

# **Analysis of Black-White Differences in Traffic Stops and Searches in Wilmington, NC, 2002-2013**

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Table 1. Overview of the Data

Data Subsets	Observations
Total stops	154,261
-2014	8,227
-Passengers	3,362
-Checkpoint stops	168
Total number of cases deleted	11,547
Stops for analysis	142,714
Searches	6,909
Percent of stops leading to search (search rate)	4.84%

Figure 1. Number of Traffic Stops per Year

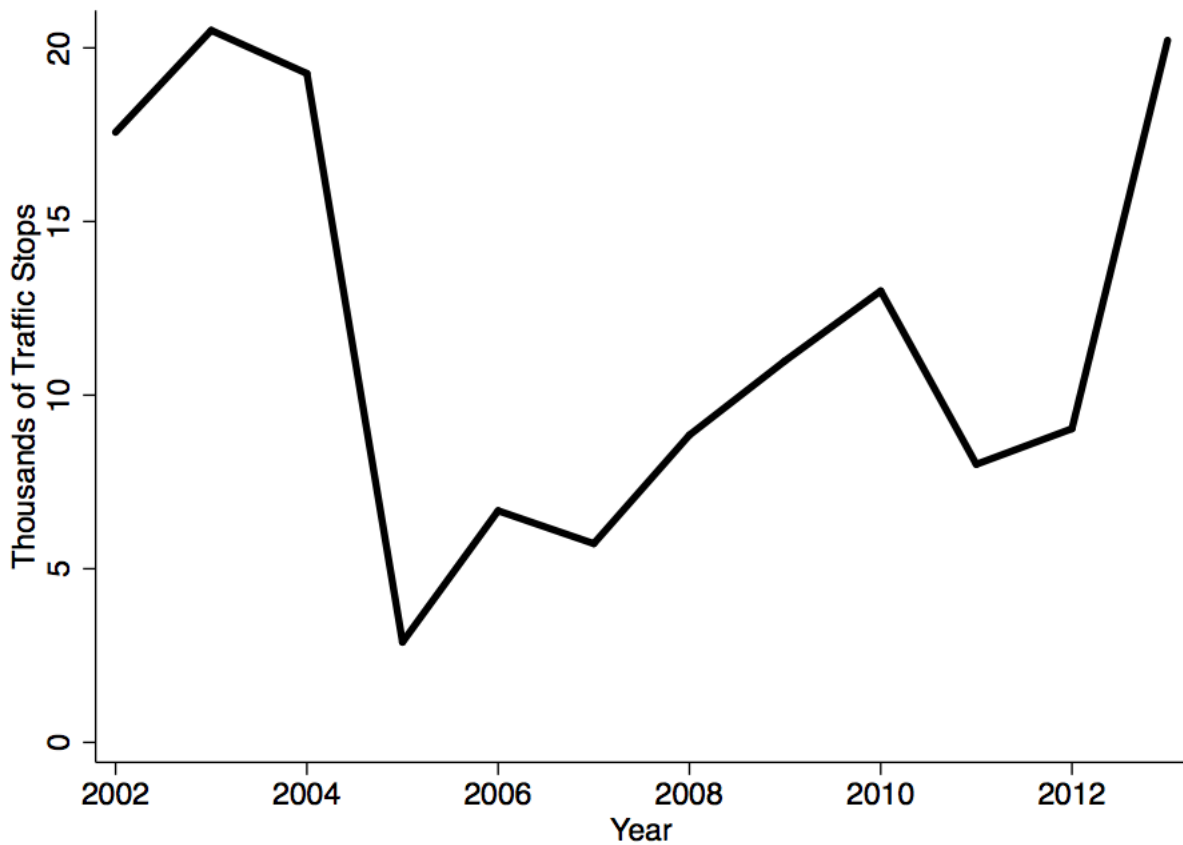


Figure 2. Racial Composition of Traffic Stops by Year

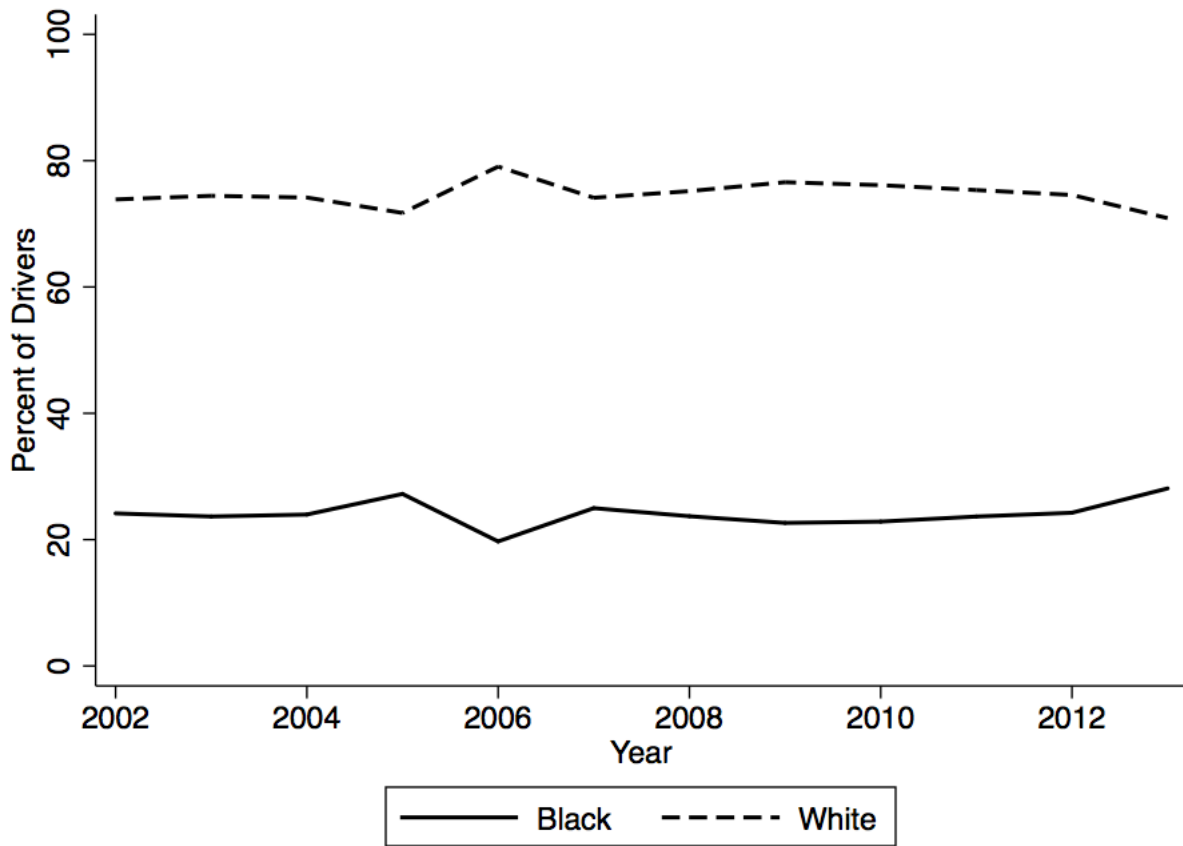


Table 2. Racial Composition of Traffic Stops by Purpose, Drivers

Purpose	Number	Percent	
		White	Black
Total Stops	142,714	74.40	24.22
Speed Limit	55,173	81.07	17.54
Stop Light/Sign	9,378	74.74	23.38
Driving Impaired	1,198	82.22	16.28
Safe Movement	9,392	74.67	23.74
Vehicle Equipment	15,583	61.82	36.48
Vehicle Regulatory	34,126	71.57	27.46
Seat Belt	6,977	74.36	24.45
Investigation	4,435	61.49	37.16
Other Vehicle	6,452	69.37	28.91

