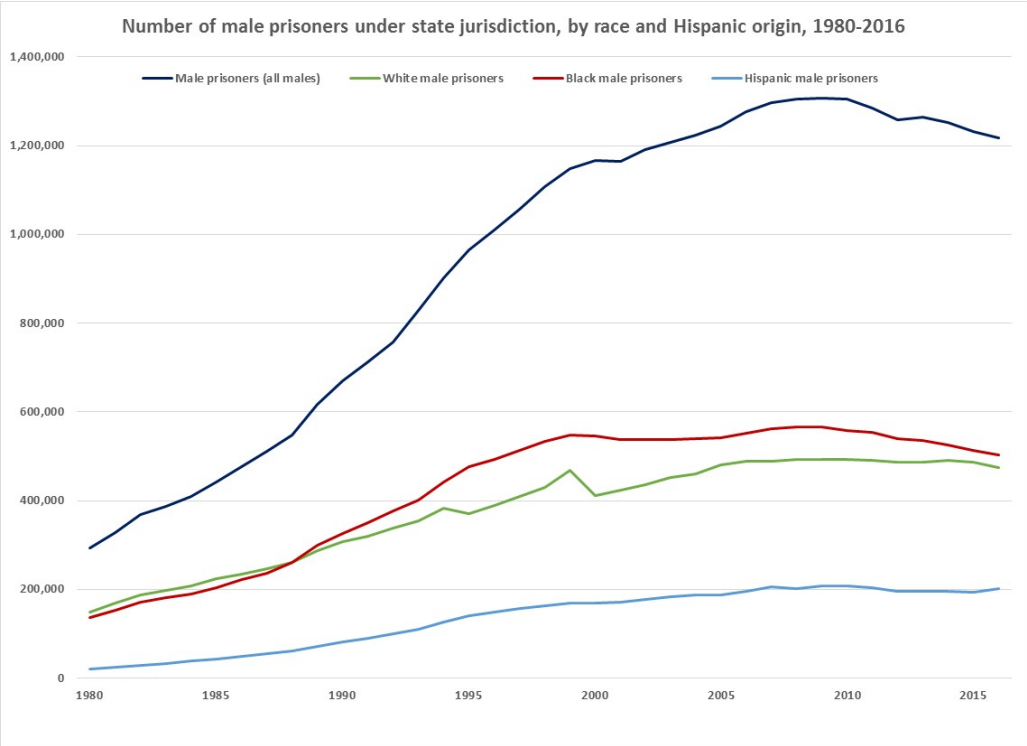


Figure 2.

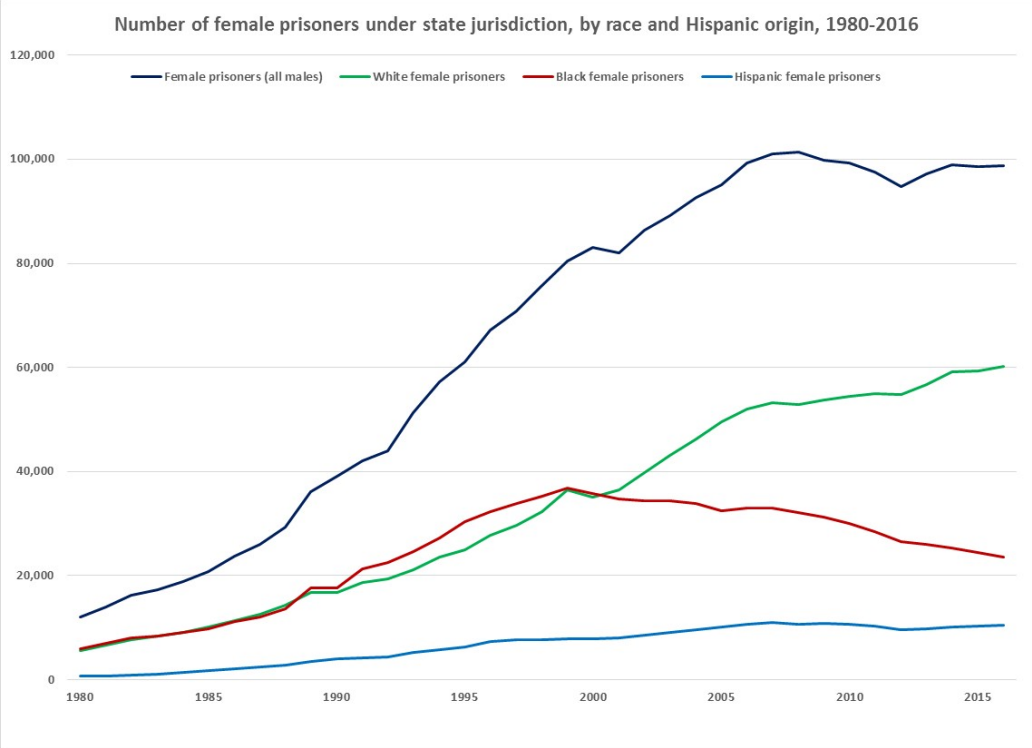


Figure 3.

Concentrating on women, and taking into account the racial differences in the growth rates in the general population the black-white female imprisonment rate shows the run-up in incarceration of black women from 1980 through 2000, followed by a secular decline in their rate from about 200 per 100,000 to 100 per 100,000 in 2016. Still, that rate was more than twice the black female rate in 1980, before the expansion of prison populations. By comparison, the white female rate increased consistently over the entire period from 1980-2016, reaching half the rate for that of black women by 2016 (Figure 4).

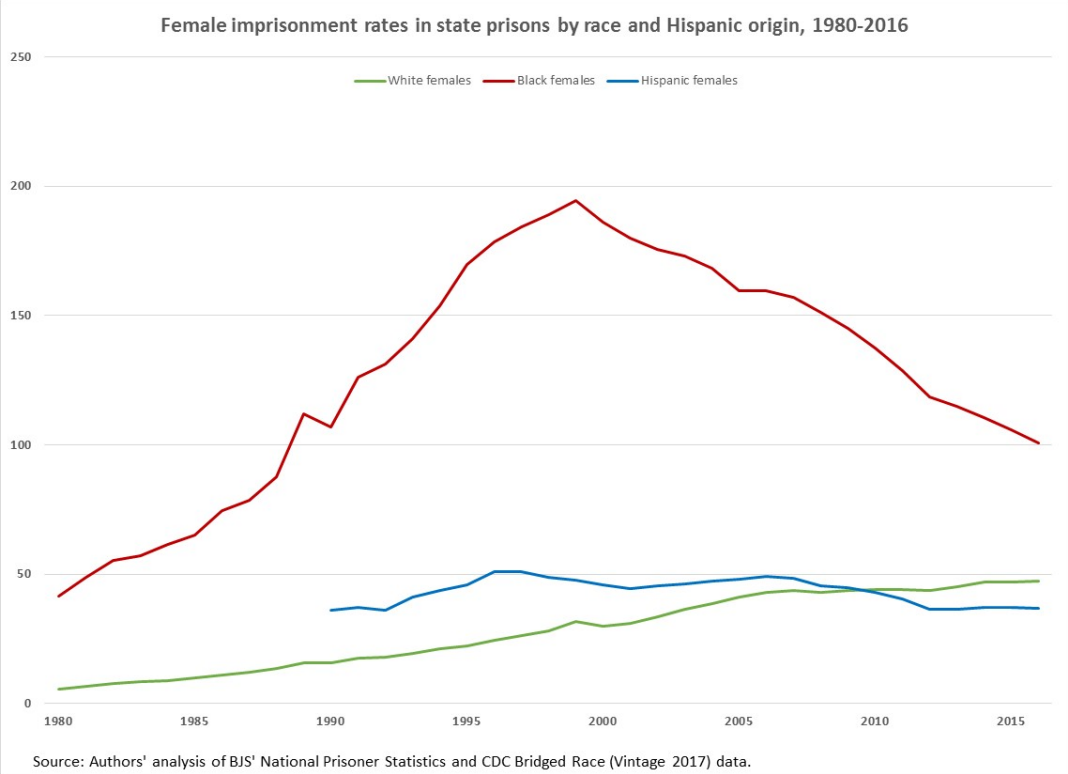
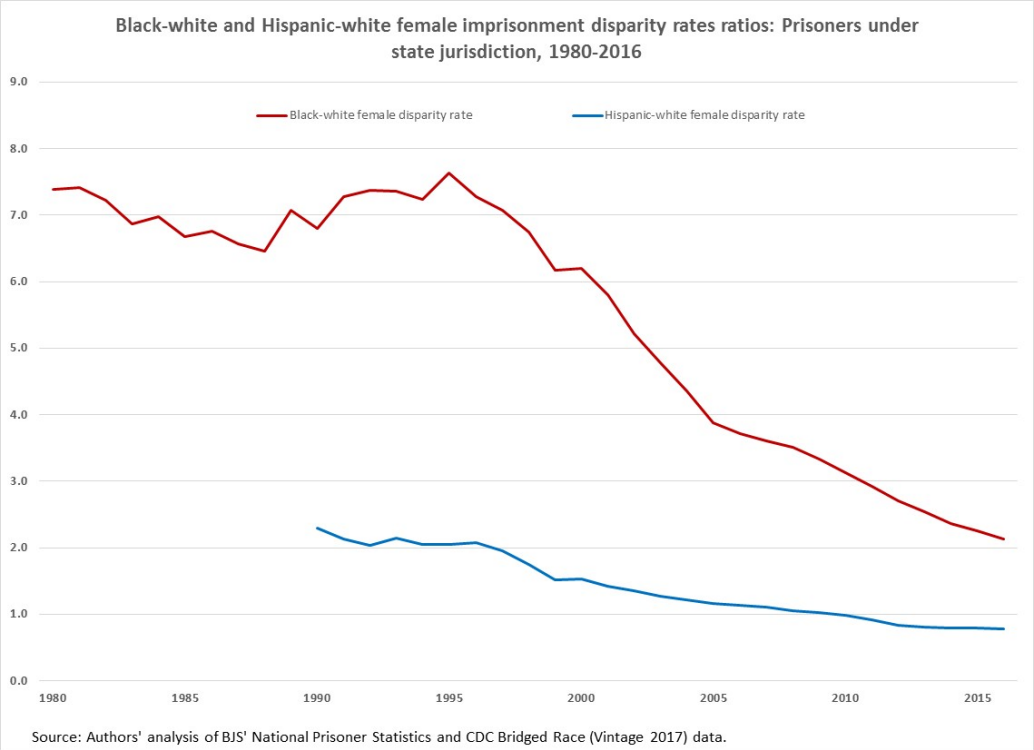


