

Explaining State Black Imprisonment Rates 1983-1999  
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This paper is available at <http://www.ssc.wisc.edu/~oliver/> Follow the links to the "racial disparities" section.

**Abstract**

This paper addresses the problem of rising Black/White disparities in imprisonment and seeks to determine factors predicting which states will have the highest Black imprisonment rates for various offenses. Annual state imprisonment rates for 1983-1999 are calculated from the Correctional Populations of the United States (CPUS) and National Corrections Reporting Program (NCRP) data. Dependent variables are the logged Black and White rates of being "in-prison" (CPUS) and of sentences to prison, and the first differences of the logged rates, disaggregated by offense group. Multivariate pooled time-series analysis using panel-corrected standard errors is employed to identify the correlates of Black and White imprisonment rates, for Blacks, with and without a control for the White imprisonment rate. Factors examined include Black and White poverty rates, homicide rates, and unemployment rates, as well as the percent Black, the percentage change in the percent Black, the average level of metropolitan segregation, and the presence of a Republican governor. All independent variables are lagged one year to clarify issues of causal order. Results show a much more complex interplay of inter-racial dynamics than previous theory has predicted. Low White poverty is the most consistent predictor of high Black imprisonment rates. Blacks generally have higher imprisonment rates where the percent Black is lower, while White imprisonment rates are lower where the percent Black is increasing. Imprisonment rates are higher where homicide rates are higher. Predictors of Black drug sentences are different from those for other kinds of sentences.

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Table 1. Classification of states by %Black and Dissimilarity (N= in NCRP sample)

[illegible]

Table 2. Correlations Among Variables in Static Analysis

	Black CPUS	White CPUS	Black Non Drug	Black Drug	White Non Drug	White Drug	% Black	D % Black	Diss	Rep Gov	White Pov	Black Pov	Whi Hom	Blk Hom	Blk Unem	Whi Unem	Year
Black CPUS	1.00																
White CPUS	0.56	1.00															
Black Non Drug	0.57	0.06	1.00														
Black Drug	0.57	0.38	0.47	1.00													
White Non Drug	0.19	0.56	0.31	0.31	1.00												
White Drug	0.24	0.52	0.18	0.65	0.65	1.00											
% Black	<b>-0.29</b>	0.07	<b>-0.36</b>	0.05	<b>0.27</b>	<b>0.33</b>	1.00										
Change % Black	0.17	-0.18	<b>0.36</b>	0.04	<b>-0.36</b>	<b>-0.29</b>	-0.42	1.00									
Dissimilarity	<b>-0.22</b>	<b>-0.43</b>	-0.13	-0.06	<b>-0.37</b>	-0.18	0.01	-0.07	1.00								
Repub Gov	<b>0.23</b>	0.07	0.16	0.18	-0.04	0.04	-0.03	0.05	0.04	1.00							
White Poverty	<b>-0.23</b>	<b>0.25</b>	<b>-0.31</b>	<b>-0.46</b>	0.08	-0.12	-0.01	-0.21	-0.31	-0.15	1.00						
Black Poverty	<b>-0.33</b>	-0.15	-0.13	<b>-0.44</b>	-0.17	<b>-0.35</b>	0.12	-0.01	0.12	-0.01	0.37	1.00					
White Homicide	-0.05	<b>0.54</b>	-0.06	0.02	<b>0.40</b>	<b>0.33</b>	0.17	-0.52	-0.22	-0.19	0.39	-0.08	1.00				
Black Homicide	0.03	0.01	<b>0.22</b>	0.13	0.03	0.07	-0.12	0.13	0.37	0.03	-0.15	-0.04	0.15	1.00			
Black Unemployed	-0.04	-0.06	0.11	<b>-0.31</b>	<b>-0.33</b>	<b>-0.47</b>	-0.41	0.24	-0.13	0.10	0.25	0.32	-0.15	-0.07	1.00		
White Unemployed	-0.08	0.04	-0.03	-0.18	-0.15	<b>-0.20</b>	-0.49	-0.07	0.17	0.01	0.30	0.11	0.26	0.21	0.41	1.00	
Year	<b>0.59</b>	<b>0.45</b>	0.18	<b>0.65</b>	<b>0.26</b>	<b>0.37</b>	0.04	0.16	-0.23	0.20	-0.20	-0.47	-0.14	0.04	-0.26	-0.22	1.00
Year Squared	-0.11	-0.02	-0.15	<b>-0.36</b>	0.04	-0.12	0.02	-0.08	0.00	0.01	0.24	-0.01	-0.09	-0.26	-0.03	-0.08	-0.01

Note: Correlations between independent and dependent variables are bolded if their magnitude is greater than .2 ( $R^2 > .04$ ).