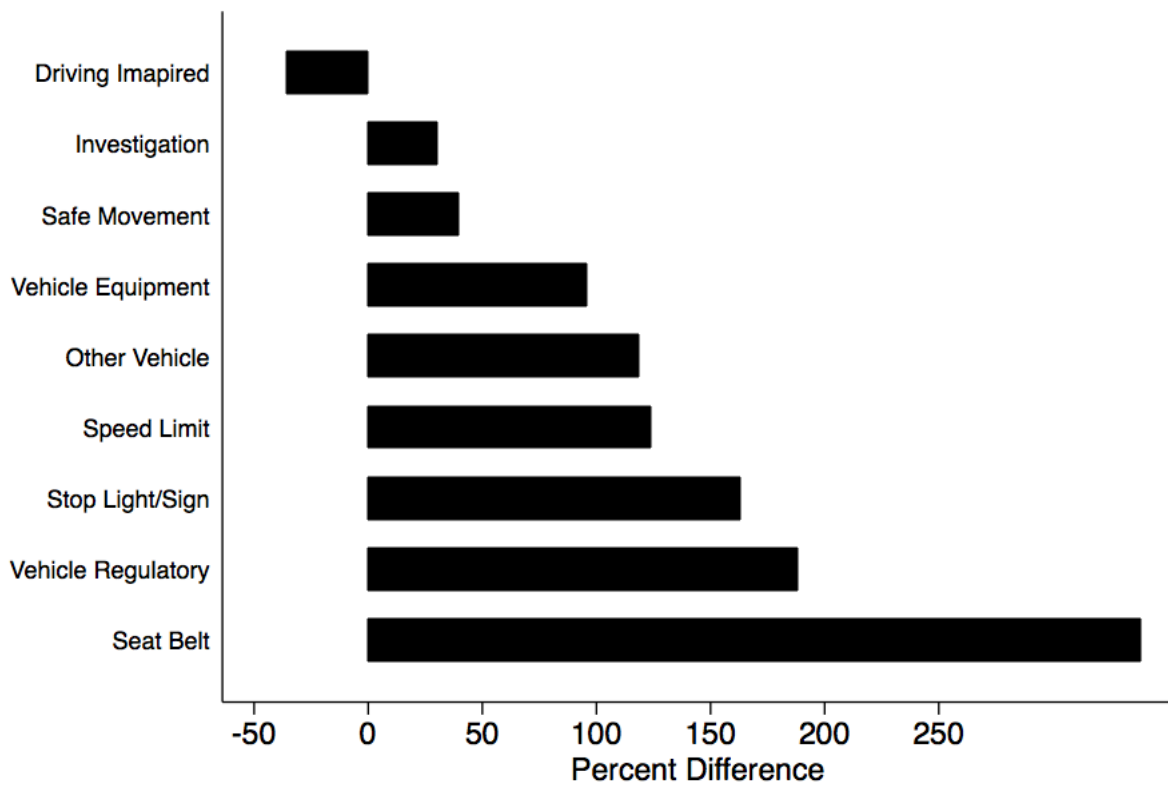
Note: Includes only drivers. Excludes 168 checkpoint stops. Excludes 3,362 passengers.

Table 3. Percent Searched by Race and Purpose of Stop

Purpose	Number	% Total	% White	% Black	Ratio
					Black:White
Total Stops	142,714	-	74.40	24.22	-
Total Searches	6,909	4.84	3.65	8.53	2.34
Speed Limit	55,173	1.96	1.61	3.61	2.24
Stop Light/Sign	9,378	3.76	2.74	7.20	2.63
Driving Impaired	1,198	39.15	41.22	26.67	0.65
Safe Movement	9,392	7.22	6.62	9.24	1.40
Vehicle Equipment	15,583	7.96	5.91	11.59	1.96
Vehicle Regulatory	34,126	4.29	2.82	8.14	2.89
Seat Belt	6,977	4.10	2.22	9.73	4.38
Investigation	4,435	20.27	18.23	23.79	1.30
Other Vehicle	6,452	6.77	5.03	10.99	2.18

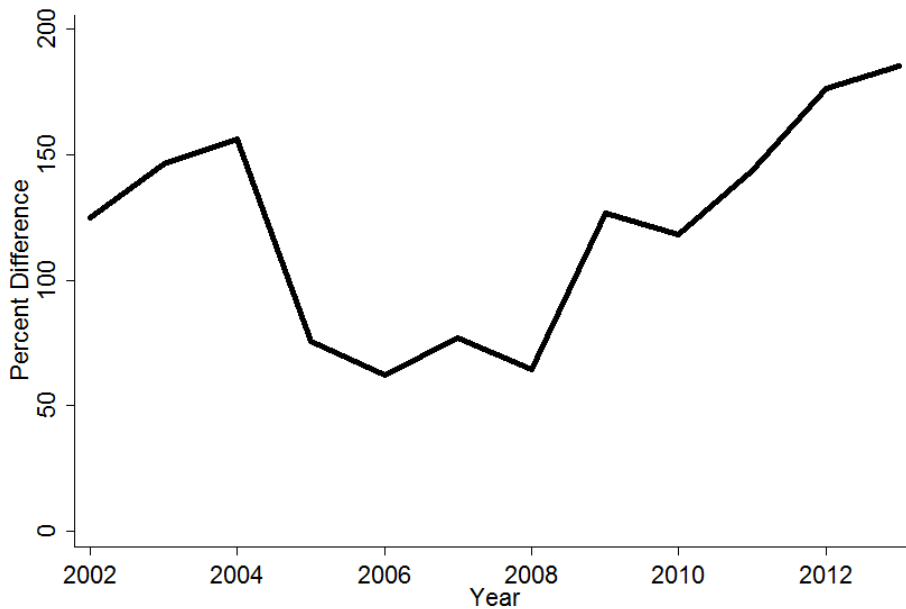
Note: See the appendix for this same table broken down for Men and Women.