Figure 4.

The relative changes in black-white female imprisonment rates means that the racial disparity in imprisonment declined. From 1980 through the late-1990s, black women were imprisoned at about 7 times the rate of white women, and peaked at about 7.5 times the rate of white women in 1995. By the late 1990s, this disparity decreased to about 6 to 1, and it continued to decline through the 2000s, reaching a ratio of about 2 to 1 in 2016. The fastest decline in the black-white female disparity occurred from 1995 to 2005, dropping from 7.5 to slightly less than four-to-one; since 2005 the rate of decline in disparity slowed, taking an additional 10 years to drop two points (figure 5). The decline for women was not the result of changes in a few states. Rather, most states, including those with relatively small black populations, observed declines in the number of black women in prison and their imprisonment rate for black women. Consequently, the black-white female racial disparity in incarceration rates declined, and the variability among states in the racial disparity also narrowed (figure 6).



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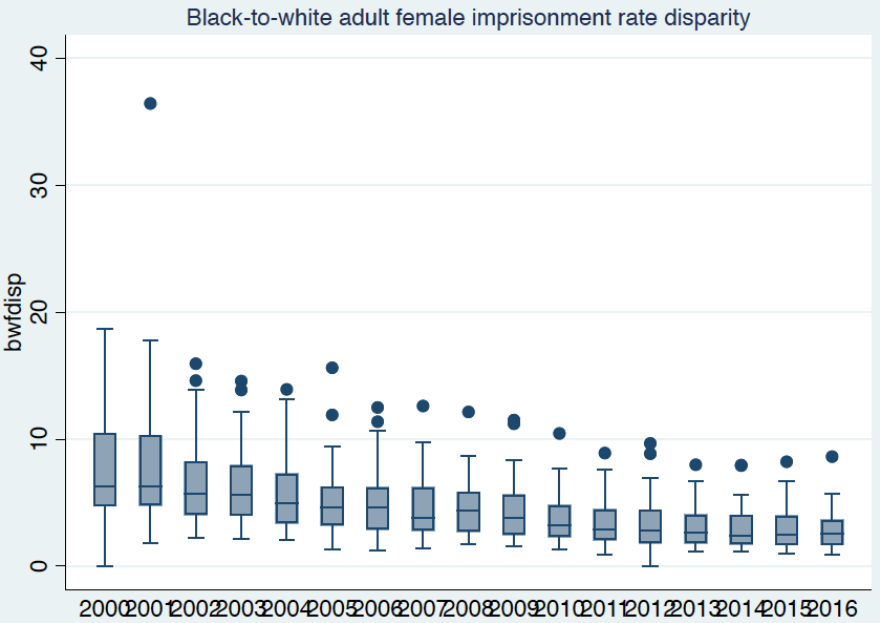


Figure 6. Box-plot of the black-to-white adult female state imprisonment rate disparity ratio across states within years.

Along with the changes in the race-specific imprisonment rates and the racial disparity in these rates for women were changes in the number of prisoners by race and type of offense. These were most pronounced for black females held for drug offenses. Overall, the number of women

in state prisons increased by about 15,500 persons between 2000 and 2016 to reach 98,500 persons, with increases in the numbers held for violent, property, and public order[5] offenses more than offsetting the decrease in the number held for drug offenses (table 1). The number of white female prisoners increased by 24,300 to 59,400, or a 69% increase. Conversely, the number of black female prisoners fell by 11,300 (32%) to 24,500 in 2016.

The number of women held for violent offenses increased by 8,500 (32%), and white women accounted for 75% (or 6,400 prisoners) of this increase. Similarly, for property and public order offenses, the increase in white women held on these charges accounted for the majority of the increase in female prisoners.

Conversely, the number of women held for drug offenses decreased by 3,000 persons, but within the drug offense category, the decrease of 10,000 black women (a more than 600% decrease) was responsible for all of the overall decline in female drug offenders in state prisons, as the number of white women held on drug charges increased by 6,000 (65%).[6]

Change in number of prisoners, by race, sex, and type of offense, 2000-2016, (thousands of prisoners).

	Type of offense				
Race*/sex group	**Total***	**Violent**	**Property**	**Drug**	**Public Order**
Total	81.3	96.6	-3.4	-74.2	58.7
White	118.6	50.3	17.2	20.2	27.7
Black	-16.3	47.1	-15.3	-74.6	25.3
Hispanic	39.7	44.4	1.9	-19.0	12.5
Male	65.8	89.2	-8.5	-71.9	53.8
White	75.0	34.6	5.4	10.4	21.9
Black	-33.0	32.4	-16.8	-72.4	22.8
Hispanic	25.2	36.5	-0.5	-21.5	10.8
Female	15.5	8.5	4.6	-3.0	5.0
White	24.3	6.4	6.7	6.9	3.8
Black	-11.3	1.0	-3.2	-10.0	0.8
Hispanic	2.5	2.3	0.6	-1.1	0.7

Notes:

* Race groups are defined as white-nonHispanic, black-nonHispanic, and Hispanic.

**Includes "Other" offenses, not shown separately.

Source: Authors' analysis of BJS National Prisoner Statisics (NPS) and National Corrections Reporting Program (NCRP) data.

NCRP race-sex-offense specific counts weighted to NPS national totals.

Table 1

[5] Among the public order offenses contributing to increases were weapons offenses and habitual offender charges in which the underlying offense was not identified in the data.

[6] The number of women in federal prison held on drug charges followed a similar pattern to that of state prisons. Between 2000-2014, the number of black women declined by 57% (from 2,284 to 1,309) while the number of white women increased about 60% (from 3,728 to 5,960).

These changes in the numbers and types of crimes for which black and white women were held in prison represent departures from past experiences of U.S. state prison populations where racial disparities were relatively consistent or increased. And as the change in racial disparity coincides with first a slowing, then leveling off, and subsequently a decline in the number of state prisoners, the explanations for the change in disparity need to account for both phenomenon. In other words, explanations for the change in disparity have to have races-specific elements.

One method for accounting for change in prison populations focuses on the mechanics of imprisonment. This involves decomposing shifts in imprisonment into changes in demographics, crime rates, law enforcement, prosecution, sentencing decisions (in prison or onto probation), prison admissions, and expected length of stay. The body of work using this approach to account for racial disparities in imprisonment focuses on the extent to which race-specific differences in the transitions between these mechanical stages of processing account for racial differences in imprisonment (e.g., Blumstein 1982; Langan, 1986; Sabol & Lynch 2018; Beck and Blumstein 2017). To our knowledge, the methodology has not been applied to analyze the race-sex-specific changes that we've described herein. This is in part due to several data limitations, as we discuss below.

Plausible Mechanisms

The phenomenon of declining black female and increasing white female imprisonment rates is new and differs from past experiences. As such speculations about the reasons for it are not well formulated. One speculation is related to the opioid crisis. While black women historically have been marginalized within the criminal justice system because of drug use, when white women began to face drug addition, great public alarm was expressed. The focus of drug enforcement shifted from crack cocaine to methamphetamines and opioids, a shift that is associated with racial differences in involvement with specific types of drug. The hypothesis is that there were differential public responses to the white female opioid crisis relative to the responses faced by black females.

Other plausible mechanisms producing the differential changes in incarceration rates for white vs black females include:

- Inequality in the declines in violent crime, which declined by about half from its level in the early 1990s, could contribute to the decrease in the disparity if the decline were larger for blacks than whites.
- Income inequality has expanded since the 2000s and the effect on declining economic prospects for whites has led to relatively greater criminal justice involvement on their part. Income inequality has spread into suburban areas with large white populations.
- Criminal justice reforms implemented since the mid-2000s have had impacts on prisoners from urban areas more than rural areas, geographies associated with racial residential patterns. Since 2000, most states have implemented various criminal justice reforms that aim to improve efficiency and reduce the costs of the justice system by adopting some

form of risk-based approaches to sentencing and supervision with a goal of diverting less serious offenders from prison and enhancing the use of community supervision for them. One way that reforms could have an impact on the racial disparity is if impacted urban areas more than suburban areas.