Table 3. Regression of White Imprisonment and New Sentences on Independent Variables. All are Logged Rates Per 100,000

	White CPUS In Prison		White New Prison Sentences (NCRP)				
	All <sup>a</sup>	NCRP	NonDrug	NonDrug <sup>b</sup>	Drug	Drug	Drug <sup>b</sup>
Year	0.051**	0.052**	0.028**	0.012**	0.061**	0.044**	0.042**
	[0.001]	[0.001]	[0.001]	[0.002]	[0.006]	[0.005]	[0.006]
% Black					0.015**	0.008**	0.009**
					[0.004]	[0.003]	[0.003]
Change % Black	-0.027**	-0.085**	-0.129**	-0.122**	-0.152**	-0.075**	-0.092**
	[0.006]	[0.007]	[0.010]	[0.007]	[0.024]	[0.022]	[0.024]
Dissimilarity	-1.074**	-1.053**		-1.864**		-1.059**	-1.353**
	[0.043]	[0.058]		[0.139]		[0.183]	[0.219]
White Poverty						-0.077**	-0.074**
						[0.014]	[0.014]
Black Homicide				0.008**			0.005**
				[0.001]			[0.002]
White Homicide	0.120**	0.108**				0.096**	0.082**
	[0.003]	[0.004]				[0.012]	[0.013]
Black Unemployed				-0.019**		-0.033**	-0.033**
				[0.003]		[0.010]	[0.010]
Constant	5.270**	5.359**	3.703**	4.827**	1.803**	3.137**	3.216**
	[0.035]	[0.048]	[0.010]	[0.077]	[0.048]	[0.170]	[0.182]
Observations	675	612	453	453	453	453	453
Number of States	44	39	29	29	29	29	29
R2	0.65	0.67	0.23	0.45	0.29	0.45	0.45
Model DF	4	4	2	5	3	7	8

Standard errors in brackets

+ significant at 10%; \* significant at 5%; \*\* significant at 1%

a) Total R<sup>2</sup> for all independent variables for full sample = .66

b) Total R<sup>2</sup> for all independent variables for White non-drugs = .45 and for drugs = .48.

Table 4. Regression of Black Imprisonment and New Sentences on Independent Variables. All are Logged Rates Per 100,000

	Black CPUS In Prison				Black Sentences (NCRP)							
	All	All	NCRP		Non Drug	Non Drug	Non Drug	Non Drug		Drug	Drug	Drug
Year	0.055**	0.047**	0.049**					0.008**		0.121**	0.123**	
	[0.002]	[0.002]	[0.002]					[0.003]		[0.004]	[0.004]	
Year Squared										-0.014**	-0.012**	
										[0.001]	[0.001]	
% Black	-0.014**	-0.015**	-0.015**		-0.009**	-0.010**	-0.015**	-0.015**				
	[0.000]	[0.000]	[0.001]		[0.001]	[0.001]	[0.002]	[0.002]				
Change % Black					0.071**	0.089**	0.055**	0.053**				
					[0.008]	[0.009]	[0.011]	[0.010]				
Dissimilarity		-0.497**	-0.642**				-0.749**	-0.648**				-1.488**
		[0.081]	[0.071]				[0.088]	[0.087]				[0.410]
Repub Gov		0.057**	0.051*				0.091**	0.078**				0.303**
		[0.020]	[0.021]				[0.018]	[0.019]				[0.077]
White Poverty		-0.037**	-0.044**			-0.071**	-0.081**	-0.083**		-0.146**	-0.199**	-0.235**
		[0.005]	[0.006]			[0.007]	[0.011]	[0.011]		[0.017]	[0.018]	[0.047]
Black Poverty							0.008**	0.011**				-0.029**
							[0.003]	[0.003]				[0.011]
Black Homicide							0.005**	0.004**				
							[0.002]	[0.002]				
White Homicide						0.048**	0.046**	0.051**			0.104**	0.068**
						[0.006]	[0.010]	[0.010]			[0.010]	[0.024]
Black Unemployed		-0.006**	0.001									-0.027**
		[0.002]	[0.003]									[0.010]
White Unemployed							-0.045**	-0.045**				
							[0.011]	[0.010]				
Constant	7.297**	8.018**	8.106**		5.544**	6.006**	6.453**	6.337**		5.998**	6.011**	8.086**
	[0.011]	[0.092]	[0.082]		[0.020]	[0.057]	[0.088]	[0.090]		[0.163]	[0.154]	[0.573]
Observations	675	675	612		453	453	453	453		453	453	453
Number of State	44	44	39		29	29	29	29		29	29	29
R2	0.45	0.51	0.52		0.18	0.31	0.40	0.41		0.61	0.66	0.37