Figure 3. Difference in Likelihood of Being Searched, by Race and Type of Stop



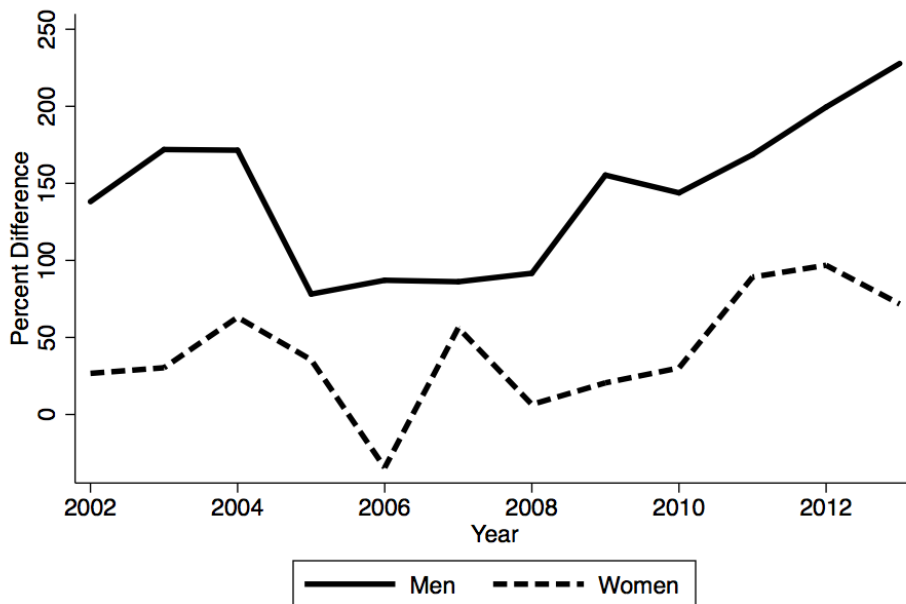
The figure shows the percentage difference in the likelihood of Blacks being searched as compared to Whites by purpose of stop.

Figure 4. Racial Differences in the Likelihood of Search



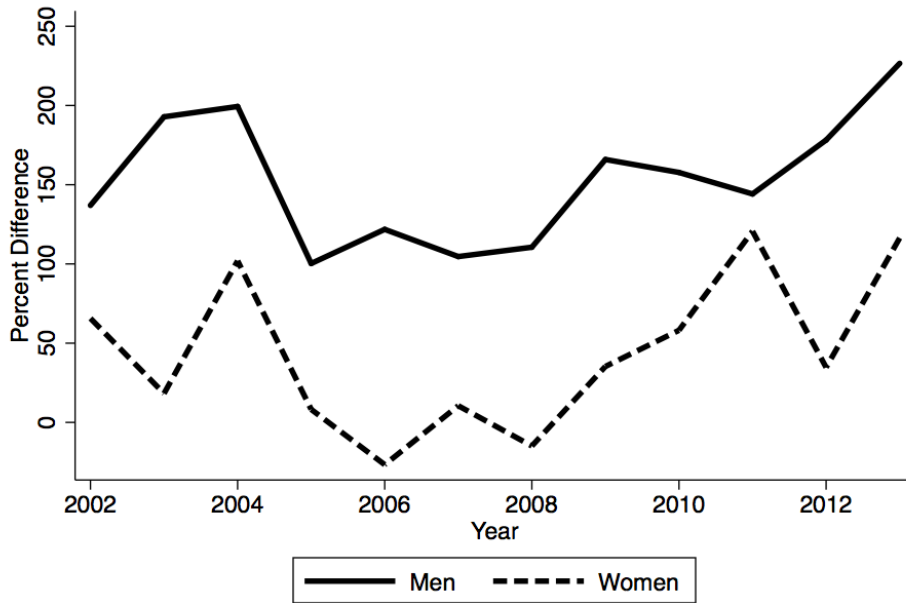
The figure shows the percentage difference in the likelihood of Blacks being searched as compared to Whites.

Figure 5. Racial Differences in the Likelihood of Search by Gender



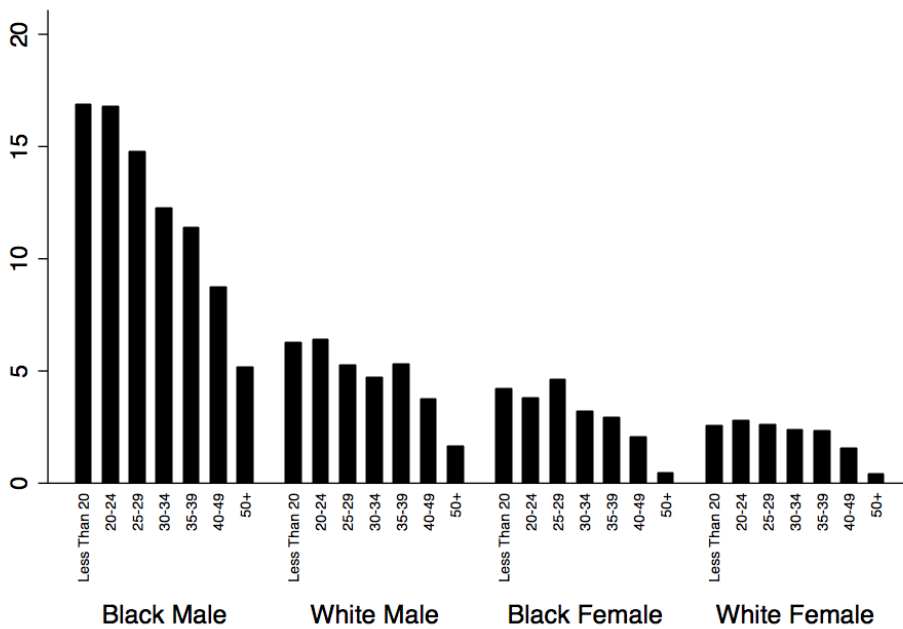
The figure shows the percentage difference in the likelihood of Blacks being searched as compared to Whites by gender.

Figure 6. Racial Differences in the Likelihood of Search by Gender, for Drivers Under 30



The figure shows the percentage difference in the likelihood of Blacks being searched as compared to Whites by gender for motorists under 30.

Figure 7. Search Rates by Race, Gender, and Age Group



Based on 142,714 traffic stops from 2002 through 2013, and 6,909 searches. Overall rate of search: 4.84 percent.

Black men under the age of 30 are searched at rates of about 16 percent whereas white men of that age see rates of about 6 percent, and women in general are typically below 4 percent. The figure makes clear how race, gender, and age combine to indicate where searches are most likely.

The patterns in Figure 7 are highly consistent over time. Figures 8 and 9 show the number of stops, then searches, by the four race/gender groups.