- At the same time, cost-conscious state governments have sought ways to decrease expenditures that impact black women differentially from white women. If the economic efficiency model that lies behind justice reforms were adopted in other areas such as child welfare, then states could save money by reducing the number of mother in prison and thereby avoiding foster care costs. According to the Bureau of Justice Statistics, the number of black children with an incarcerated parent was about 58% larger than the number of white children with an incarcerated parent (Glaze and Maruschak 2008).
- Political parties in power and elected officials matter: The growth in prison populations during the 1980s and 1990s has been tied to political partisanship and elected officials. This is a complicated issue.

We discuss these plausible mechanisms in turn.

Declines in crime and decline in racial disparity in imprisonment for females

The relationship between crime rates and imprisonment rates is not immediate or direct but is mediated by policy and practice. The imprisonment rate is a stock, point-in-time concept and it is a function of the number admitted into prison and their length of stay. Crime rates are a flow concept, which means that the relationship between crime rates and prison stocks are mediated by practices related to apprehension, prosecution, conviction, admissions and length of stay. Despite the complexity of the relationship between the two, empirical studies have consistently found a positive relationship between the crime rates and imprisonment rates (Pfaff 2008).

For changes in crime rates to affect the racial disparity in adult female imprisonment rates, there either must be race-specific differences in crime rates or differential treatment by the criminal justice system on those rates. Presuming, no racial differences in treatment on crime rates (assuming equal rates of arrest, prosecution, sentencing and time served), for crime to explain the decrease in the black-white female imprisonment rate, the black female crime rate would have to have declined more rapidly than did the white female crime rate.

Using victim self-report descriptions of their assailants' characteristics in the National Crime Victimization Survey (NCVS), estimates of the race of offenders in nonfatal violent victimizations (rape, robbery, aggravated assault, and simple assault) can be generated to compare racial differences over time in offending. The rate of nonfatal violent victimization by offender race-sex group over the 1993-2015 period declined considerably for all four groups (figure 7). During the 2000-2015 period, in particular, they also declined by over 50% overall, but the decreases were largest for white males (60%), followed by white women (52.3%), black man (51%) and black women (46%).

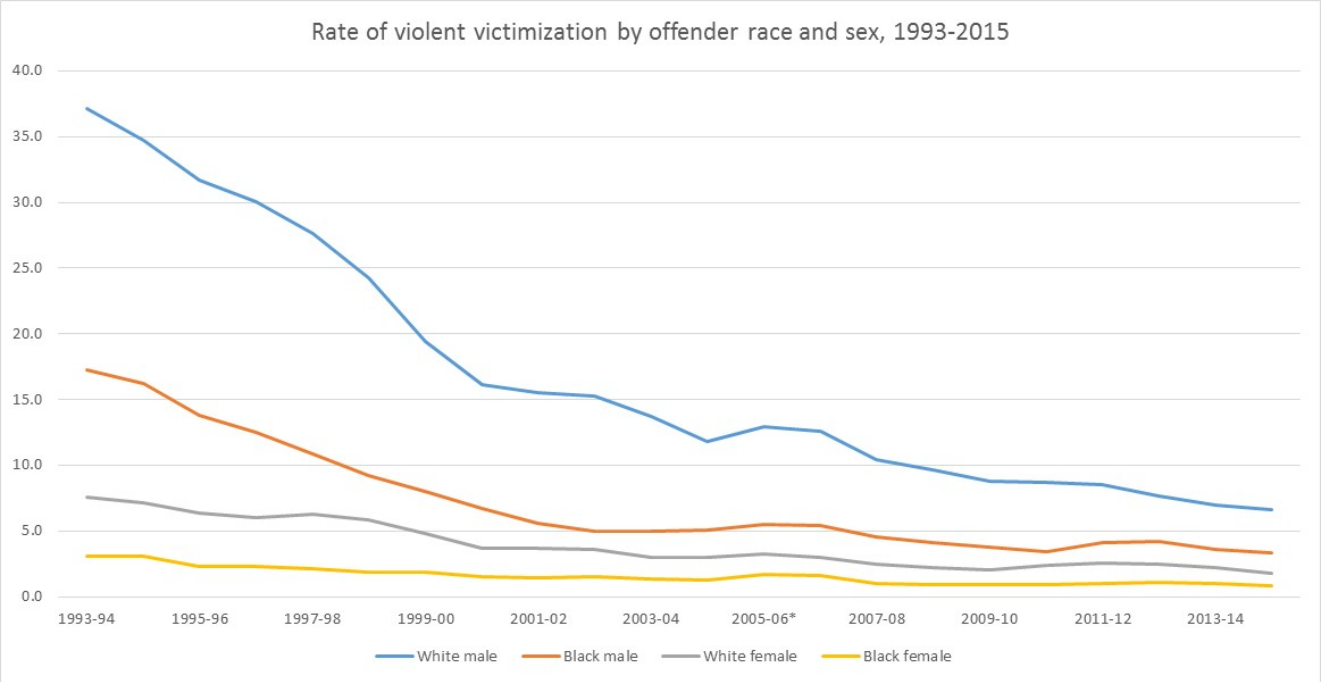


Figure 7

Although the differences among race-sex groups were comparatively small, the differences between black and white women were in the opposite direction from what would be expected if racial differences in violent crime rates over time were to account for much of the change in the racial disparity in imprisonment between them, ceteris paribus.

Given the changes in women held in prison for violent crimes (see above), we would expect to see larger declines in non-fatal offender-based victimization rates for black women offenders than white women offenders, if racial differences crime rates explained the change in the racial disparity in imprisonment for black and white women. But this was not the case. The national trends in offending do not align with the direction of imprisonment rates. As these NCVS estimates are of offenders, not unique persons, and do not distinguish between the incidence and prevalence of offending behaviors, it is possible that racial differences in the prevalence of offending could align with the changes in black-white female imprisonment rates. For this to be true, the prevalence of offending among white women would have to be larger than that for black women, which would mean that the individual offending rates for black women would have to higher than those of white women. We are unaware of evidence that supports this contention. Indirect evidence about decline in crime rates suggests that declines in violent and property crimes were greater in cities with larger proportions of blacks and higher percentages of their population in poverty.

Lofstrom and Raphael (2016) show that the communities that experienced the largest reductions in crime between 1990 and 2008 were also the ones that bore the brunt of the growth in the prison population. Using Federal Bureau of Investigation, Uniform Crime Reports (UCR) at the city level, and computing the violent and property crime rates by the deciles of the proportion of

a city's population that was black, they show that as the percent black population in a city increased, the crime rate decline increased (figure 8).

Relationship between Violent and Property Crime and Deciles of the Distribution of the Proportion of City Residents African-American in 2000

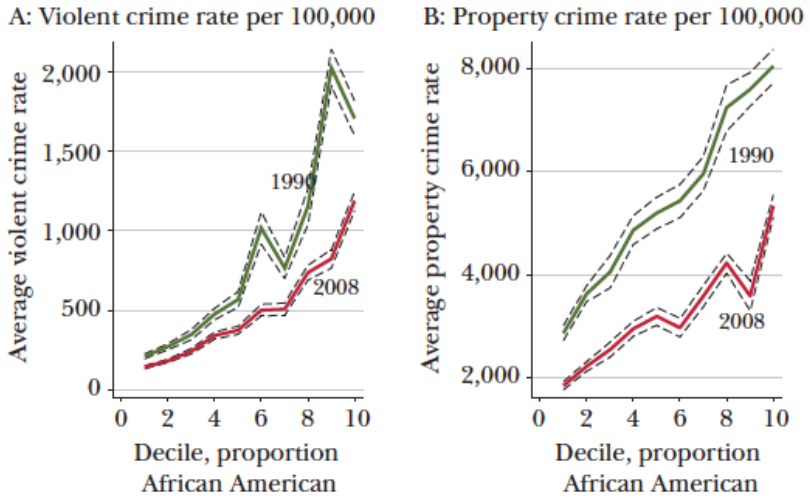


Figure 8: From Lofstrom and Raphael (2016)

The UCR data that Lofstrom and Raphael used do not identify the race and sex of victims or offenders, so they cannot be decomposed into those categories. And even though there is a correlation between the racial composition of places and declines in crime rates, that does not mean that the declines were a result of fewer black offenders. Still, their finding is consistent with the view that lower crime rates in cities with higher black populations likely meant fewer black offenders in these places. Given the largely intra-racial nature of non-fatal violence, especially for aggravated and simple assault (the two largest crime categories), these data are generally consistent with the view that black female offending declines were larger than those of white females. Assuming no differences in enforcement and sentencing, these findings are consistent with the view that racial differences in crime rates could are consistent with the decrease in racial disparity.

In short, the evidence that the decrease in the black-white female imprisonment rate disparity was due to racial differences in offending is very weak and indirect. This does not mean that racial differences in crime rates did not contribute to the decrease in imprisonment disparity; rather, it means that with available data we are not able measure whether there was an effect of crime rates on the black-white-female imprisonment disparity.