Standard errors in brackets

+ significant at 10%; \* significant at 5%; \*\* significant at 1%

Total R<sup>2</sup> for all independent variables for CPUS full sample = .53, for non-drugs = .41 and for drugs = .67

Table 5. Disparity: Black Rates Regressed on White rates and Independent Variables. All are Logged Rates Per 100,000

	Black Imprisonment (CPUS)				Drug Sentences (NCRP)			Non-drug Sentences (NCRP)		
White Rate	0.478**	0.314**	0.334**	0.607**	0.274**	0.491**	0.491**	0.871**	0.583**	0.633**
	[0.049]	[0.012]	[0.011]	[0.020]	[0.034]	[0.018]	[0.025]	[0.088]	[0.044]	[0.043]
Year		0.038**	0.039**	0.018**					0.099**	0.087**
		[0.002]	[0.002]	[0.002]					[0.005]	[0.004]
Year Squared									-0.015**	-0.012**
									[0.001]	[0.001]
% Black			-0.015**	-0.015**		-0.013**	-0.015**			-0.012**
			[0.001]	[0.001]		[0.001]	[0.001]			[0.003]
Change % Black						0.097**	0.098**			
						[0.009]	[0.010]			
Dissimilarity										
Repub Gov							0.076**			
							[0.019]			
White Poverty				-0.057**		-0.057**	-0.079**			-0.139**
				[0.005]		[0.004]	[0.008]			[0.013]
Black Poverty							0.008**			
							[0.002]			
Black Homicide				0.003**			0.002			
				[0.001]			[0.001]			
White Homicide				-0.054**			0.036**			
				[0.006]			[0.009]			
Black Unemployed							0.012**			
							[0.002]			
White Unemployed							-0.041**			
							[0.008]			
Constant	4.708**	5.549**	5.603**	4.909**	4.519**	4.344**	4.165**	2.726**	3.572**	4.864**
	[0.256]	[0.060]	[0.050]	[0.103]	[0.124]	[0.078]	[0.116]	[0.206]	[0.085]	[0.136]
R2	0.31	0.46	0.57	0.70	0.10	0.52	0.60	0.42	0.71	0.78
Net R2 after White		0.15	0.26	0.39		0.42	0.50		0.29	0.36

Standard errors in brackets. Observations and states the same as for White and Black tables.

+ significant at 10%; \* significant at 5%; \*\* significant at 1%

Total R<sup>2</sup> for all independent variables for imprisonment = .72, for non-drugs = .60 and for drugs = .80

Table 6. Whites: Regression of first difference of log imprisonment rates on independent variables

	-65x		-3	-4	-6		
	White CPUS		White Drug Sentences				White Non-Drug <sup>a</sup>
Yearly Mean		0.936**			0.887**	1.008**	
		[0.041]			[0.107]	[0.066]	
% Black	-0.001**	-0.000**		-0.001+	-0.002*	-0.003**	
	[0.000]	[0.000]		[0.001]	[0.001]	[.001]	
Change % Black	-0.002**	-0.001*					
	[0.001]	[0.001]					
Dissim							
Rep Gov	-0.009*	-0.007*					
	[0.003]	[0.003]					
Black Unempl	0.000*	0.000+	0.009*	0.008+	0.005		
	[0.000]	[0.000]	[0.005]	[0.005]	[0.005]		
D Black Unempl						0.017**	
						0.008	
Constant	0.057**	0.011**	-0.03	-0.001	-0.023	0.044	
	[0.004]	[0.004]	[0.054]	[0.061]	[0.053]	[0.011]	
Observations	631	631	424	424	424	424	
Number of State	44	44	29	29	29	29	
R2	0.03	0.07	0.04	0.04	0.09	0.11	
Model DF	4	5	1	2	3	4	

a) No independent variables are significant predictors for White non-drug sentences. R2 for mean alone is .08, for time alone is .02.

b) For White CPUS imprisonment, R2 mean alone is .05, R2 time is .00, R2 all independent variables is .10.

c) For White drug sentences, R2 mean alone is .06, R2 time alone is .02, R2 all independent variables is .14.