Figure 8. Number of Stops, by Race and Gender

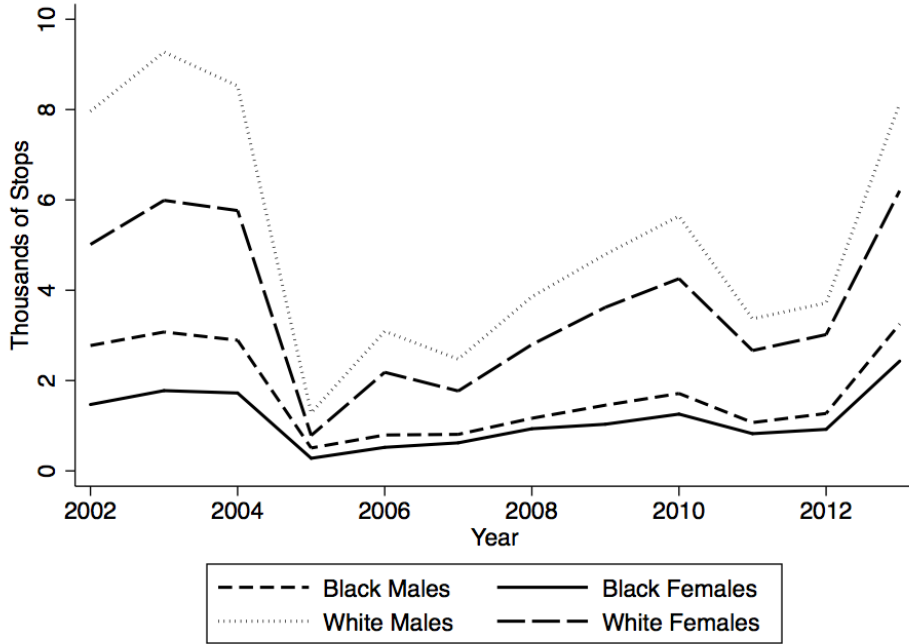


Figure 9. Percent of Stops Resulting in a Search, by Race and Gender

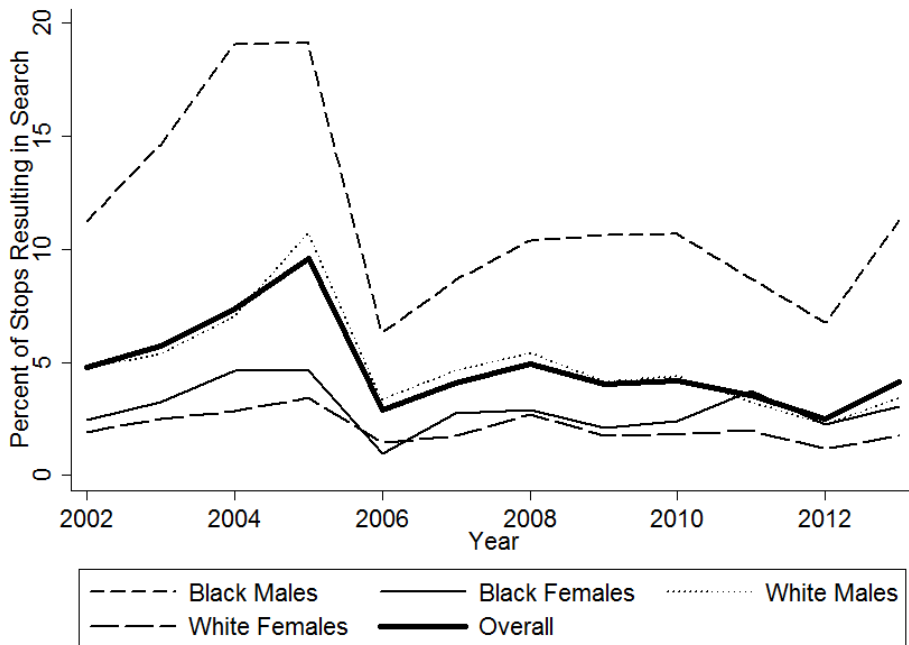


Table 4. Type of Search by Race

Search Type	Number	% Total	% White	% Black	Ratio
					Black:White
Total Stops	142,714	-	74.40	24.22	-
Total Searches	6,909	4.84	3.65	8.53	2.34
Consent	3,045	2.13	1.60	3.80	2.38
Search Warrant	27	0.02	0.02	0.03	1.50
Probable Cause	640	0.45	0.22	1.17	5.32
Incident to Arrest	3,061	2.14	1.77	3.28	1.85
Protective Frisk	136	0.10	0.05	0.25	5.00

Note: See the appendix for this same table separately for Men and Women.

Table 5. Distribution of Officer IDs by Stop

Number of Stops	Officers w/ this many Stops	Percent of Officers	Cumulative Percent	Percent of Stops	Cumulative Percent
1	337	35.47	35.47	0.24	0.24
2 – 10	181	19.05	54.53	0.50	0.75
11 - 100	183	19.26	73.79	5.45	6.19
101 – 1,000	223	23.47	97.26	48.42	54.60
1,001 +	26	2.74	100.00	45.40	100.00
Total	950	100	-	100	-