<u>Differential involvement in drug crimes</u>

Much has been written about how the war on drugs contributed to increases in prison populations and racial disparities in the prison population. The gist of this research is that racial differences in drug enforcement practices (arrests) are largely independent of racial differences

in drug use but not necessarily drug trafficking. Racial differences in enforcement of drug crimes, more than use, is highly correlated with racial differences in prison admissions and prison populations. As Myers (2016, 2017) has shown, the racial disparities in the drug arrests alone do not account for the overall racial gap in incarceration. But, as our interest here is focused on race by sex differences in imprisonment, our ability to assess how drug arrests are related to prison population growth for white and black women is hampered by the fact that the national data on arrests are not available by race and sex, but only by race or by sex. Hence, it is not possible to assess directly the contribution of changes in race-sex-specific patterns of drug enforcement on race-sex specific changes in prison populations.

Indirect evidence is consistent with the view that there has been a shift in drug enforcement away from blacks and males and towards whites and females. Since 2006, drug arrest arrests for blacks declined by 62% (from 2,168 to 1,338 per 100,000) and for males they declined by 32% (from 1,251 to 946 per 100,000). For adult whites and especially females, the drug arrest rates increased. The adult female drug arrest rate increased from about 225 to 253 per 100,000 from 2000-2014.

In relative terms, the black-white and male-female disparities in adult drug arrest rates declined, converged around 1990 and then diverged slightly. From 2000 on, the black-white drug arrest disparity ratio fell more quickly than did the male-female disparity ratio; both fell with the black-white female imprisonment rate disparity (figure 9). These patterns are consistent with a relative decline in black-female drug arrest rates to white-female drug arrest rates, a pattern that would be consistent with a lessening of the impact of drug arrests on the number of black, relative to white women in prison for drug crimes.

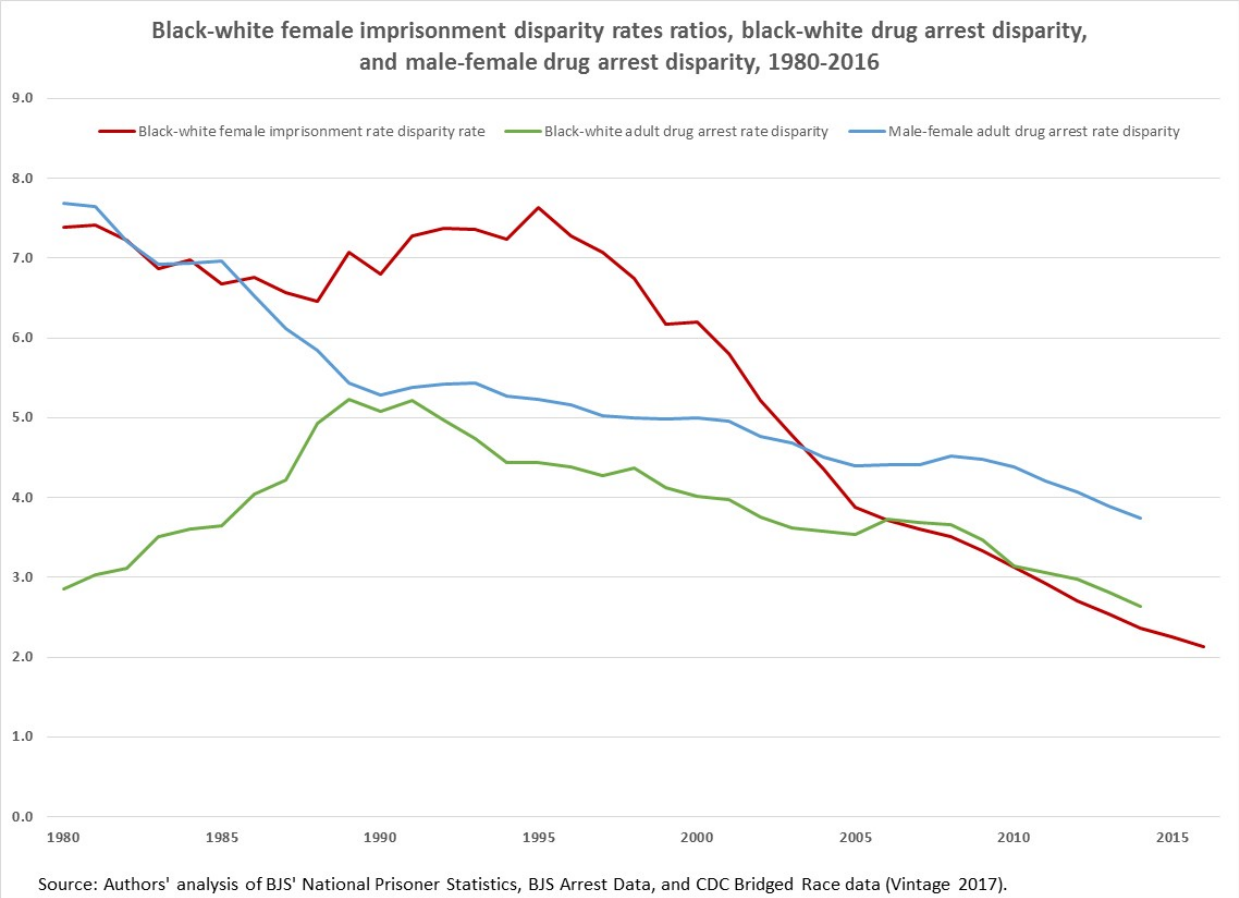


Figure 9

These data on drug arrests are also consistent with increases in drug arrest rates for both white and black women. In this case, the relationship between drug arrests and racial disparities in imprisonment of black white women would not be strongly supported by race-sex differences in drug arrests. However, additional data on drug overdoses supports the contention that shifts in drug arrests occurred and these shifts followed race-specific patterns in involvement in different types of drugs.

Economists reporting on the recent declines in life expectancy of U.S. populations point out that the life expectancy of whites has declined largely as a result of drug overdoses related to increased opioid analgesic use (Case and Deaton 2015). The policy response to whites' use and abuse of analgesic opioids differs considerable from the law-enforcement and severe punishment approach to crack cocaine, which tremendously affected black communities. Hansen and Netherland (2016), for example describe racialized differences between heroin and prescription opioid control by reference to the punishment-severity distinction between crack and powder cocaine (the 100 to 1 disparity in sentencing). Their point is that white patients were more likely to be prescribed opioids than non-white patients, which ultimately led to faster increases in white opioid overdose deaths.

Figures 10 and 11 show that the drug overdose crude mortality rate for white women increased linearly over the 2000-2017 period, with increases in extreme values for some states over time (figure 10). By comparison, the drug overdose crude mortality rate for black women in the median state was comparable to that of white women in 2000, but the black rate remained relatively constant (with some fluctuations) until late in the series (e.g., around 2015-2017), when it began to increase (figure 11). These figures illustrate the racial differences in drug overdose deaths, which are primarily opioids. To the extent that the racial differences in overdose death rates reflect racial differences in use and related criminal activities, the patterns in figures 9 and 10 are consistent with a shift in the enforcement of the types of drugs that lead to imprisonment. To the extent that white women's drug overdose death rates reflect greater drug-related crimes by white women and subsequently greater enforcement of these drug-related crimes, then their imprisonment rate rose as a result. The opposite occurred for black women. These opposing trends for black and white women are consistent with the decline in their racial disparity in imprisonment and the race-sex specific changes in drug offenders in state prisons.

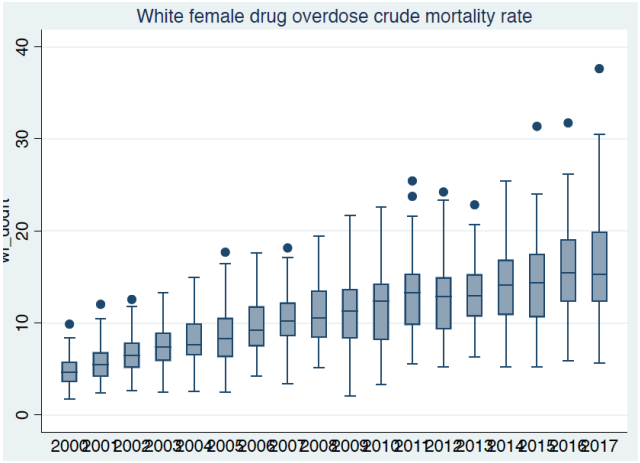


Figure 10: White female drug overdose crude mortality rate, box plot: state within year

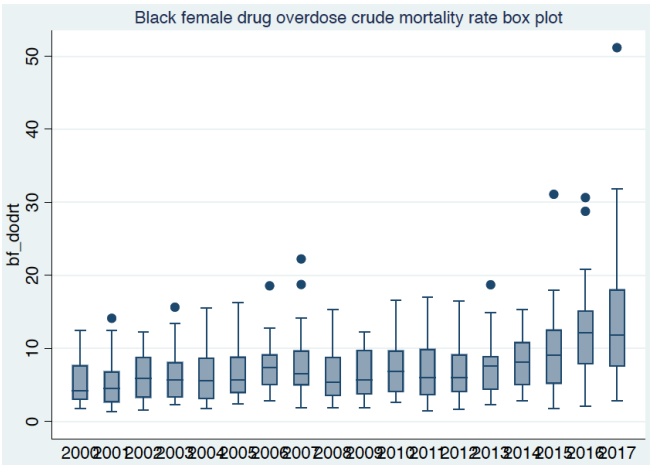


Figure 11: Black female drug overdose crude mortality rate, box plot: state within year

In our regression analyses that follow, we control for income differences by race and other measures of socio-economic status.