+ significant at 10%; \* significant at 5%; \*\* significant at 1%

Standard errors in brackets

Table 7. Blacks: Regression of first difference of log imprisonment rates on independent variables

	Black in Prison CPUS		Black Drug NCRP		Black Non-Drug NCRP	
Yearly Mean	1.099**		1.000**		0.787**	
	[0.058]		[0.043]		[0.096]	
% Black						
Change % Black		-0.006	0.019*			
		[0.004]	[0.008]			
Dissim	0.056**	0.055*		0.577**		
	[0.018]	[0.021]		[0.134]		
Black Poverty		0.001**		0.004	0.002*	0.002*
		[0.000]		[0.003]	[0.001]	[0.001]
D Black Poverty						
White Poverty						
D White Poverty		-0.008*		-0.060*		
		[0.004]		[0.027]		
Black Homicide				-0.003*		
				[0.001]		
D Black Homicide	-0.002**	-0.001	0.007+	0.017**	0.003*	0.004*
	[0.001]	[0.001]	[0.004]	[0.006]	[0.001]	[0.001]
White Homicide				0.013**		
				[0.005]		
D White Homicide				0.071	0.014	0.019
				[0.045]	[0.012]	[0.012]
Black Unempl				0.012*		
				[0.005]		
D Black Unempl			0.015*			
			[0.007]			
Constant	-0.039**	-0.006	-0.014	-0.413**	-0.035*	-0.046*
	[0.010]	[0.017]	[0.014]	[0.100]	[0.018]	[0.020]
Observations	631	631	424	424	424	424
Number of State	44	44	29	29	29	29
R2	0.18	0.08	0.34	0.19	0.11	0.07

a) For Black CPUS imprisonment, R2 for mean is .13, R2 for year is .10, R2 for all independent variables is .21.

b) For Black drug sentences, R2 for mean is .31, for year is .20, for all independent variables is .37, for all independent variables except time and mean is .22

c) For Black non-drug sentences, R2 for mean is .08, for time is .04, and for all variables is .15  
Standard errors in brackets.

\*\* p<.01 \* p<.05 + p<.1



Table 8. Disparity: Regression of first difference of log imprisonment rates for Blacks on White rate plus independent variables

[illegible]

	Black in Prison		Black Drug Sentences					Black Non-Drug Sentences					
Black Unempl													
D Black Unempl								0.004**	0.004**	0.004**	0.005**	0.005**	0.005**
								[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]
White Unempl													
D White Unempl								-0.012*		-0.014*	0		-0.002
								[0.006]		[0.006]	[0.006]		[0.007]
White Rate	0.573**	0.623**	0.720**	0.800**	0.794**	0.796**	0.807**	0.748**	0.750**	0.747**	0.717**	0.717**	0.711**
	[0.045]	[0.051]	[0.083]	[0.088]	[0.088]	[0.088]	[0.089]	[0.051]	[0.051]	[0.051]	[0.052]	[0.052]	[0.053]
Constant	-0.026**	0.013*	0.009	-0.205+	-0.292**	-0.119+	-0.152*	0	0	0	-0.010*	-0.010*	-0.009*
	[0.004]	[0.006]	[0.041]	[0.112]	[0.088]	[0.062]	[0.068]	[0.005]	[0.006]	[0.006]	[0.004]	[0.004]	[0.004]
Observations	631	631	424	424	424	424	424	424	424	424	424	424	424
Number of State	44	44	29	29	29	29	29	29	29	29	29	29	29
R2	0.30	0.21	0.69	0.59	0.57	0.56	0.53	0.62	0.62	0.62	0.62	0.62	0.62
R2 – WhiR2	0.11	.02	.20	.10	.08	.07	.04	.09	.09	.09	.09	.09	.09
Model DF	4	3	4	7	4	3	2	7	6	6	6	5	5

a) Disparity Black CPUS: R2 White alone .19

b) Disparity Black drug: R2 White alone .49, R2 white & mean .67, R2 white & time .62, R2 all independent variables .70

c) Disparity Black non-drug: R2 White alone .53, R2 White & mean .58, R2 White + year .60

+ significant at 10%; \* significant at 5%; \*\* significant at 1%

Standard errors in brackets

Table 9. Summary of results: Black and White Imprisonment Rates

Unmodified coefficients are multivariate. Time controlled with year & year<sup>2</sup> in static analysis, with annual national mean change in dynamic analysis.