Figure 10. Number of Black and White Motorists Stopped, by Officer

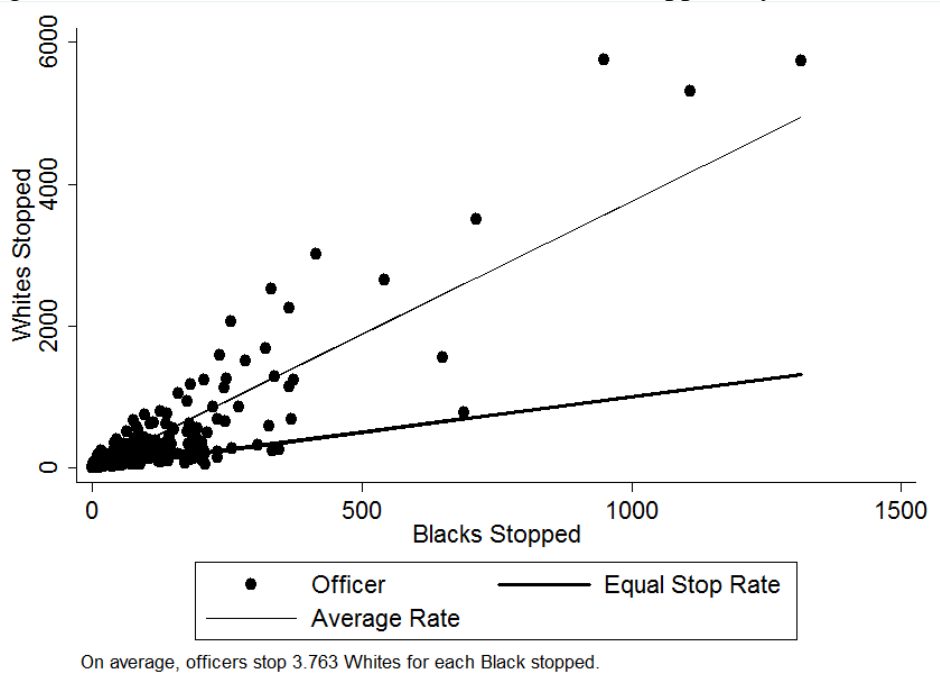


Figure 11. Number of Black and White Motorists Searched, by Officer

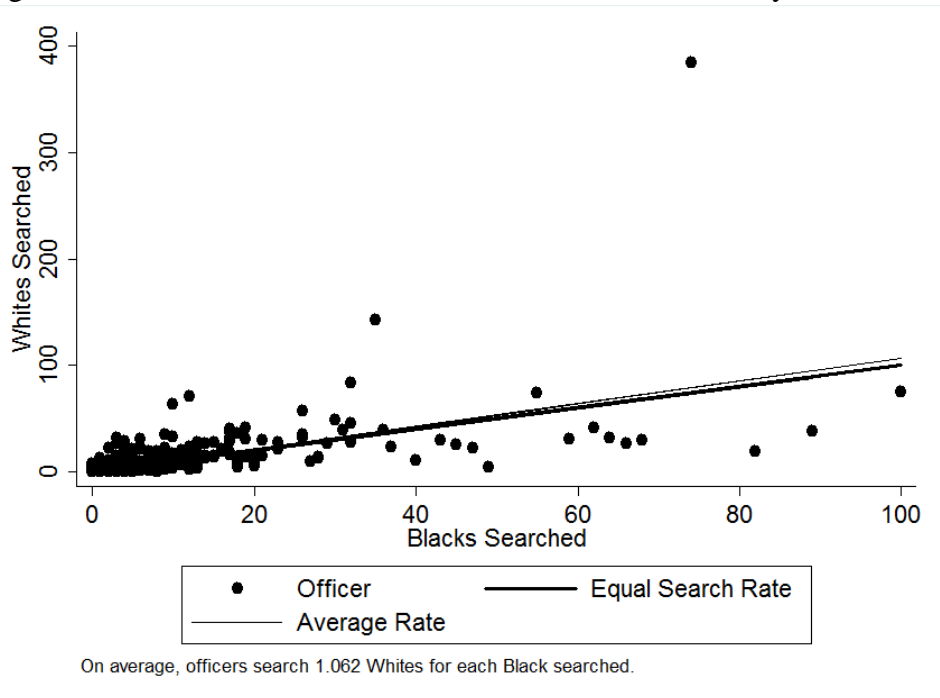
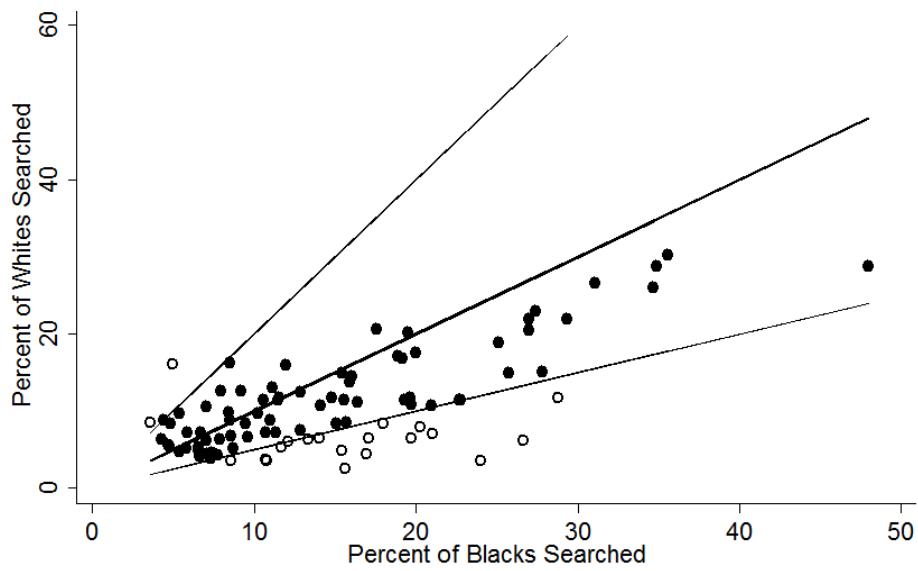


Figure 12. Percent of White and Black Drivers Searched, by Officer



Includes 93 officers with a minimum of 50 White stops, 50 Black stops, and a search rate above the department average of 4.84. The hollow circles indicate high disparity officers. 2 officers search Whites at more than twice the rate that they search Blacks. 19 officers search Blacks at more than twice the rate that they search Whites.

Table 6. Predicting the Occurrence of a Search, Male Drivers

Variable	Model 1	Model 2	Model 3	Model 4	Model 5
<b>Demographics</b>					
Race	2.89*(0.08)	2.97*(0.09)	2.65*(0.08)	2.61*(0.08)	2.43*(0.07)
Hispanic	1.86*(0.12)	1.66*(0.11)	1.32*(0.09)	1.31*(0.09)	1.30*(0.09)
Age	-	0.97*(0.00)	0.97*(0.00)	0.97*(0.00)	0.97*(0.00)
<b>Stop Purpose</b>					
Speed Limit	-	-	-	-	-
Stop Light	-	-	1.76*(0.13)	1.72*(0.12)	1.58*(0.11)
Impaired	-	-	25.75*(2.09)	24.76*(2.02)	16.73*(1.42)
Movement	-	-	3.20*(0.19)	3.15*(0.18)	2.77*(0.16)
Equipment	-	-	3.21*(0.16)	3.09*(0.15)	2.48*(0.12)
Regulatory	-	-	2.10*(0.10)	2.06*(0.10)	2.12*(0.10)
Seat Belt	-	-	1.86*(0.14)	1.80*(0.13)	2.28*(0.17)
Investigation	-	-	8.94*(0.51)	8.86*(0.50)	8.20*(0.47)
Other	-	-	2.71*(0.18)	2.70*(0.18)	2.56*(0.17)
<b>Officer Type</b>					
Black Disparity <sup>†</sup>	-	-	-	1.70*(0.08)	1.56*(0.07)
White Disparity <sup>†</sup>	-	-	-	1.49*(0.24)	1.36*(0.22)
<b>Time</b>					
Hour of Day	-	-	-	-	Included
Day of Week	-	-	-	-	Included
<b>Constant</b>	0.05*(0.00)	0.13*(0.01)	0.06*(0.00)	0.06*(0.00)	0.08*(0.01)
<b>N</b>	82,898	82,898	82,898	82,898	81,745
<b>Pseudo R<sup>2</sup></b>	0.03	0.05	0.11	0.11	0.13

Note: Entries are odds-ratios, with standard errors in parenthesis.

Note: The number of observations is smaller for Model 5 because the “hour of stop” variable is missing in some cases.

\*  $p < 0.05$

† See Figure 12 for an explanation of the identification of high disparity officers.

Table 7. Predicting the Occurrence of a Search, Female Drivers

Variable	Model 1	Model 2	Model 3	Model 4	Model 5
<b>Demographics</b>					
Race	1.46*(0.09)	1.51*(0.09)	1.33*(0.08)	1.32*(0.08)	1.24*(0.08)
Hispanic	1.10(0.23)	1.04(0.22)	0.77(0.17)	0.78(0.17)	0.82(0.18)
Age	-	0.96*(0.00)	0.97*(0.00)	0.97*(0.00)	0.97*(0.00)
<b>Stop Purpose</b>					
Speed Limit	-	-	-	-	-
Stop Light	-	-	2.02*(0.28)	1.98*(0.28)	1.71*(0.24)
Impaired	-	-	51.62*(6.85)	50.08*(6.66)	24.36*(3.41)
Movement	-	-	4.90*(0.53)	4.81*(0.52)	3.77*(0.42)
Equipment	-	-	3.66*(0.36)	3.55*(0.35)	2.36*(0.24)
Regulatory	-	-	2.05*(0.19)	2.01*(0.18)	2.06*(0.19)
Seat Belt	-	-	1.19(0.24)	1.18(0.24)	1.58*(0.32)
Investigation	-	-	15.54(1.64)	15.31*(1.61)	11.84*(1.29)
Other	-	-	4.04*(0.52)	4.01*(0.52)	3.46*(0.45)
<b>Officer Type</b>					
Black Disparity <sup>†</sup>	-	-	-	1.55*(0.16)	1.41*(0.15)
White Disparity <sup>†</sup>	-	-	-	2.01*(0.57)	1.78*(0.51)
<b>Time</b>					
Hour of Day	-	-	-	-	Included
Day of Week	-	-	-	-	Included
<b>Constant</b>	0.02*(0.00)	0.07*(0.01)	0.03*(0.00)	0.03*(0.00)	0.03*(0.01)
<b>N</b>	57,852	57,852	57,852	57,852	56,920
<b>Pseudo R<sup>2</sup></b>	0.00	0.02	0.11	0.11	0.14

