Percent Black, Ceiling Effects, Black Urbanization and Black Prison Admissions 1926-1999

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This report documents the relationship between the relative size of the Black population in a state on the one hand and the Black imprisonment rate and the Black/White disparity in imprisonment, on the other. It shows that states that have a higher percentage of Black residents consistently have *lower* Black prison admission rates and a *lower* Black/White disparity in prison admissions than states with a smaller percentage of Black residents. More detailed analysis suggests that this pattern is due to a ceiling effect which is probably related to the cost of incarceration, and that it is not just tracking Black urbanization. This is also a longstanding pattern that shows little evidence of abatement.

The basis for this report are the scatter plots shown in the appendix. These graphs use two-letter abbreviations for the states and show the relation between a state's percent Black and three indicators of US prison admission rates in eight time periods. The eight time periods are 1929-36, 1942-46, 1960-64, 1974-1982, 1983-1986, 1987-19990, 1991-94, 1995-99. Data 1929-1982 are from Langan's compilation of historical prison admission statistics; data 1983-1999 are from the National Corrections Reporting Program. These plots show first the the Black/White disparity ratio (i.e. the ratio of the Black to White prison admission rates), then the Black rate and the White rate.

The plots in the appendix reveal a clear and consistent pattern: each scatter plot has an L or triangular ◺ shape for the relation between the percent Black in a state and the Black rate of prison admissions as well as the Black/White disparity in prison admissions. States which are 20% or more Black have low Black prison admissions, while states that are less than 20% Black are much more variable in their prison admission rates, with some having very high Black prison admission rates and others having rates that are just as low (or even lower) than the rates in the states which are 20% or more Black. In some graphs, the maximum increases relatively linearly, while in others the increase is more discontinuous and L-shaped. This pattern produces a substantial negative correlation between the Percent Black in a state and the Black prison admission rate. However, the specific pattern in the plots suggests that the mechanism of this effect is that the percent Black imposes a ceiling on the feasible Black prison admission rate. Where the percent Black is lower, less than 20%, there is much more variability, and much more room for other factors to have play.

The White prison admission rate has a much weaker relationship to the percent Black. Examination of the White imprisonment rate patterns reveals that the Southern states with high percent Black also had low White imprisonment rates in the 1930s, but since then, there has been a zero or positive correlation between the percent Black and White imprisonment rates. Because of this, when the Black/White racial disparity ratio is plotted against the percent Black, the apparent ceiling effect phenomenon is especially strong and the negative correlation is even stronger for the disparity than for the Black rate.

This suggests that a major factor explaining Black imprisonment rates is cost or state capacity. As the percentage Black becomes high, it is economically infeasible for a state to incarcerate a huge proportion of its Black residents. But when the percentage Black is low, high Black incarceration rates are feasible. Whether these high feasible rates will actually occur is, presumably, subject to other factors.

Urbanization

There is often the assumption that urbanism is the source of high Black imprisonment rates, and the cause of the higher Black imprisonment rates in the Northern states where the Percent Black is lower. It is very difficult empirically to distinguish percent Black from the rate of Black urbanization in a state. The rate of Black urbanization in the North is above 85% in virtually every state with significant Black population. There are only a handful of Southern states for which less than 60% of Blacks were urbanized in the 1980s and less than 75% were urbanized in the 1990s, and all of these states are above 20% Black. Because of this high correlation, it is not possible to answer the question of whether it is "really" Percent Black or Black urbanization that is the main correlate.

However, our data from the National Corrections Reporting Program (NCRP) on prison admissions and statistics on the numbers in prison from the Correctional Populations of the United States (CPUS) series in the 1980s and 1990s suggests that the percent Black is the more consistent predictor. As tables 1 and 2 indicate, within all four time periods, the percent Black is the stronger predictor of the rate at which Blacks are admitted to prison and the rate of Blacks being in prison.

Table 1. Regression of Black prison admission rate on percent Black and Black urbanization

	pBlack		Bmetro		Constant			
	b	se	b	se	b	se	N	R2
1983-1986	-7.254**	(3.47)			481.7***	(52.6)	28	0.14
			1.213	(2.02)	301.3*	(159.0)	28	0.01
	-7.739*	(3.92)	-0.607	(2.13)	534.2**	(192.0)	28	0.15
1987-1990	-14.89**	(6.86)			799.8***	(103.0)	29	0.15
			5.66	(4.50)	141.7	(390.0)	29	0.06
	-14.08	(8.30)	0.941	(5.16)	709.9	(504.0)	29	0.15
1991-1995	-17.64***	(5.94)			964.4***	(91.4)	29	0.25
			7.31	(4.41)	115.5	(388.0)	29	0.09
	-18.49**	(8.00)	-0.88	(5.41)	1051*	(542.0)	29	0.25
1991-1995	-21.10***	(6.01)			1003***	(96.1)	28	0.32
			10.17**	(4.51)	-136	(391.0)	28	0.16
	-21.14**	(8.75)	-0.0361	(5.92)	1007	(594.0)	28	0.32