() Bivariate results, listed only if  $r^2 > .04$  for static results, &  $> .02$  for dynamic results  
[indicates multivariate result that is significant only if time trends are **not** controlled]

	Static Analysis: Annual Rates						Dynamic Analysis: Annual First Differences					
	Black CPUS	Black Non Drug	Black Drug	White CPUS	White Non Drug	White Drug	Black CPUS	Black Non Drug	Black Drug	White CPUS	White Non Drug	White Drug
% Black	- (-)	- (-)	(*)		(+)	+ (+)				-		+
Change % Black		+ (+)		-	- (-)	- (-)	(-)		+	-		
Dissimilarity	- (-)	-	[-]	- (-)	- (-)	-	+ (+)		[+] (+)			
Repub Gov	+ (+)	+	[+]							-		
White Poverty	- (-)	- (-)	- (-)	(+)		-						
D Wpov**							[-] (-)		[-] (-)			
Black Poverty	(-)	+	[-] (-)			0 (-)	+	+ (+)	0 (+)			
D Bpov**												
White Homicide		+	+	+ (+)	(+)	+ (+)						
D Whom**												
Black Homicide		+ (+)			+	+			[-]			
D Bhom**							-	+ (+)	+ (+)			
Black Unemployed	-		+ (-)		- (-)	- (-)			[+] (+)	+		[+] (+)
D Bunemp**									+			+ (+)
White Unemployed		-	[-]			0 (-)						
D Wuenmp**												
Year	+ (+)	+	+ (+)	+ (+)	+ (+)	+ (+)		(-)	(-)			
Year Squared			- (-)									

\* Bivariate effect of %Black on Black drug sentences is curvilinear. This effect is largely explained by other factors.

\*\* Lagged first differences

Table 10. Summary of results: Disparity in Imprisonment (Black rate controlling for White rate, or Black first difference in rate controlling for White first difference)

Unmodified coefficients are multivariate. Time controlled with year & year<sup>2</sup> in static analysis, with annual national mean change in dynamic analysis.

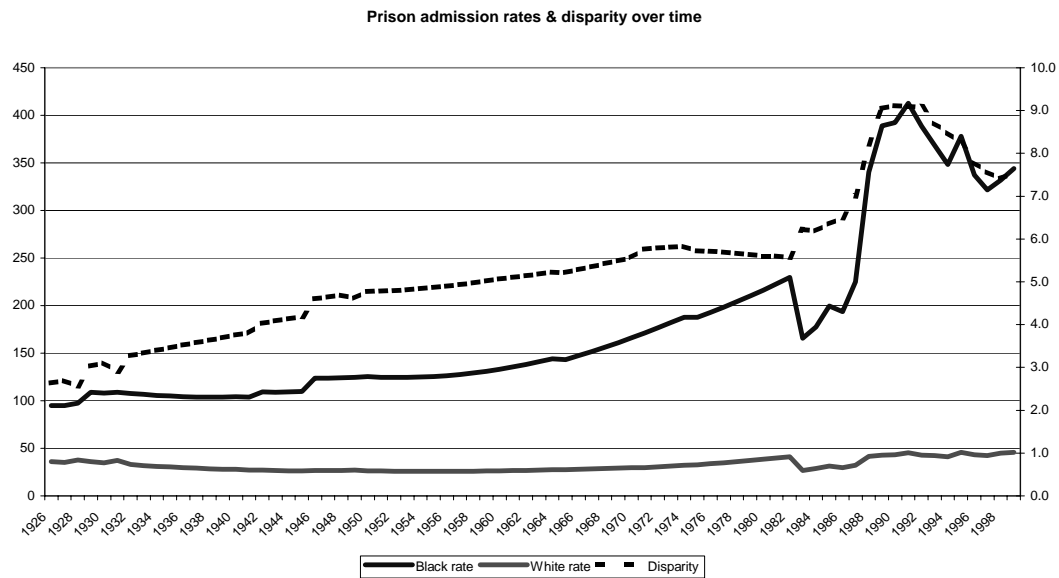
[indicates multivariate result that is significant only if time trends in Black rate are **not** controlled]

	Static: Black Rate Controlling for White Rate			Dynamic: First Difference in Black Rate Controlling for First Difference in White Rate		
	CPUS	Non Drug	Drug	CPUS	Non Drug	Drug
% Black	-	-	-	+		
Change % Black			+			
Dissimilarity						[+]
Repub Gov			+			
White Poverty	-	-	-			-
D Wpov**				[-]	-	
Black Poverty			+			+
D Bpov**						
White Homicide	-		+			[+]
D Whom**						
Black Homicide	+					[-]
D Bhom**					+	[+]
Black Unemployed			+			
D Bunemp**					+	
White Unemployed			-			
D Wunemp**					-	
Year	+	+			+	
Year Squared		-				

\* Bivariate effect of %Black on Black drug sentences is curvilinear. This effect is largely explained by other factors.