Economic efficiency and justice and child welfare reforms

Starting around the mid-2000s, many states embarked upon different varieties of sentencing reform. These efforts were motivated by cost considerations, as states' spending on prisons increased nearly 8-fold from 1985 to 2012, increasing from 1.9% to 3.3% of state expenditures (U.S. Census Bureau, Census of Government Finance.) The reforms focused on reserving prison for the most serious prisoners or those at greatest risk of recidivating, and focusing on improving community supervision for less serious offenders by reinvesting any savings from smaller prison populations into the supervision budgets. Collectively, these reforms have been termed the "justice reinvestment initiative" (JRI), and these have been supported by federal funds through Bureau of Justice Assistance grant programs. Since 2007, 35 states have participated in these efforts (Pew Charitable Trust 2016).

Child welfare expenditures are large portion of state budgets. Total spending for child welfare during the 2000s ranged in the $28 to $31 billion range annually, with states picking up about 44% of the total. A major component of the child welfare system costs are foster care placement costs. State spending for foster care is on foster care children who are not eligible for federal Title IV-E services, either because of family income levels or placements other than those permitted under federal programs. States must spend on services in order to receive federal matching dollars for Title IV-E programs.

During the 1980s through 2000s, foster care caseloads increased, and increases in incarceration of women were shown to account for about 30% of the growth in these caseloads (Swann and Sylvester 2006). However, the relationship between foster care and imprisonment is complicated. Certainly, the removal of a mother to incarceration can lead to the placement of a child in foster care. For example, among mothers incarcerated in BJS's 2004 survey of inmates, about 10% reported that their minor children were in foster care, while the majority (87%) reported that their children were with the other parent or with a grandparent (Glaze and Maruschak 2008). Alternatively, parental neglect could lead a child's placement in foster care prior to a mother's incarceration (Ross, Khashu, and Wamsley 2004).

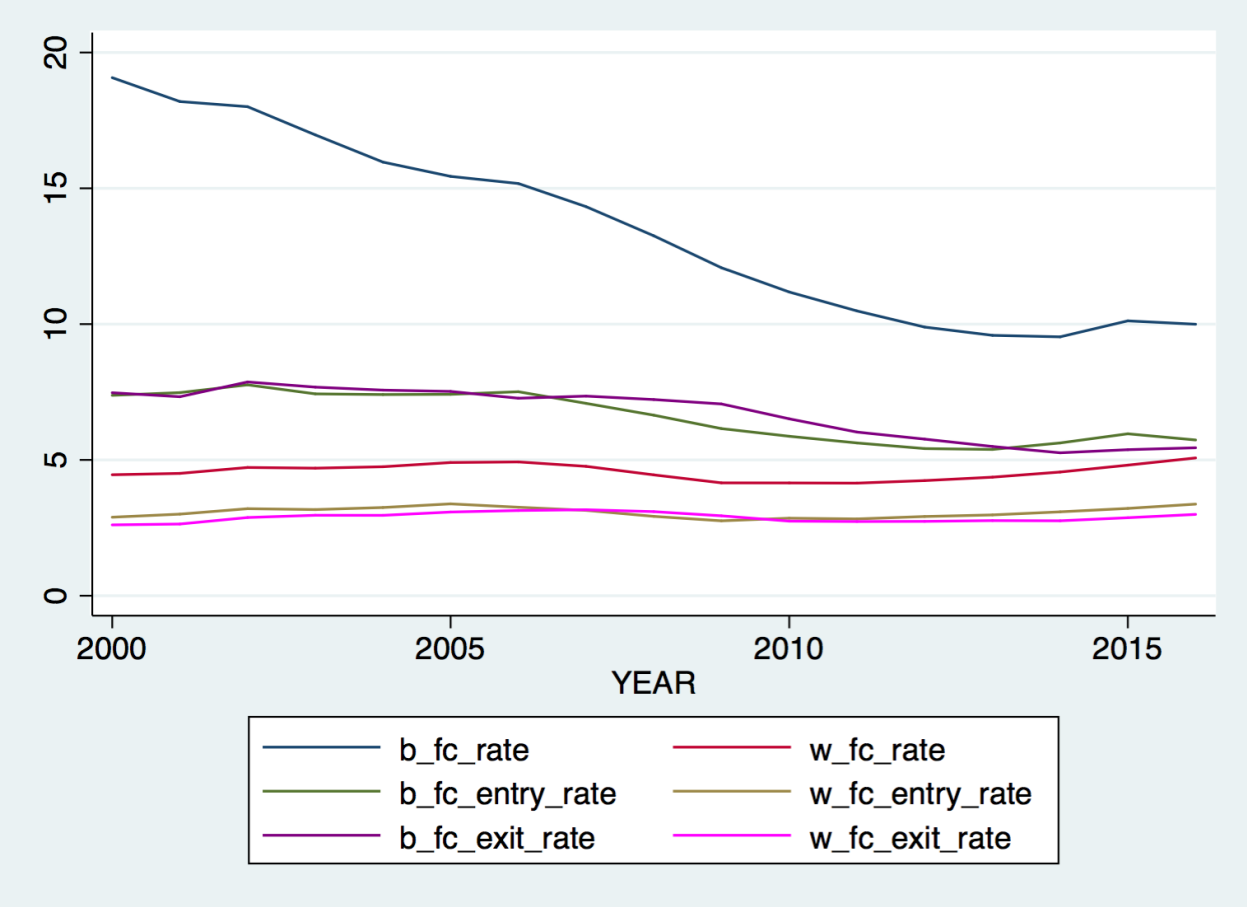
We suggest a third possibility: Given states' budgetary concerns and recent declines in federal spending for child welfare, incarceration of mothers may be less desirable than the less costly option of a community supervision sentence. This also has, potentially, the effect of keeping a child out of the foster care system.

But Figure 12 casts doubt on the argument that these trends contribute to the rising white female incarceration rates and declines in the black female incarceration rates. Figure 12 reveals that black foster care rates declined sharply from 2000 to 2011 and leveled off thereafter. Entry and exit rates were about flat throughout. If the cause of the drop in black female incarceration was

the increasing burden that black foster care placed on the state, the evidence does not support the idea that during the time period when black female incarceration was declining, foster care rates were increasing. For white females, whose incarceration rates were rising, there is a comparable finding. There was little or no change in white foster care rates between 2000 and 2006 and then a slight drop in white foster care rates. It is hard to make the case that foster care growth and/or the fiscal burden of caring for children of incarcerated mothers is at the root of the narrowing of black-white gaps in female incarceration.

Figure 12

Trends in Foster Care Rates, Entry Rates and Exit Rates by Race



Model Specification and Estimation

Denote the incarceration rate for the kth group in year t in state j by In_{jt}^{k}. It is a function of a vector of time variant factors x_{jt}^{k}, state fixed effects ω_{j}^{k}, and a random error, ε^{k}. The difference in the log-incarceration rates for blacks vs whites is given by:

Equation 1

$$\ln[In^b_{jt} / In^w_{jt}] = \ln[In^b_{jt}] - \ln[In^w_{jt}]$$
$$= [\sum \beta^b_{ijt} x^b_{ijt} + \omega^b_j + \varepsilon^b] - [\sum \beta^w_{ijt} x^w_{ijt} + \omega^w_j + \varepsilon^w]$$

Differentiating the difference in log-incarceration rates for blacks vs whites produces the easily interpreted expression:

Equation 2

$$\frac{\partial \ln[In^b_{jt} / In^w_{jt}]}{\partial x_i} = \frac{\partial \ln[In^b_{jt}]}{\partial x_i} - \frac{\partial \ln[In^w_{jt}]}{\partial x_i}$$
$$= \beta^b_{ijt} - \beta^w_{ijt}$$

A factor x_i contributes to the reduction in racial gap in incarceration rates when the effects on white incarceration rates are larger (in absolute value) than the effects on black incarceration rates or when $\beta^b_{ijt} - \beta^w_{ijt} < 0$.

Now, consider two time periods t and t+1. A factor x_i contributes to the narrowing of the racial gap between time period t and t+1 when:

Equation 3

$$\frac{\partial \ln\left[\dfrac{In^b_{t+1} / In^w_{t+1}}{In^b_t / In^w_t}\right]}{\partial x_i} = \beta^b_{it+1} - \beta^w_{it+1} - \beta^b_{it} + \beta^w_{it} < 0$$

In other words, when the ratio of black to white incarceration rates in period t+1 relative to the ratio of black to white incarceration rates in period t is falling when x increases, the factor x contributes to the narrowing of the racial gap in incarceration rates.