*** p<0.01, ** p<0.05, * p<0.1

Table 2. Regression of Black imprisonment (in prison) rate on percent Black and Black urbanization

	pBlack		Bmetro		Constant			
	b	se	b	se	b	se	N	R^2
1983-1986	-15.93***	(5.39)			1075***	(77.40)	39	0.19
			4.302	(3.23)	564.3**	(255.00)	39	0.05
	-15.34**	(6.00)	0.791	(3.31)	1007***	(294.00)	39	0.19
1987-1990	-21.59***	(6.72)			1427***	(97.30)	39	0.22
			9.363**	(4.10)	402	(348.00)	39	0.12
	-17.92**	(7.40)	4.925	(4.27)	974.6**	(404.00)	39	0.25
1991-1995	-21.95***	(7.25)			1776***	(108.00)	39	0.20
			12.52**	(4.91)	444.8	(427.00)	39	0.15
	-16.45*	(8.74)	6.42	(5.75)	1160**	(562.00)	39	0.23
1996-1999	-24.06***	(8.17)			2053***	(125.00)	39	0.19
			12.52**	(5.63)	690.8	(489.00)	39	0.12
	-19.80*	(10.20)	4.73	(6.76)	1597**	(665.00)	39	0.20

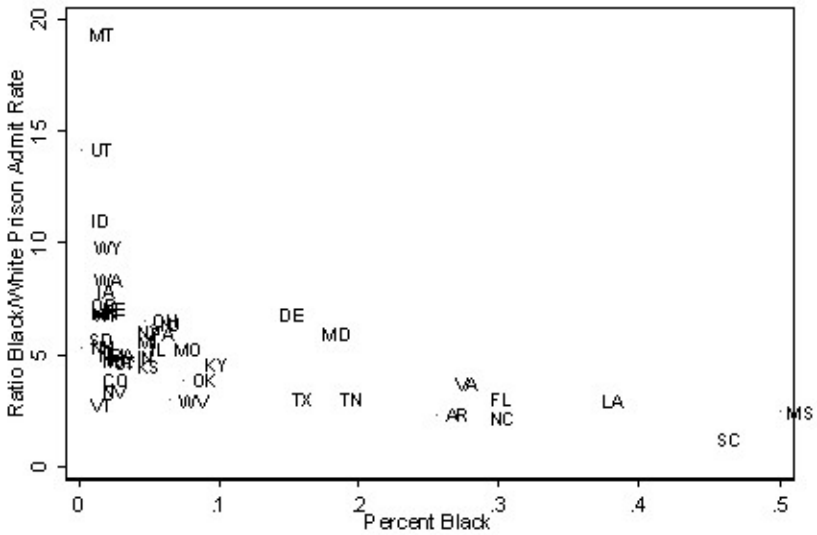
*** p<0.01, ** p<0.05, * p<0.1

In tables 1 and 2: b is the OLS regression coefficient, se is the standard error, N is the number of cases, R^2 is the square of the multiple correlation coefficient, which can be interpreted as the percentage of variation in the Black imprisonment rate that is explained by the regression equation. "Constant" is an algebraic term in a regression equation that has no substantive interpretation. The variable pBlack is the percent Black, and the variable Bmetro is the percent of Blacks who live in metropolitan areas. Each line in the table is a regression equation. In each time period, the first line has pBlack only, the second line as Bmetro only, and the third line has both. The tables show that the R^2 is larger for pBlack alone than for Bmetro alone, and that the R^2 for both combined is either the same as or only a little higher than for pBlack alone. The b's are the size of the change in the imprisonment rate for each unit change in the independent variable. For example, the -19.80 in the last row of table 2 indicates that the Black imprisonment rate is 19.8 points lower for each 1 percentage point increase in the percent Black, and 4.7 points higher for each percentage point increase in the percent of Blacks who live in metropolitan areas. Again, the b's for pBlack go down only a little when Bmetro is controlled, while the b's for Bmetro go down much more when pBlack is controlled.

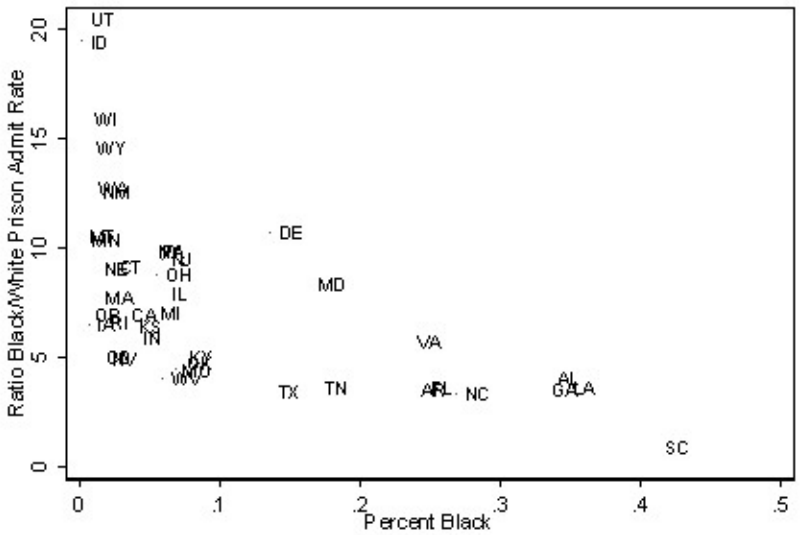
Scatter plots in Appendix

The scatter plots in the appendix use two-letter abbreviations for the states and show the relation between a state's percent Black and three indicators of US prison admission rates in eight time periods. The eight time periods are 1929-36, 1942-46, 1960-64, 1974-1982, 1983-1986, 1987-19990, 1991-94, 1995-99. Data 1929-1982 are from Langan's[1] compilation of historical prison admission statistics; data 1983-1999 are from the National Corrections Reporting Program. These plots show first the the Black/White disparity ratio (i.e. the ratio of the Black to White prison admission rates), then the Black rate and the White rate.