\*\* Lagged first differences

Table 1. Black Prison Admissions in the 20<sup>th</sup> Century US



Note: Data source changes in 1983. 1926-1982 calculated from Langen's historical data; 1983-1999 our calculation from the NCRP.

Figure 2 A. Disparity Ratios by Type of Admission

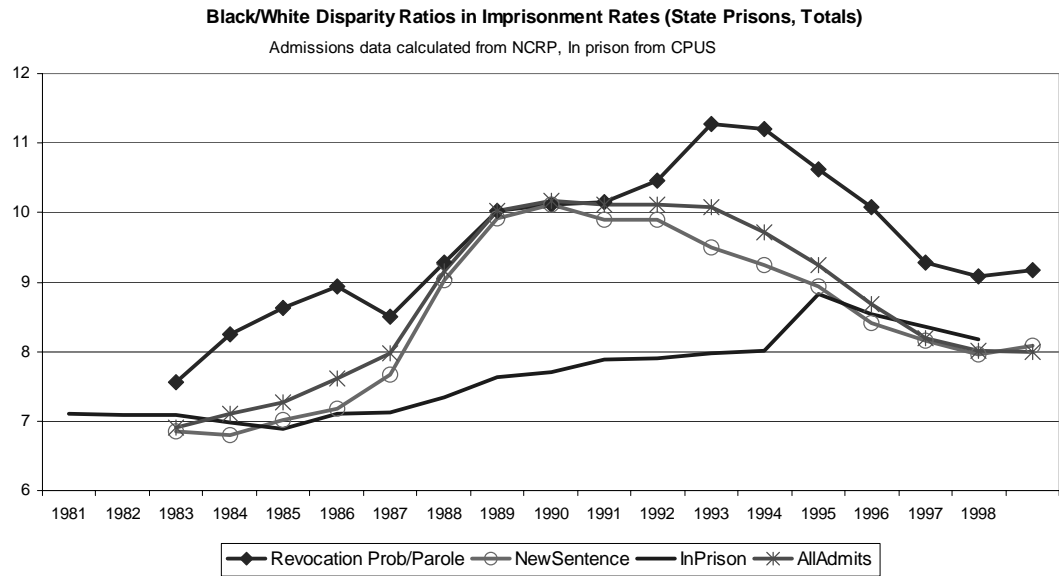


Figure 2B. Trends in Disparity Ratio for New Sentences, By Offense