The Data and Descriptive Statistics

The incarceration and state prisoner data come from National Prisoner Statistics (NPS) Program, which contains aggregate, state-level counts of prisoners by race and sex for the years 1978 through 2016. To create the incarceration rates we divide the total number of incarceration population. The population estimates come from the National Center for Health Statistics. These estimates result from "bridging" the 31 race categories used in Census 2000, as specified in the 1997 Office of Management and Budget (OMB) standards. The bridged-race population estimates are the July 1st resident population of the United States.

The foster care population is a combination of Adoption & Foster Care Statistics, Children's Bureau and National Child Abuse and Neglect Data System (NCANDS), which contains data by race on foster care populations, foster care entries, foster care exits, and child population for the years 2000 through 2016. The labor force participation rate is the state-level by race and sex annual averages from the year of 1999 to 2017. The Local Area Unemployment Statistic, Bureau of Labor Statistics releases the demographic and economic characteristics of the labor force on an annual-average basis from the Current Population Survey (CPS).

The drug overdose death data are a data abstract from the CDC WONDER website by state by year by race and sex for the year 2000 through 2016. The correctional expenditure and deficit summaries are abstracts from the Annual Survey of State Government Finances Tables, from the year of 2000 to the year 2016.

Due to some small population, some state-level statistics are not released, such as by race by sex drug overdose deaths and labor force participation rate. Therefore, some states in some years are not included in the analysis.

Table 2

Female Incarceration rates per 100,000								
Race	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]		
W	850	49.37925	0.950536	27.71265	47.51357	51.24492		
B	850	165.391	3.004042	87.58213	159.4948	171.2873		
diff (unweighted)		116.0118	3.150839				Unwerighted	t = 36.8193
diff (weighted)		104.4633	4.407529				Weighted	t=23.70

Table 2 reports the incarcerations per 100,000 for black and white females for the 50 states from 2000-2016, yielding 850 observations for each race. Weighted and unweighted tests show statistically significant differences in the incarceration rates for blacks vs whites across states during the 17 year period. Overall, the black female incarceration rate was more than three times that for white females.

Table 3 reports the incarceration rates by time period, comparing 2000-2007 to 2008-2016. Black female incarceration rates dropped by 28 percent while white female incarceration rates rose by 20 percent. These changes are all statistically significant.

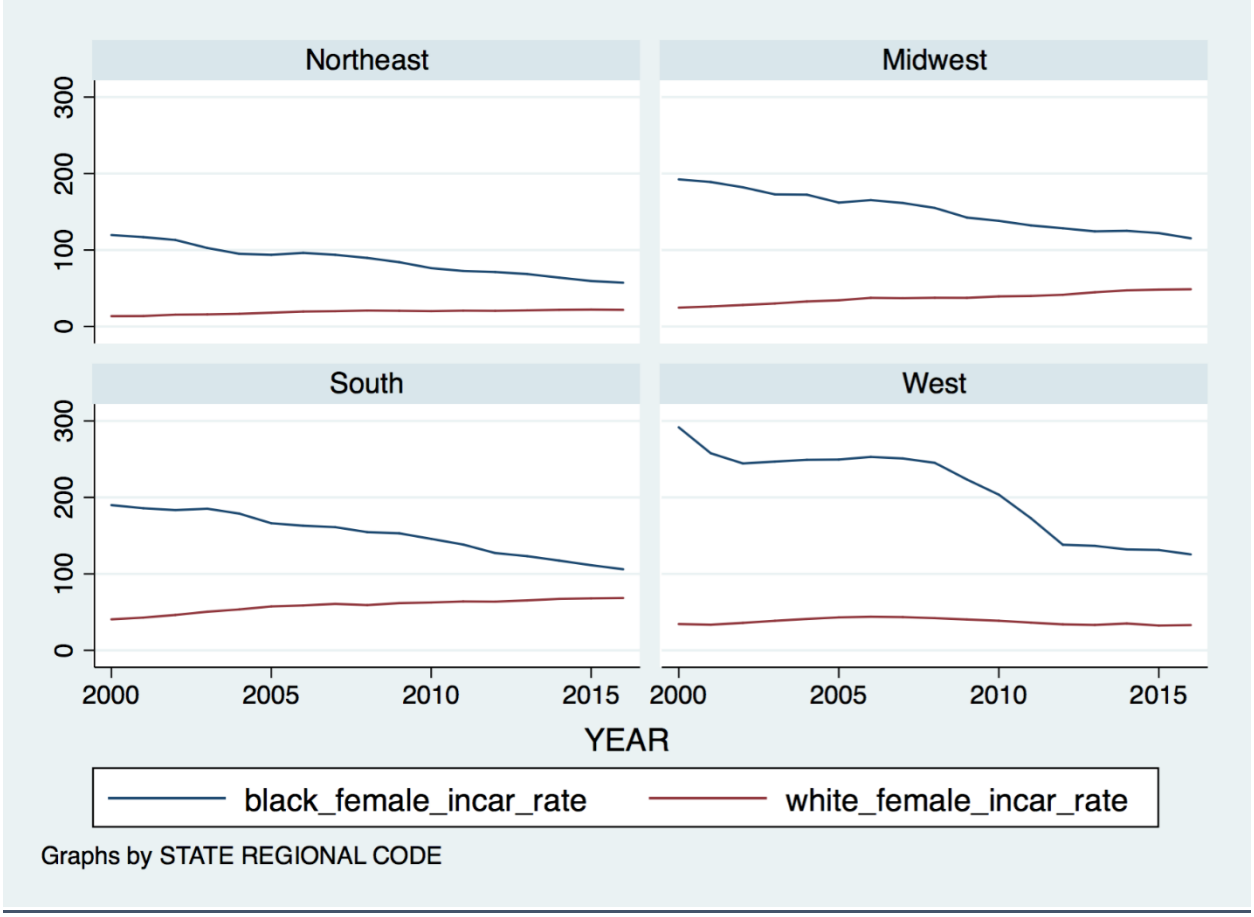
Table 3

Incarceration rates per 100,000, Black Females						
Period	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf	Interval]
year 2000 -- 2007	400	194.7235	4.849033	96.98066	185.1907	204.2564
year 2008 -- 2016	450	139.3177	3.231246	68.54508	132.9675	145.668
diff (unweighted)		-55.4058	5.827012			
Unweighted		t = -9.5084				
Incarceration rates per 100,000, White Females						
Period	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf	Interval]
year 2000 -- 2007	400	44.57226	1.234338	24.68676	42.14564	46.99888
year 2008 -- 2016	450	53.65213	1.391814	29.52484	50.91685	56.38741
diff (unweighted)		9.079874	1.860306			
Unweighted		t = 4.8809				

The narrowing of the racial gap in female incarceration rates varied by region. As figure 13 shows, in the South and the Midwest, black female incarceration rates fell while white female incarceration rates rose from 2000-2016. In the West, white female incarceration rates were nearly flat, while the black female incarceration rates saw sharp declines from 2000-2001 and then again from 2009-2012. The other years saw level black female incarceration rates. The North East witnessed declines in black female incarceration rates but only modest increases in white female incarceration rates. We do not control for region in the model since a region variable would be time-invariant.

We do control for the percentage black in the state, a variable that varies only slightly from year to year. As a result, we estimate the model with and without this control variable. Other variables of interest include the lagged change in the stock of foster care placements, lagged state per capita correctional expenditures, female labor force participation rates, and the state's percentage difference between revenues and expenditures.

Figure 13



Of particular interest in our analysis is the measure of drug overdose deaths. Table 4 reveals that during the period of 2000-2016 white female drug overdose death rates were 46 percent higher than black female drug overdose death rates.

Table 4

Female Drug Overdose Death Rate, per 100,000						
Race	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
White	835	10.56464	0.1687959	4.877587	10.23333	10.89596
Black	447	7.256412	0.1960567	4.145105	6.871102	7.641721
diff (unweighted)		3.308232	0.2587089	Unwerighted	t = 12.7875	
diff (weighted)		3.710078	0.252337	Weighted	t= 14.7	

Table 5 provides the results of estimating the underlying equations 1-4. Table 6 summarizes the derivations. We present the results with and without controls for the percentage blacks in the population. All results exclude states with missing values on the independent variables (amounting to an exclusion of one to 19 states.)