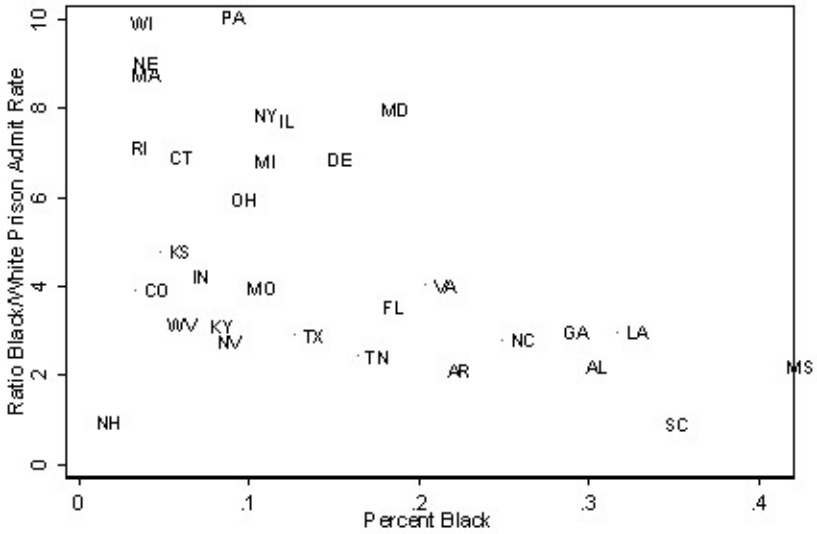
[1]Langan, Patrick A. 1991. "Race of Prisoners Admitted to State and Federal Institutions, 1926-86." NCJ 125618 Washington, DC: Bureau of Justice Statistics



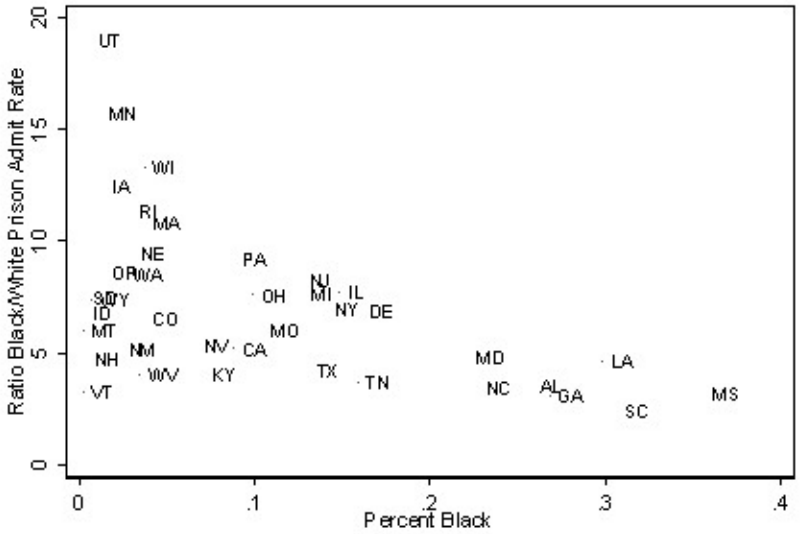
1929-1936 (r= -.49)



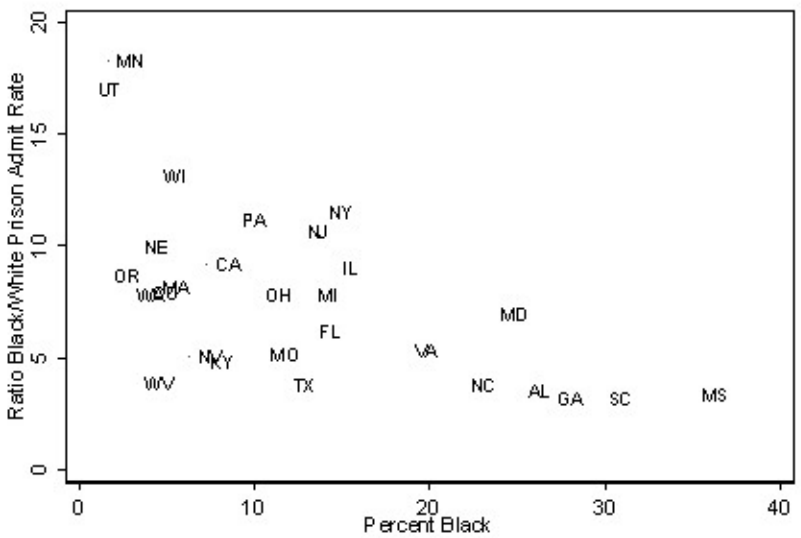
1942-1946 (r= -.59)



1960 & 1964 (r= -.51)



1974-1982 (r= -.52)



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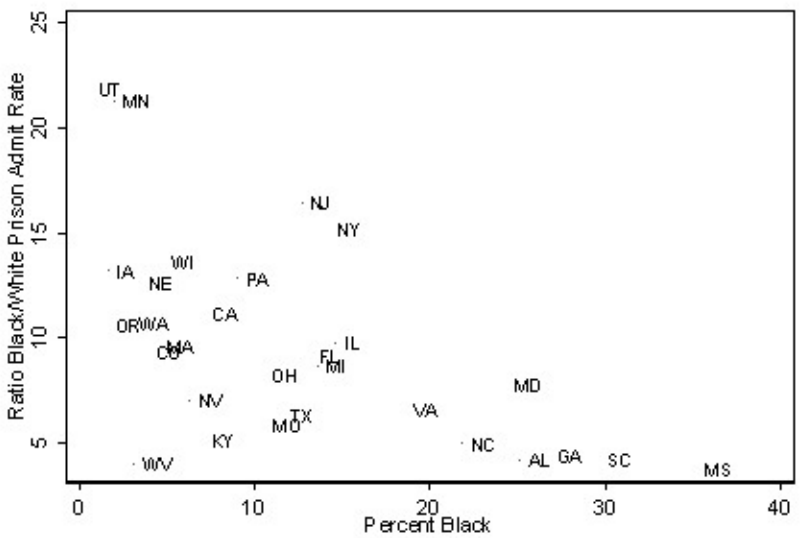