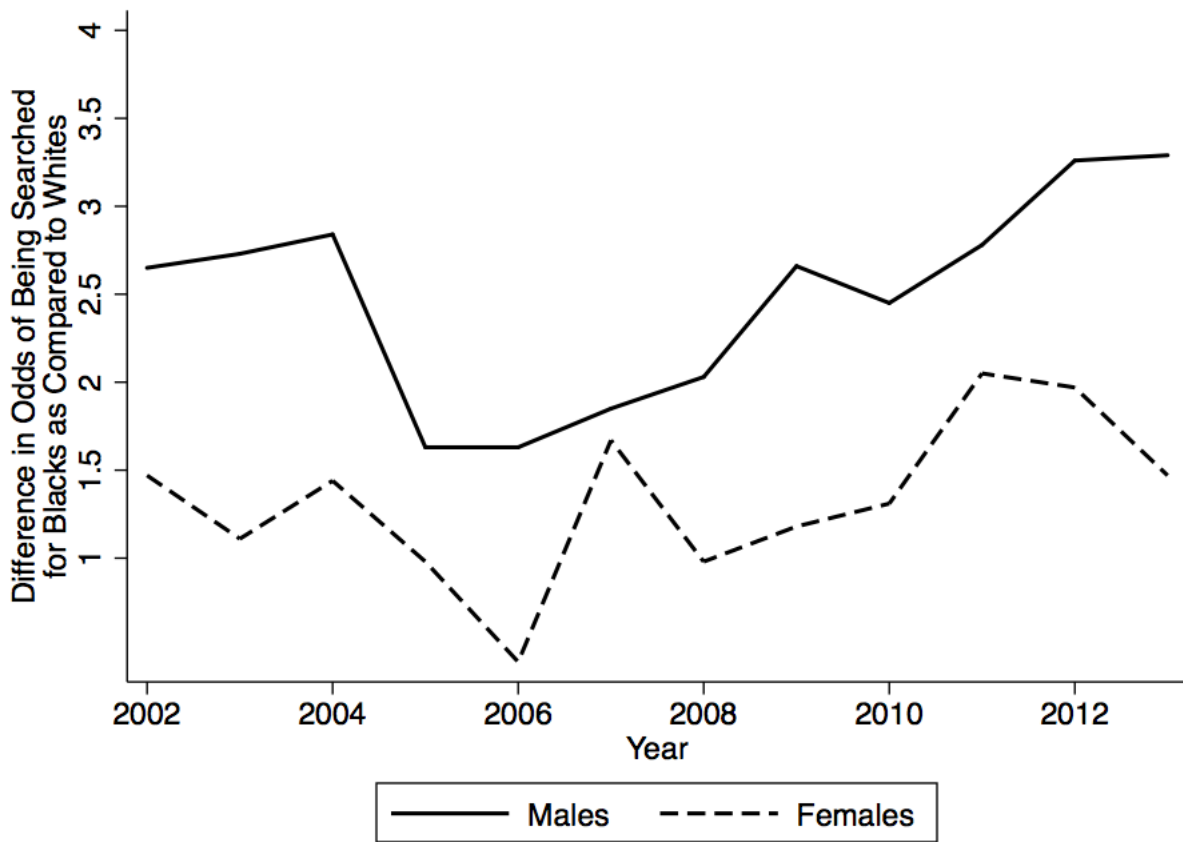
Note: Entries are odds-ratios, with standard errors in parenthesis.

Note: The number of observations is smaller for Model 5 because the “hour of stop” variable is missing in some cases.

\*  $p < 0.05$

† See Figure 12 for an explanation of the identification of high disparity officers.

Figure 14. Increased Odds of Search for Blacks, by Gender, 2002-2013



## Appendix

Table A1. Racial Composition of Traffic Stops by Purpose, Passengers

Purpose	Number	Percent	
		White	Black
Total Stops	3,362	46.01	53.00
Speed Limit	303	53.14	46.86
Stop Light/Sign	184	45.65	53.80
Driving Impaired	119	82.35	15.13
Safe Movement	259	55.98	43.63
Vehicle Equipment	713	38.01	60.45
Vehicle Regulatory	760	42.37	57.24
Seat Belt	167	39.52	57.49
Investigation	596	48.83	50.34
Other Vehicle	260	41.54	56.92

Table A2. Percent of Men Searched by Race and Purpose of Stop

Purpose	Number	% Total	% White	% Black	Ratio
					Black:White
Total Stops	84,307	-	73.68	24.65	-
Total Searches	5,568	6.60	4.77	12.20	2.56
Speed Limit	30,639	2.79	2.18	5.70	2.61
Stop Light/Sign	5,677	4.99	3.41	10.18	2.99
Driving Impaired	832	41.95	44.08	30.46	0.69
Safe Movement	5,993	8.84	7.76	12.31	1.59
Vehicle Equipment	9,934	10.41	7.48	15.57	2.08
Vehicle Regulatory	19,460	6.13	3.82	12.29	3.22
Seat Belt	4,589	5.62	2.89	13.73	4.75
Investigation	3,055	23.40	20.51	28.27	1.38
Other Vehicle	4,128	8.50	6.17	13.70	2.22

Table A3. Percent of Women Searched by Race and Purpose of Stop

Purpose	Number	% Total	% White	% Black	Ratio
					Black:White
Total Stops	58,407	-	75.44	23.61	-
Total Searches	1,341	2.30	2.08	3.00	1.44
Speed Limit	24,534	0.92	0.90	1.00	1.11
Stop Light/Sign	3,701	1.89	1.74	2.39	1.37
Driving Impaired	366	32.79	35.22	13.64	0.39
Safe Movement	3,399	4.35	4.70	3.09	.66
Vehicle Equipment	5,649	3.65	3.20	4.50	1.41
Vehicle Regulatory	14,666	1.86	1.48	2.85	1.93
Seat Belt	2,388	1.17	0.95	1.91	2.01
Investigation	1,380	13.33	13.35	13.55	1.01
Other Vehicle	2,324	3.70	3.11	5.51	1.77

Table A4. Type of Search by Race: Men

Search Type	Number	% Total	% White	% Black	Ratio
					Black:White
Total Stops	84,307	-	73.68	24.65	-
Total Searches	5,568	6.60	4.77	12.20	2.56
Consent	2,535	3.01	2.17	5.56	2.56
Search Warrant	20	0.02	0.02	0.04	2.00
Probable Cause	537	0.64	0.30	1.67	5.57
Incident to Arrest	2,352	2.79	2.20	4.56	2.07
Protective Frisk	124	0.15	0.07	0.38	5.43