Table 5

Fixed Effects Estimates of Coefficients in Log Incarceration Rates Per 100,000, 2000-2016		
	Black Female , year 2000-16	**White Female , year 2000-16**
	(1)	**(2)**
	Coeff.	**Coeff.**
	(robust S.E.)	**(robust S.E.)**
	T-score	**T-score**
Black share of population	-21.2583***	5.6912*
	(6.0469)	(3.2956)
	-3.5156	1.7269
female labor force participation	0.0156***	0.0075
	(0.0055)	(0.0064)
	2.8304	1.1698
ratefoster care stock change in percentageln	-0.0004	0.0003
	(0.0009)	(0.0006)
	-0.3883	0.5629
ln(state per capita correction expenditure in year t-1)	-0.1560*	0.1858**
	(0.0907)	(0.0893)
	-1.7196	2.0813
percentage diffenence between state revemue and expemditurefemale dr	0.0001	0.0006**
	(0.0002)	(0.0002)
	0.2752	2.4372
overdose deata rate, per 100,000	-0.0186***	0.0215***
	(0.0067)	(0.0037)
	-2.7830	5.8669
Constant	8.3305***	1.5115**
	(1.3143)	(0.5724)
	6.3386	2.6406
Observations	415	786
Number of stateid	33	50
F-value	13.86	12.05
Prob > F	1.06e-07	2.87e-08
AdjustedR squared	0.413	0.310
Robust standard errors in parentheses		
*** p<0.01, ** p<0.05, * p<0.1		

For the overall period of 2000-2016 Increases in the black share of the population reduce racial disparities in female incarceration rates. A one percentage point increase in the share of blacks in the population reduces the log of the black-white ratio of incarceration rates by about 27. Taking the exponential of -27 yields a value that shows a dramatic lowering of the ratio of black-to-white incarceration rates. Increases in the female labor force participation rates raises the log of the black-white ratio of incarceration rates by 0.0081 to 0.0217, translating to increases in the black-white ratio of about 1 to 2 percent. Changes in the foster care stock and in the percentage difference between state revenues and expenditures has virtually no impact on the ratio of black to white incarceration rates. A percentage increase in lagged state criminal justice expenditures reduces the black-white ratio of female incarceration rates by .34 to .42 percent, an inelastic response. Finally, increase in one female drug overdose death per 100,000 reduces the ratio of black-to-white female incarceration rates by 4 to 5 percent.[7]

[7] The derivative of the log of the black to white ratio is from -0.0401 to -0.0557. The exponential is 0.9607 to 0.9458, meaning that the ratio is lower by 1-.96 to 1-.95.

Table 6

The Determinants of Changing Racial Disparities in Female Incarceration Rates								
	2000 - 2016		2000-2007		2008-2016		2000-2007 vs 208-2016	
	$\frac{\partial \ln[In^b_{jt} / In^w_{jt}]}{\partial x_i}$		$\frac{\partial \ln[In^b_{jt} / In^w_{jt}]}{\partial x_i}$		$\frac{\partial \ln[In^b_{jt} / In^w_{jt}]}{\partial x_i}$		$\frac{\partial \ln\left[\frac{In^b_{jt+1} / In^w_{jt+1}}{In^b_{jt} / In^w_{jt}}\right]}{\partial x_i}$	
	1	2	1	2	1	2		
Black share of population	-26.9495		-16.3849		-32.2049		-11.9215	
female labor force participation rate	0.0081	0.0217	-0.005	-0.0027	0.0095	0.0141	0.0088	0.0168
foster care stock change in percentage	-0.0007	-0.0002	-0.0004	0	-0.0023	-0.0045	-0.0012	-0.0045
ln of state per capita correction expenditure in year t-1	**-0.3418**	**-0.4179**	**-0.2653**	**-0.2905**	-0.1284	0.1059	0.3363	0.3964
percentage diffenence between state revemue and expemditure	-0.0005	-0.0005	-0.0051	-0.006	-0.0009	-0.0012	0.0043	0.0048
female drug overdose death rate, per 100,000	**-0.0401**	**-0.0557**	**-0.0254**	**-0.0277**	**-0.0224**	**-0.0379**	**0.0102**	**-0.0102**

Table 6 also reveals the effects of these variables on black-white ratios of female incarceration rates for the years 2000-2007 and 2007-2016. The full regression results are found in appendix Tables 7 and 8.

The bottom line is that black share of the population still explains a large part of the decline in black-white ratios of female incarceration rates. Foster care and revenues vs expenditures still exhibit little impacts on the racial disparity in incarceration. Because the impacts of correctional expenditures on disparities in incarceration diminished between 2000-2007 and 2008-2016, the effects of these expenditures are no longer ones of reducing the gap. The remaining factor, female drug overdose death rates, help explain the narrowing of the gap. One death per 100,000 reduces the log of the relative ratios of black to white incarceration rates from time t to t+1 by .01, when one excludes black shares of the population. This translates into a one percent reduction in the disparity. But, when one controls for black shares in the population, this effect shifts to a widening impact on inequality. In short, while drug overdose deaths explain changes in black-white disparities within periods, these deaths do not appear to explain the between period effects when we also take account of racial composition of the state.

Summary of Findings

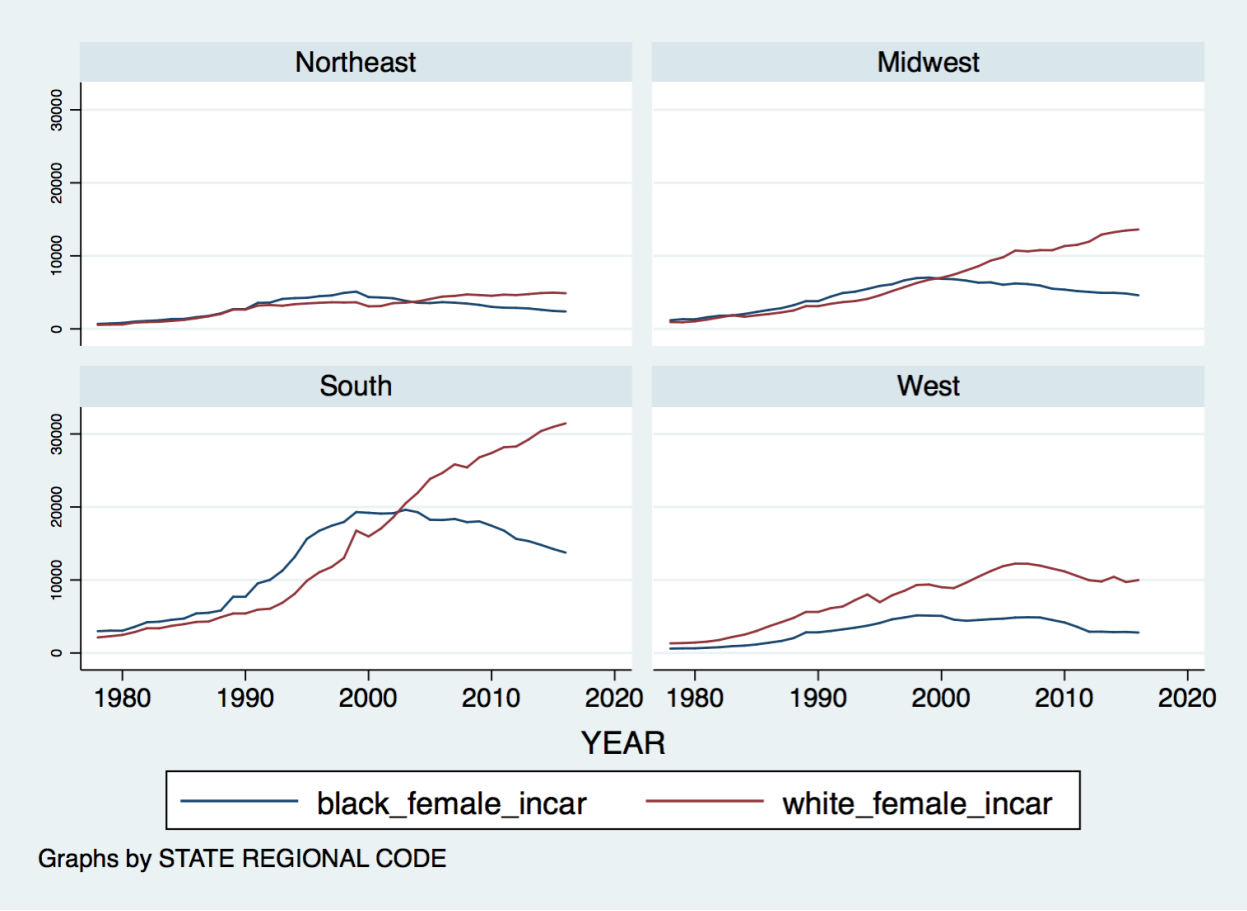
From 2000 to 2016 there was considerable narrowing of the disparity in incarceration rates between black females and white females in America's prisons. Little is known about the underlying causes or the determinants of these shifts. In this paper we outline some plausible mechanisms that could have contributed to these declines. We pointed to the possible role of welfare caseloads and foster-care placements along with increasing burdens of criminal justice expenditures along with budget deficits that may have created an impulse on the part of the state to shift resources away from incarceration to other pressing needs.

Our results show that foster care shifts and budget deficits played minimal roles in explaining the decline in racial gaps in female incarceration. There appears to be an effect of lagged correctional

expenditures but this effect diminished between 2000-2007 and 2008-2016, making it a less plausible candidate for explaining the narrowing gap.

The effects of drug overdoses differ between blacks and whites, generally increasing the incarceration rates for white females but lowering it for black females, a pattern consistent with overall reductions in the racial disparities in incarceration. However, these effects are sensitive to whether one also controls for the black share in the population. Additional robustness tests reveal that the drug overdose impact is highly sensitive to how and whether one controls for missing variables.

Figure 14



Notable in our findings is the huge effects of the black share of the population on the narrowing of the racial gaps in female incarceration. Note that most of the variation in the black share of the population comes between states and not within states over time. States with large black shares of the population include the states in the South, where as we saw in Figure 13 experienced pronounced narrowing of the racial gap in female incarceration. Also notable from Figure 14 is that the South and Midwest experienced shifts in the composition of female prisons. Before 2000, the total number of black female state prison inmates exceeded that of whites. Thereafter, the number of white female state prison inmates exceeded that of blacks. In the

Midwest, the total number of black female state prison inmates was about the same as the total number of white prison inmates in 2000. Thereafter, the number of white female state prison inmates exceeded that of blacks.