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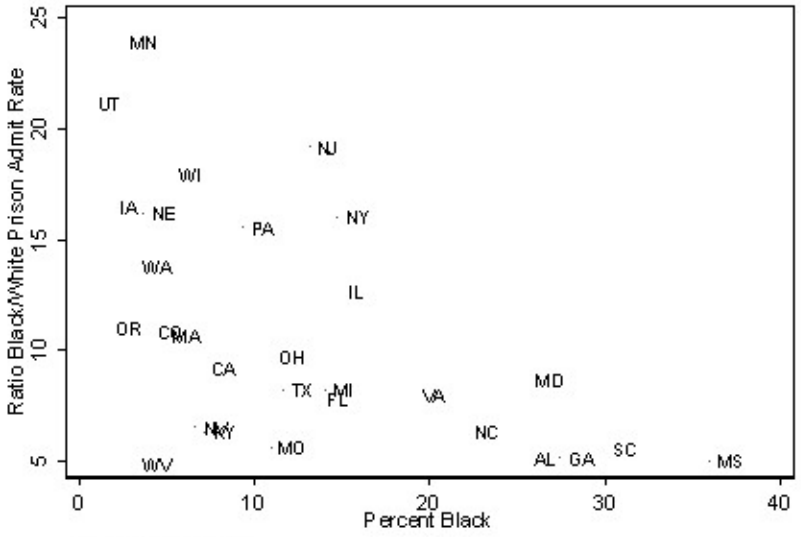

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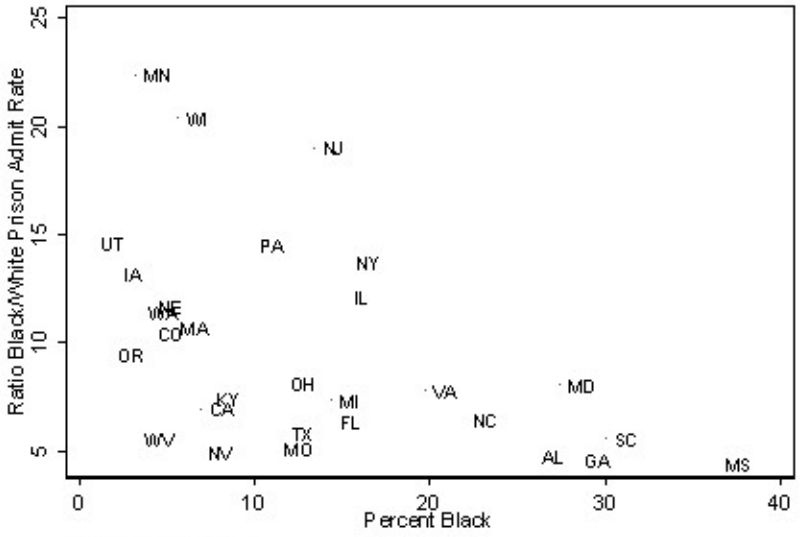
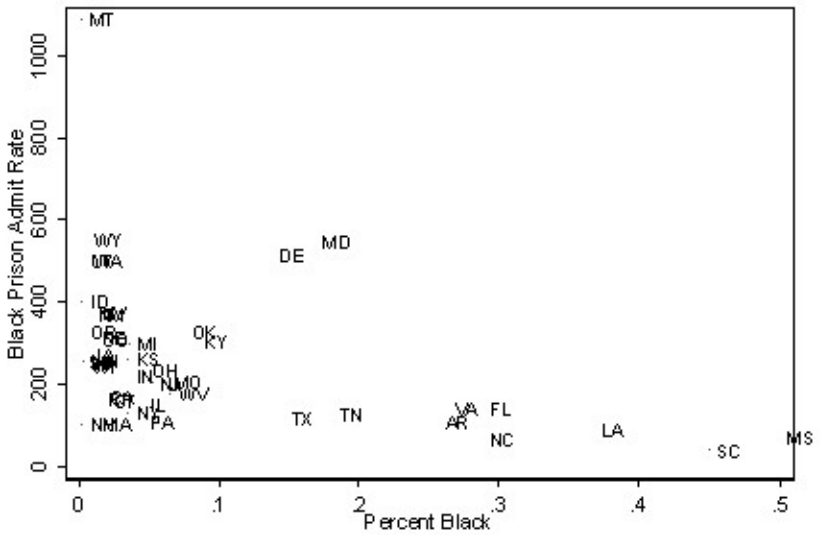


1995-1999 (r= -.48)