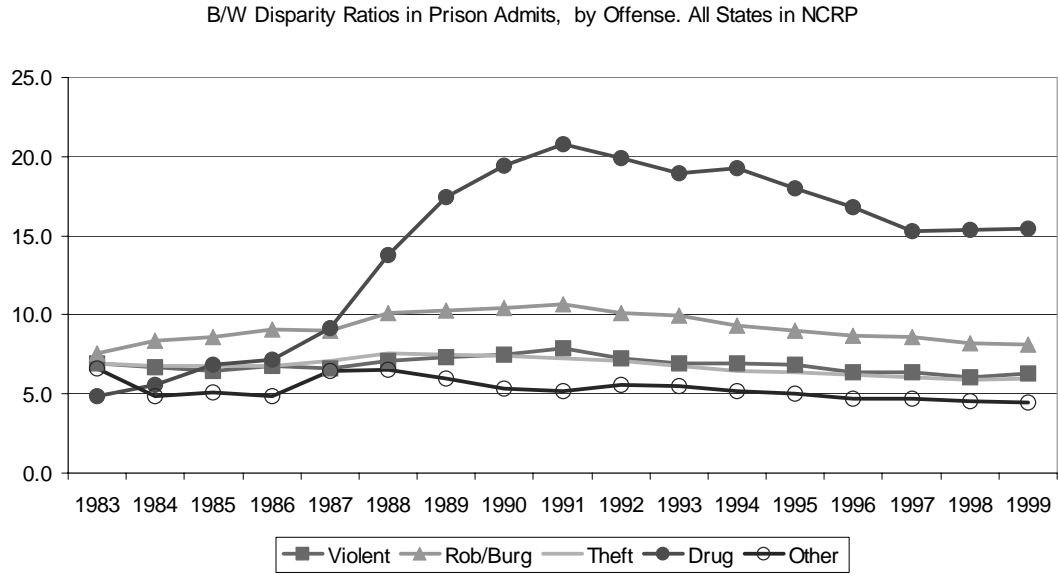


Figure 3. Black and White Prison Sentence Rates Per 100,000 by Offense Type

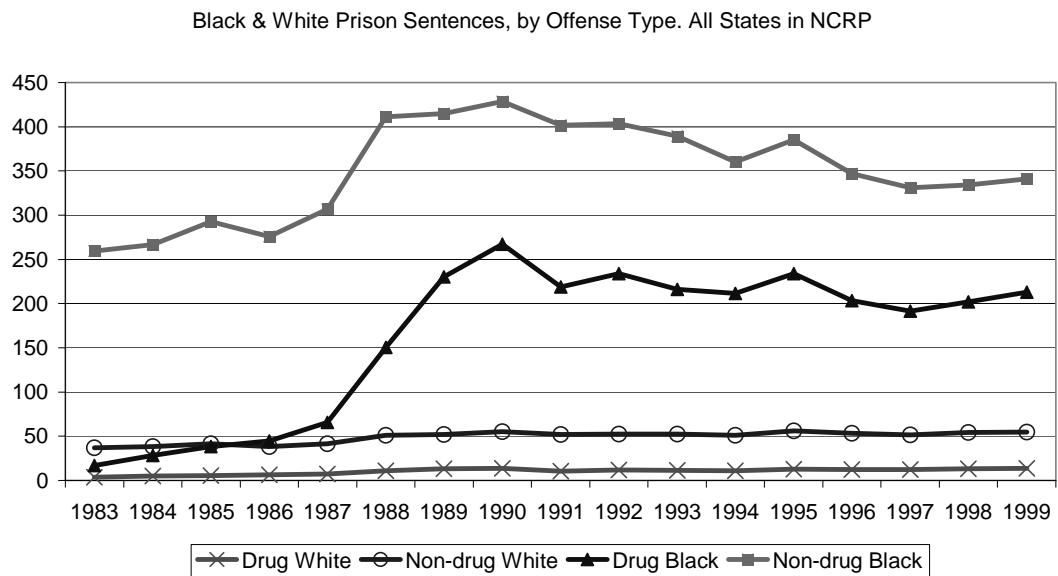


Figure 4a. Black and White imprisonment rates by type of Percent Black and Era.  
(a) Black Imprisonment

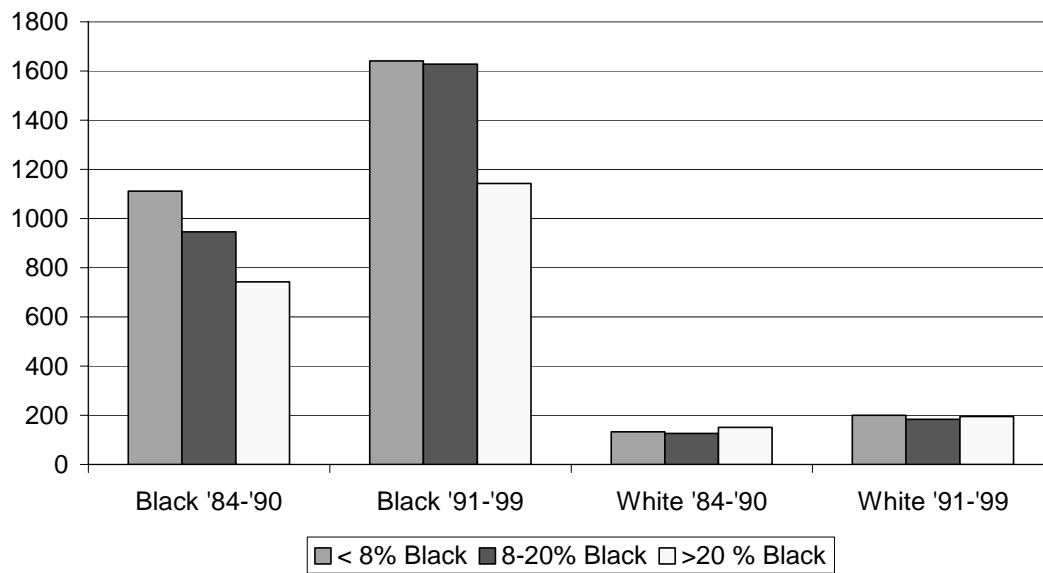


Figure 4. Black and White Drug Sentences, by Percent Black and Era  
(b) Drug sentences