Table A5. Type of Search by Race: Women

Search Type	Number	% Total	% White	% Black	Ratio Black:White
Total Stops	58,407	-	75.44	23.61	-
Total Searches	1,341	2.30	2.08	3.00	1.44
Consent	510	0.87	0.80	1.15	1.44
Search Warrant	7	0.01	0.01	0.01	1.00
Probable Cause	103	0.18	0.10	0.44	4.40
Incident to Arrest	709	1.21	1.16	1.35	1.16
Protective Frisk	12	0.02	0.01	0.06	6.00

Figure A6. Stops by Day of the Week

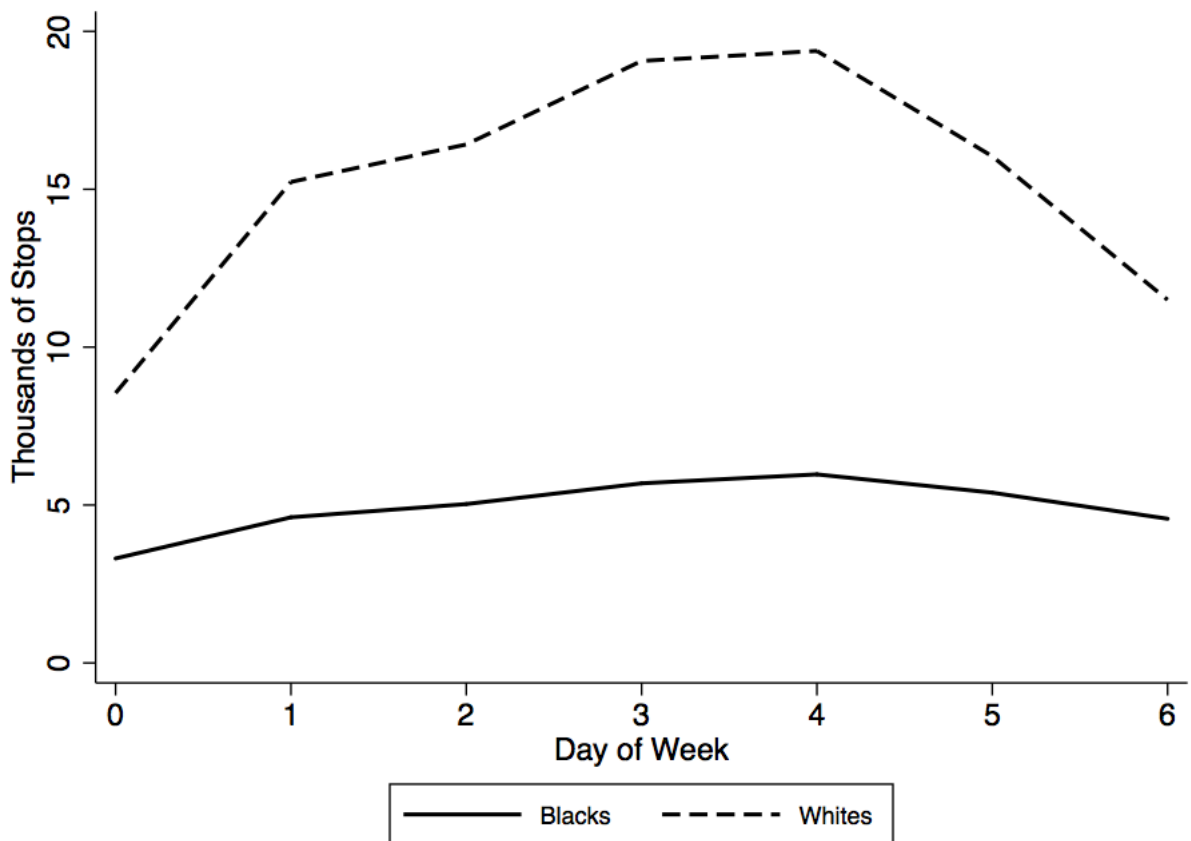




Figure A7. Searches by Day of the Week

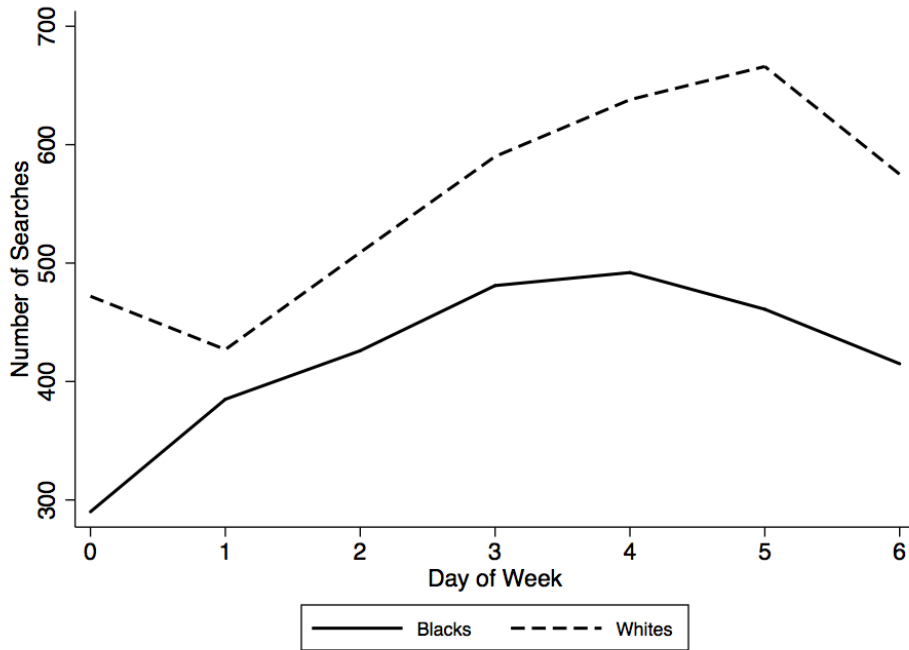
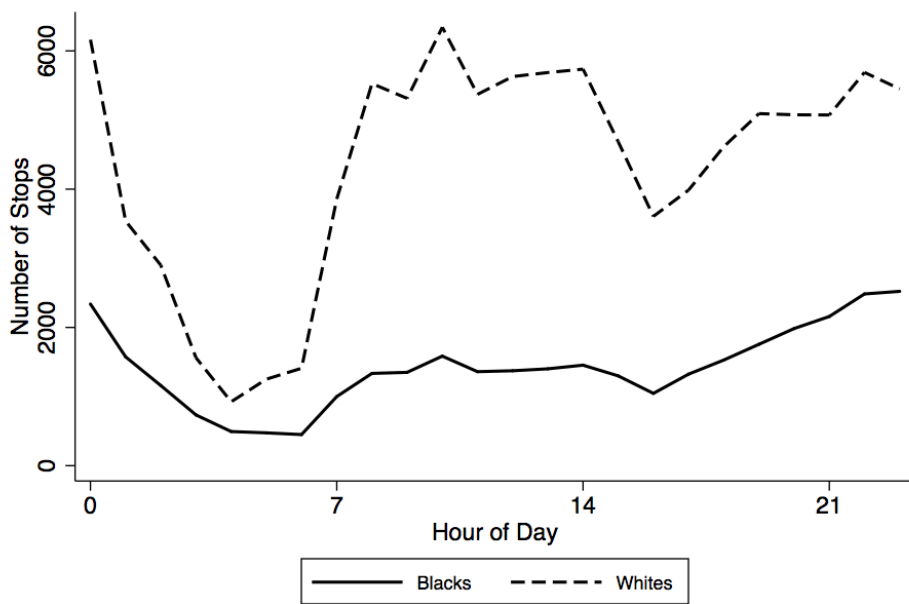


Figure A8. Stops by Hour of the Day



The figure excludes cases where the hour and minute was exactly 0:00. These cases were presumed to be missing data.