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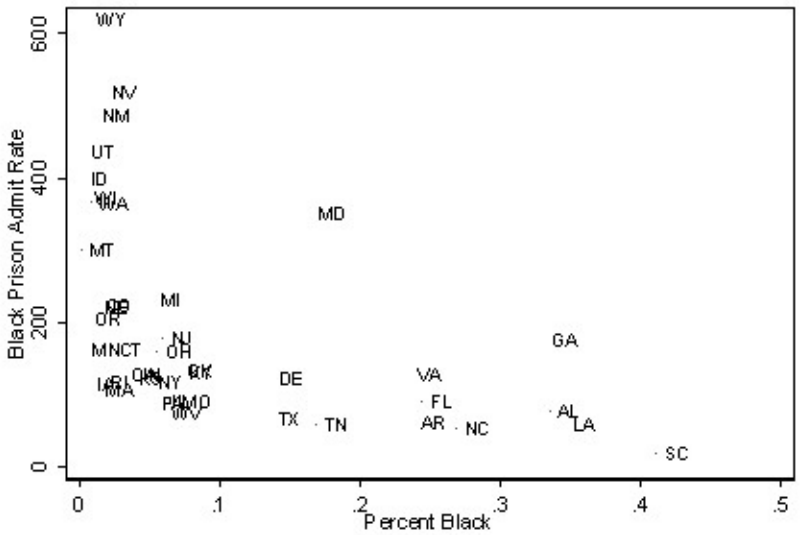

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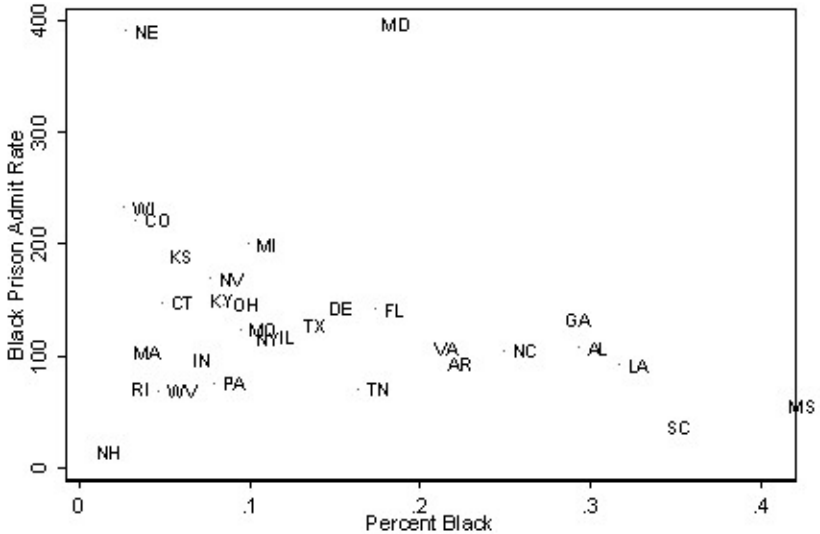

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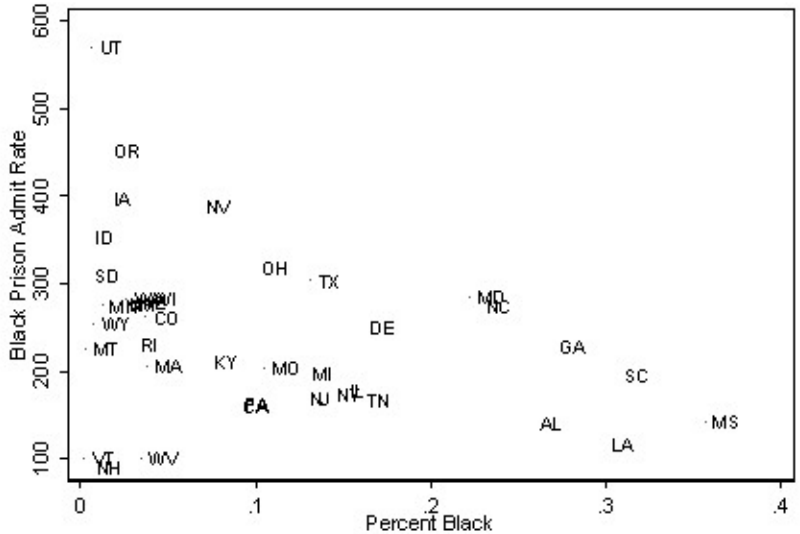

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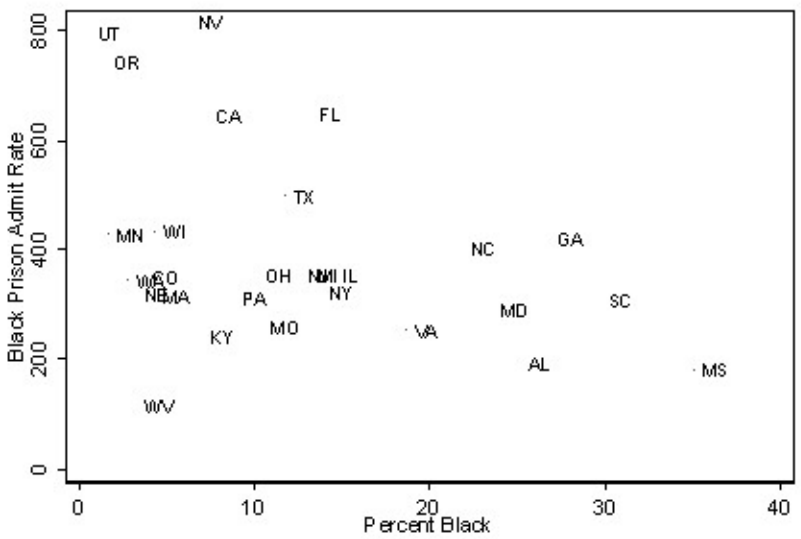