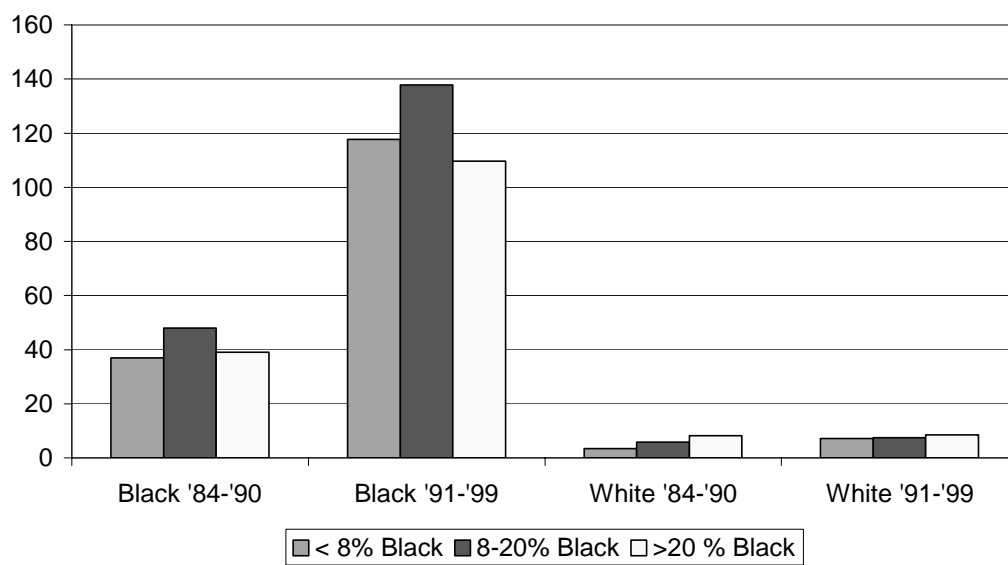


Figure 4. Black and White sentences for Non-drug crimes by Percent Black and Era  
c) non-drug sentences

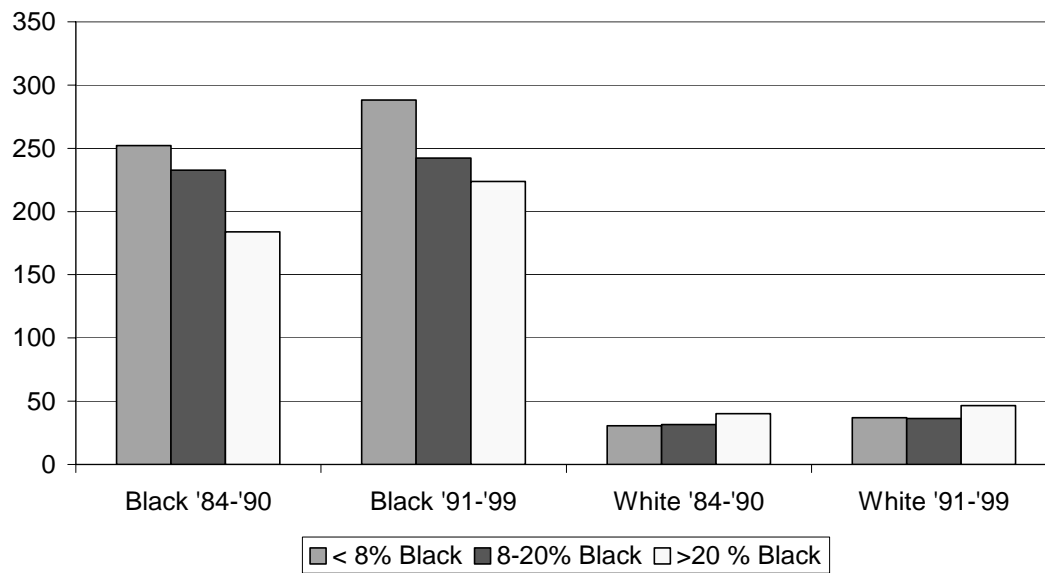


Figure 5. Black and White Drug sentences in Dane County. (Raw numbers, not rates). Madison received a multi-million dollar drug enforcement grant in 1992.