Thus, the black share of the population is a proxy for states which during the period experienced these significant shifts: a) migration – particularly black return migration to the South and East-African immigration to states like Minnesota; b) increasing burdens of public debt and expenditures per capita on prisons and welfare; and c) growth in political support for sentencing reforms and reductions in mandatory minimums and use of alternatives to imprisonment. While these patterns may explain the decline in black incarceration rates – and they do, as evidenced by the coefficients in Appendix Table 7 – they do not predict lower white female incarceration. Indeed, in Appendix Table 7, the coefficients on black share of the population in the white female regressions are all positive and often statistically significant.

We have also performed a conventional Blinder-Oaxaca decomposition that corroborates these basic findings: little or no explanatory power of changes in foster care and reductions in racial disparities in incarceration with respect to increases in drug overdose deaths. Since the state level variables are the same for blacks and whites (e.g. budget deficits and criminal justice expenditures) the Blinder-Oaxaca decompositions cannot locate changes in these factors as explaining reductions in racial disparities in incarceration. Much of the gap is unexplained. The large unexplained gap means either that there are other factors we have excluded from the analysis or that the common factors have differential impacts on black female vs white female incarceration rates.

Discussion

There are other plausible mechanisms that we do not test for in this empirical analysis. These include the role of income inequality and the forces of political polarization at the state level.

Increasing income inequality and racial differences in SES

Poverty is a well-known correlate of incarceration. As the National Academy of Sciences concluded (Travis et al. 2014). Incarceration rates in poor communities climbed to high levels during the 1990s and 2000s, particularly among young, black men with little schooling. For example, the cumulative risk of incarceration for black, male high-school drop outs born between 1975-79 reached 69% (Western and Wildeman 2009).

For our aims, if racial differences in poverty rates were to explain the decline in the racial disparity in female imprisonment rates, there would have to have been a decline in the gap in inequality and poverty between the two groups since the late 1990s. While over the past 50 years, the gap in the poverty rate for blacks and whites has declined from about 3.5 to 1 to 2.8 to 1, the gap has remained relatively steady during the past 15 years (Jones et al. 2018; Kaiser Family Foundation

2018). The absence of large diminution in the racial gap in poverty suggests that racial differences in the change in poverty rates may not be correlated with the decline in the racial disparity in imprisonment rates.

One poverty-related factor that could contribute to the diminution in the black-white female incarceration rate disparity is the effects of prior incarcerations. A majority of the prison population consists of persons who have had at least on prior incarceration (Lynch and Sabol, 2001), at least according to BJS inmate survey data. Upon release from prison, whites, but not blacks or Hispanics, reside in significantly more disadvantaged neighborhoods after prison than the ones they resided in prior to prison (Massoglia et al. 2013). In this way, the prison can contribute to white female poverty more than black female poverty rates, but it is not clear that the differential impacts of imprisonment on residence necessarily contributes to subsequent differential rates of imprisonment between black and white women.

Political parties in power

Evidence that political parties and political participation matters for incarceration matter does not address the black-white female gap in imprisonment rates. On one hand, Smith (2004) shows that the greater the percentage of state legislative seats held by Democrats, the lower the incarceration rate, in a panel analysis of state-level incarceration rates over the 1980-1995 period, a time of rapid increase in state prison populations. But this work does not address racial differences in imprisonment.

Forman (2017) argues that during the onset of the war on drugs in the early to mid-1980s, black elected officials supported tougher sentencing for drug dealers. The Congressional Black Caucus supported the 100 to 1 federal sentencing disparity for crack vs. powder cocaine. In all of these cases, the motivation was their love for their communities, fear of drug addiction and its devastating effects, and concern about the violence associated with drug turf battles. Clegg & Usmani (2017) used panel regressions of federally-mandated redistricting to find that black elected officials had a punitive impact on imprisonment and policing during the period associated with the run-up to mass incarceration. However, as the impacts of mass incarceration have become known and documented, elected officials of various persuasions have talked about these impacts, about the need to right-size justice and the need for less severe penalties for lower level offenders. But here again, the effects on the race-sex gap in imprisonment was not measured.

To the extent that parties in power influence enforcement priorities, shifts in partisan control of legislatures and governorships from a party supporting a law-and-order approach to one supporting a reform approach could lessen the racial disparity in sentencing and consequently the gap between black and white women.

Future research needs to operationalize these political and class indicators. It is entirely likely, though, that even controlling for these factors, the unexplained gaps may remain sizeable. Such a finding will require researchers to explore the structural factors that seem to affect black and white female incarceration differently.

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Appendix Table 7

Fixed Effects Estimates of Coefficients in Log Incarceration Rates Per 100,000 -- By Time Period				
	Black Female , year 2000-07	White Female , year 2000-07	Black Female , year 2008-16	White Female , year
	(3)	(4)	(5)	(6)
	Coeff.	Coeff.	Coeff.	Coeff.
	(robust S.E.)	(robust S.E.)	(robust S.E.)	(robust S.E.)
	T-score	T-score	T-score	T-score
Black share of population	-2.8696	13.5153**	-28.3064***	3.8985
	(5.3254)	(6.6576)	(10.1219)	(6.5001)
	-0.5388	2.0301	-2.7965	0.5998
female labor force participation	0.0028	0.0078	0.0038	-0.0057
	(0.0032)	(0.0089)	(0.0037)	(0.0074)
	0.8576	0.8760	1.0094	-0.7635
ratefoster care stock change in percentageln	0.0014*	0.0018**	-0.0016	0.0007
	(0.0007)	(0.0007)	(0.0013)	(0.0007)
	2.0144	2.6297	-1.2750	1.0274
ln(state per capita correction expenditure in year t-1)	-0.0810*	0.1843***	0.0710	0.1994***
	(0.0404)	(0.0536)	(0.1850)	(0.0684)
	-2.0052	3.4381	0.3839	2.9166
percentage diffenence between state revemue and expemditurefemale drug	-0.0016**	0.0035***	-0.0008**	0.0001
	(0.0007)	(0.0009)	(0.0004)	(0.0002)
	-2.4293	3.8429	-2.1518	0.2451
overdose deata rate, per 100,000	-0.0025	0.0229***	-0.0152**	0.0072**
	(0.0036)	(0.0068)	(0.0058)	(0.0029)
	-0.6871	3.3507	-2.5932	2.4699
Constant	5.7862***	0.6098	8.8975***	2.6152**
	(0.7730)	(1.0382)	(2.0320)	(1.1836)
	7.4854	0.5874	4.3787	2.2094
Observations	340	226	396	162
Number of stateid	49	33	50	31
F-value	21.32	14.51	5.178	4.655
Prob > F	0	6.33e-08	0.000343	0.00187
AdjustedR squared	0.453	0.426	0.0853	0.180
Robust standard errors in parentheses				
*** p<0.01, ** p<0.05, * p<0.1				

Appendix Table 8

Fixed Effects Estimates of Coefficients in Log Incarceration Rates Per 100,000 -- By Time Period -- without black shares				
	Black Female , year 2000-07	White Female , year 2000-07	Black Female , year 2008-16	White Female , year 2008-16
	(3)	(4)	(5)	(6)
	Coeff.	Coeff.	Coeff.	Coeff.
	(robust S.E.)	(robust S.E.)	(robust S.E.)	(robust S.E.)
	T-score	T-score	T-score	T-score
female labor force participation	0.0031	0.0058	0.0059	-0.0082
	(0.0036)	(0.0092)	(0.0038)	(0.0053)
	0.8760	0.6328	1.5779	-1.5405
Rate of foster care stock change	0.0015**	0.0015**	-0.0036***	0.0009
	(0.0007)	(0.0007)	(0.0008)	(0.0006)
	2.3073	2.1863	-4.3941	1.4361
ln(state per capita correction expenditure in year t-1)	-0.0867**	0.2038***	0.3048*	0.1989***
	(0.0355)	(0.0554)	(0.1649)	(0.0669)
	-2.4458	3.6772	1.8489	2.9750
Percentage difference between state revenues vs expenditures	-0.0018***	0.0042***	-0.0011**	0.0001
	(0.0006)	(0.0008)	(0.0004)	(0.0002)
	-2.9535	5.2044	-2.3681	0.3183
Female overdose death rate, per 100,000	-0.0018	0.0259***	-0.0295***	0.0084**
	(0.0042)	(0.0061)	(0.0058)	(0.0035)
	-0.4385	4.2513	-5.0732	2.4279
Constant	5.3156***	2.0911***	3.1140***	3.1942***
	(0.2599)	(0.7018)	(0.7776)	(0.4700)
	20.4544	2.9795	4.0049	6.7957
Observations	162	340	226	396
Number of stateid	31	49	33	50
F-value	4.915	24.46	14.55	6.007
Prob > F	0.00210	0	1.86e-07	0.000207
AdjustedR squared	0.179	0.427	0.314	0.0838
Robust standard errors in parentheses				
*** p<0.01, ** p<0.05, * p<0.1				