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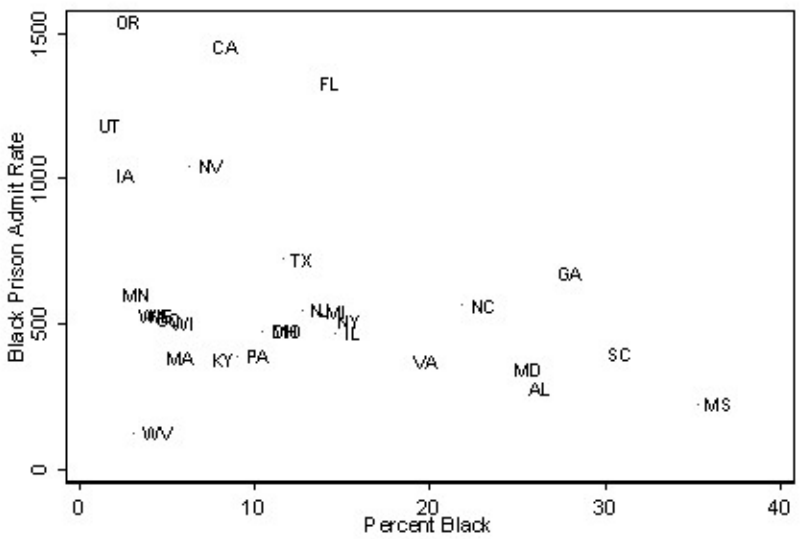

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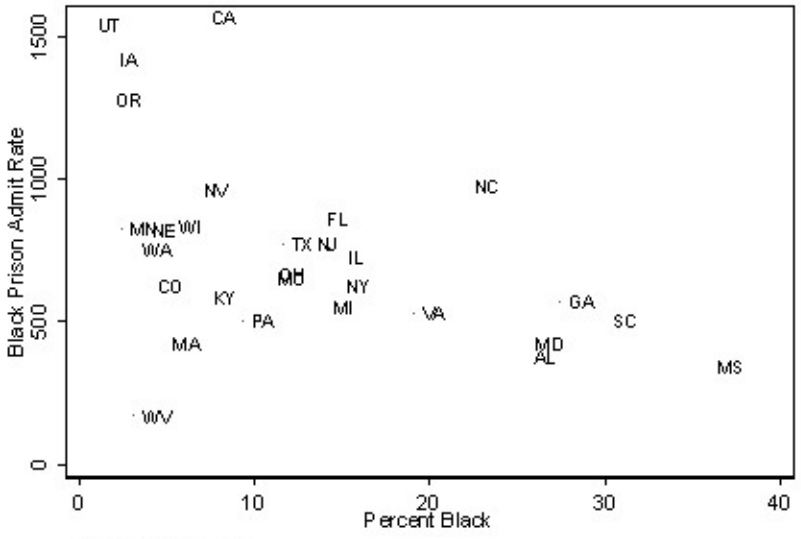

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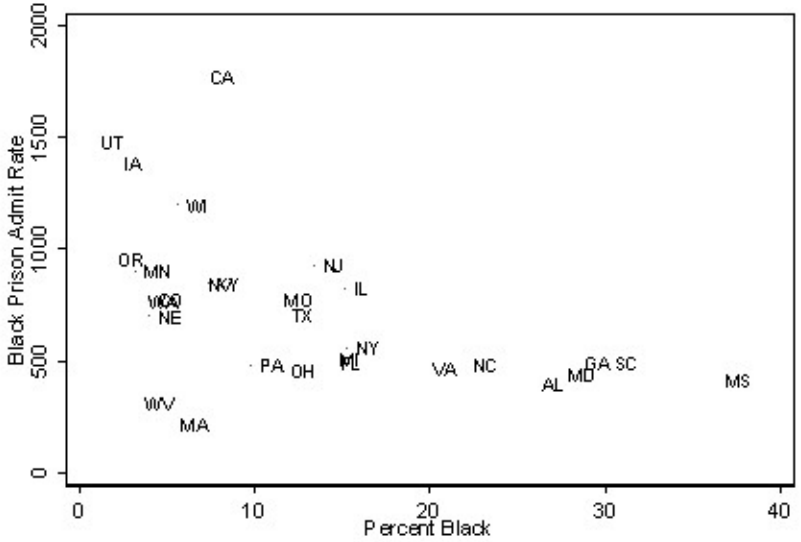

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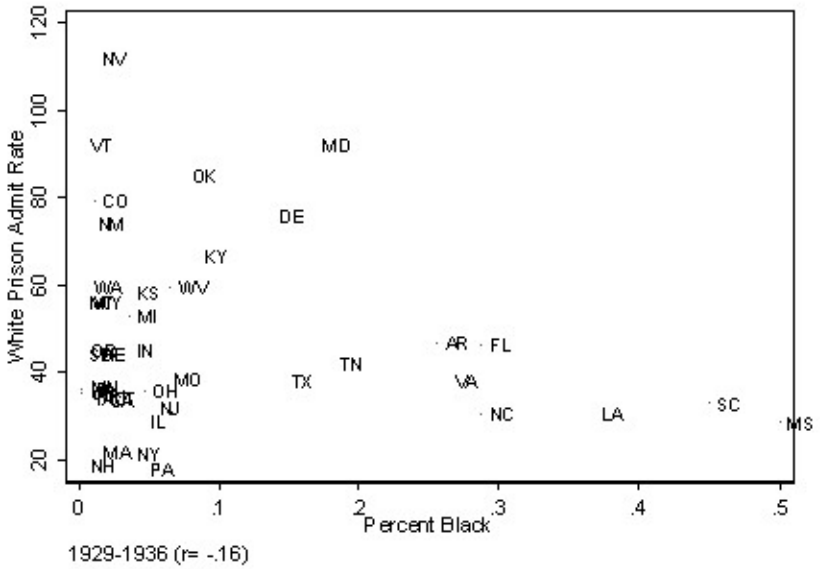

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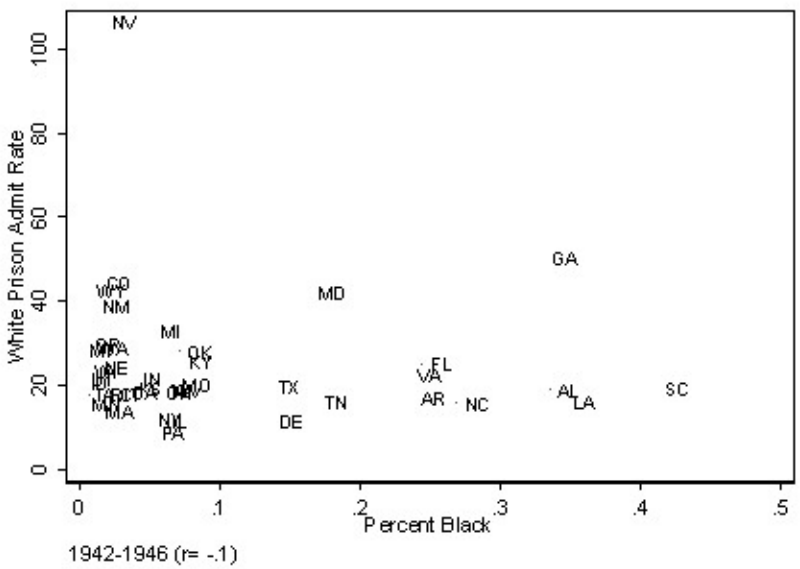

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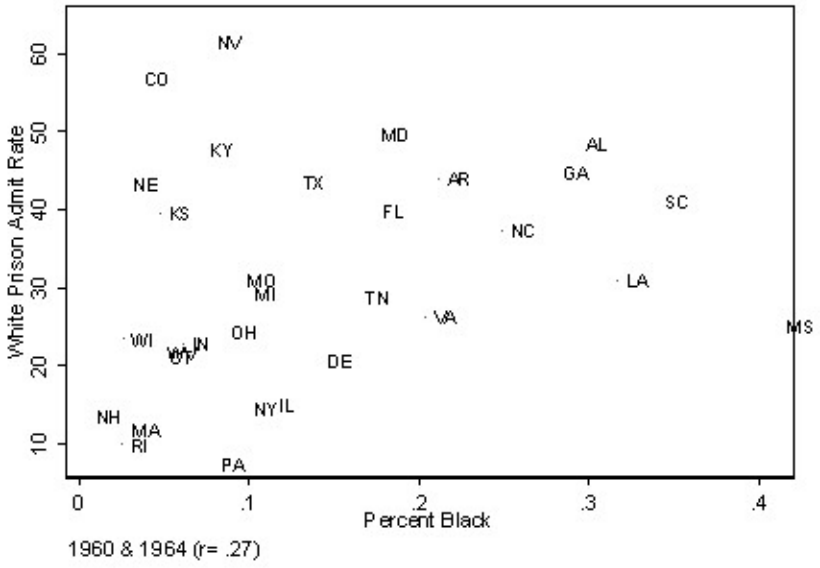

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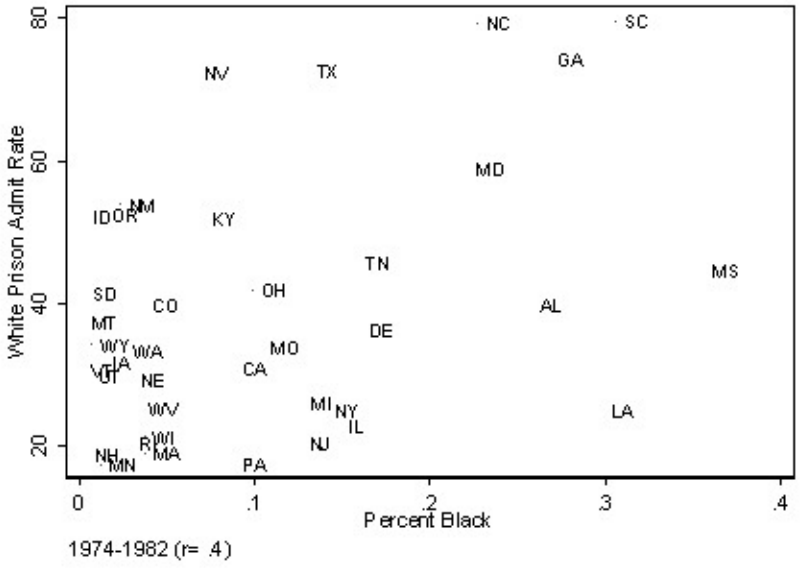

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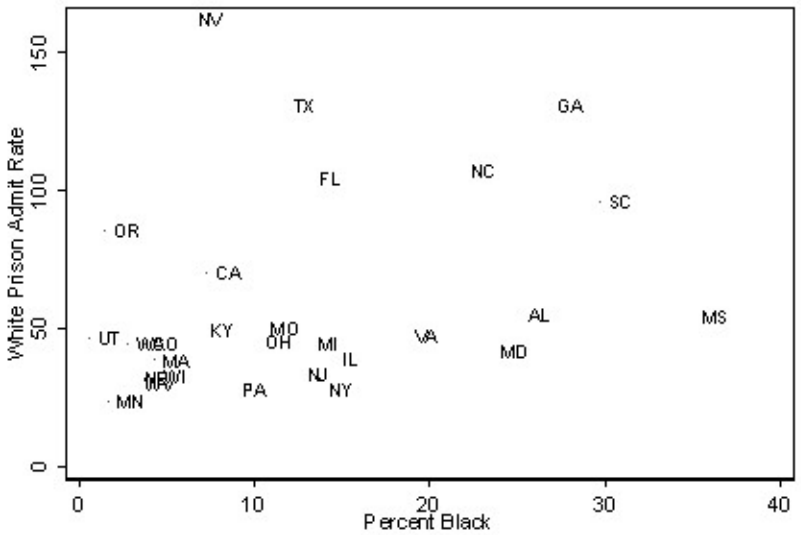

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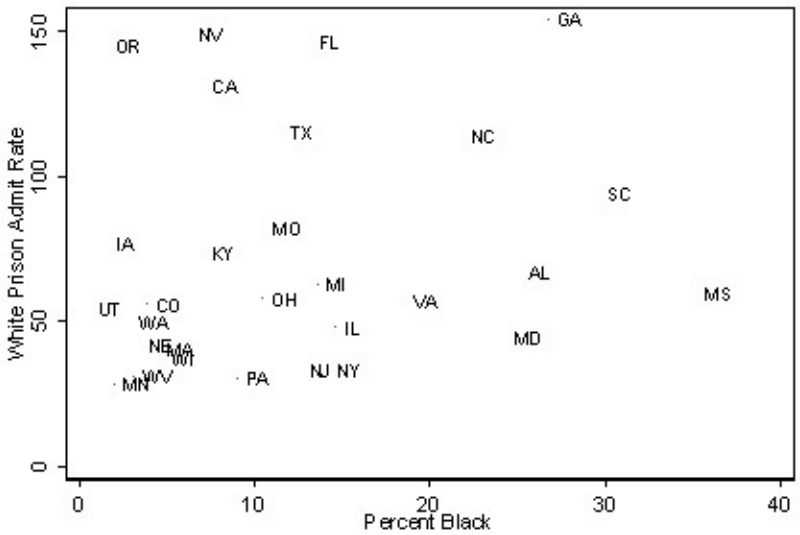

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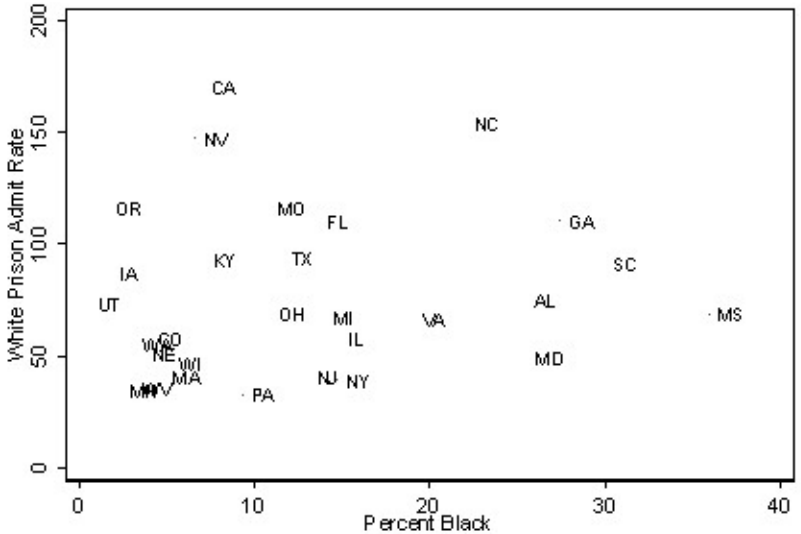

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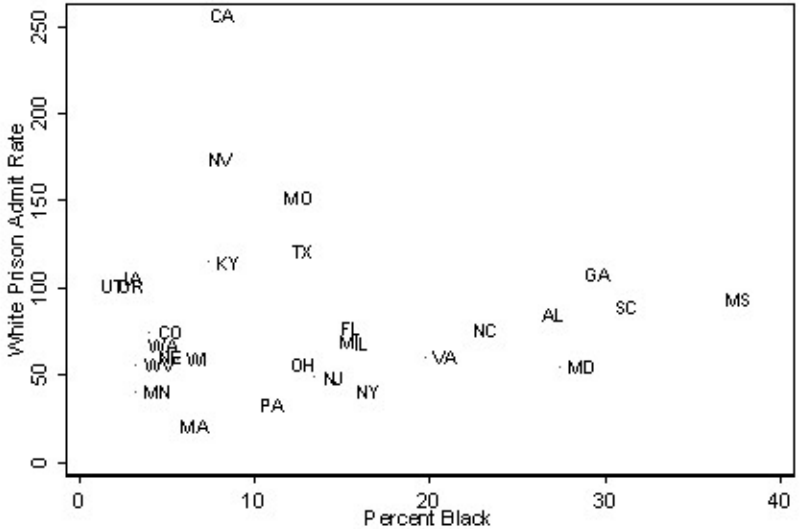

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