Figure A9. Searches by Hour of the Day

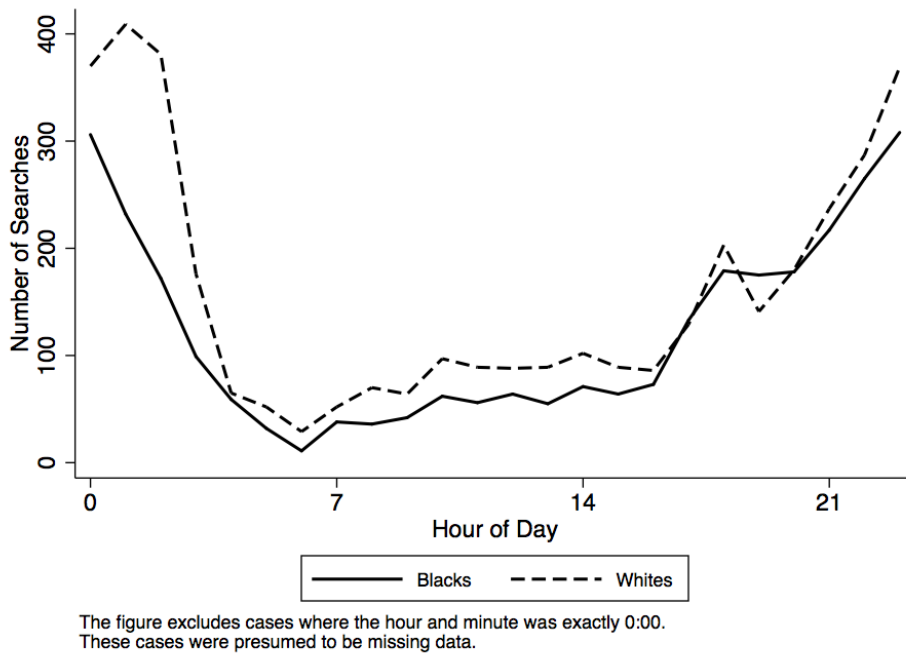


Figure A10. Correlation Between Percent Difference in Likelihood of Black Men being Searched as Compared to Whites and Odds-Ratios from Logistic Regression

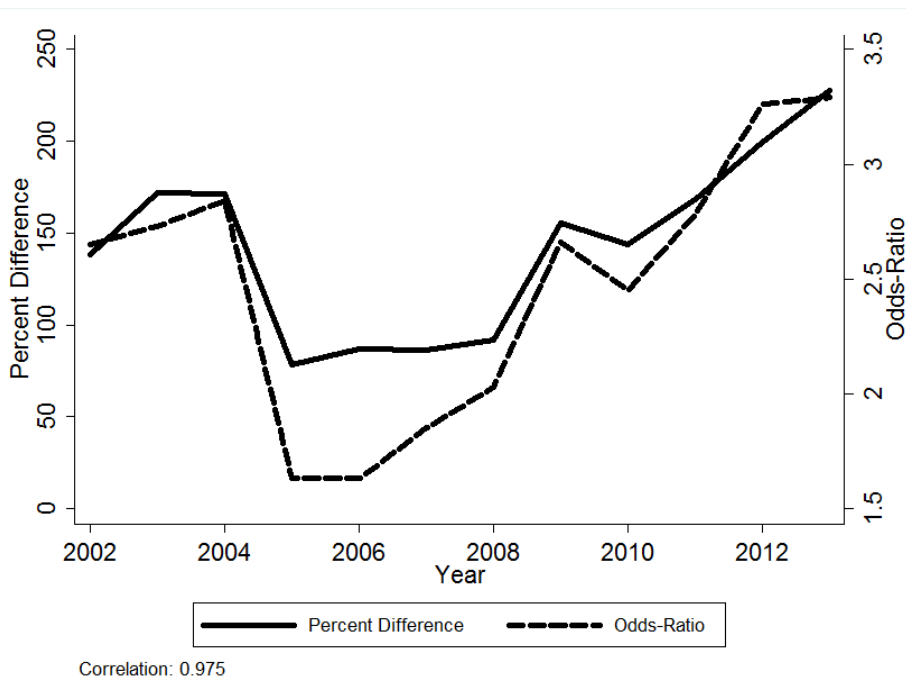


Figure A11. Correlation Between Percent Difference in Likelihood of Black Women being Searched as Compared to Whites and Odds-Ratios from Logistic Regression

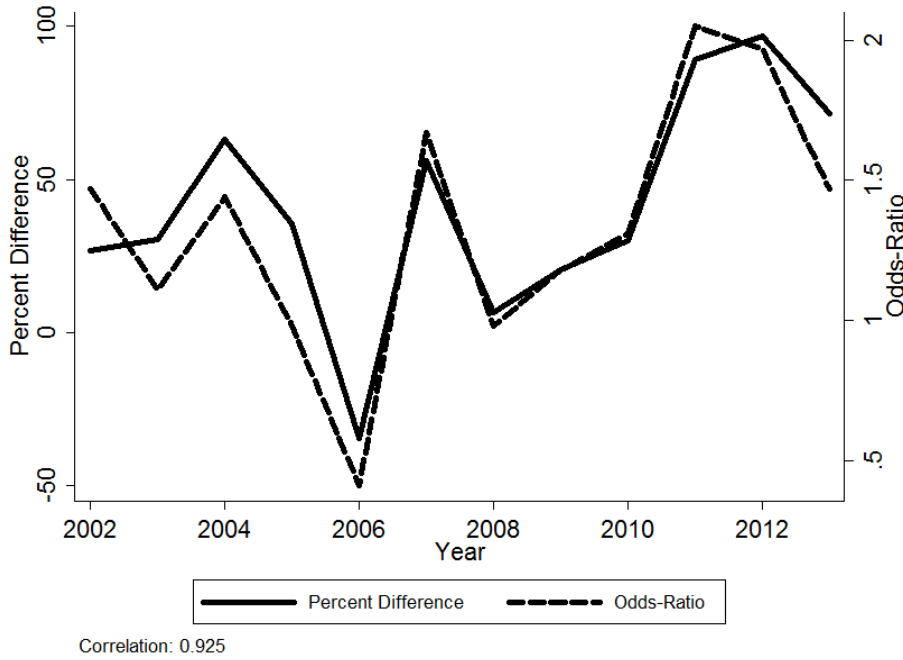


Figure A12. Racial Differences in the Likelihood of Search: Consent Searches Only

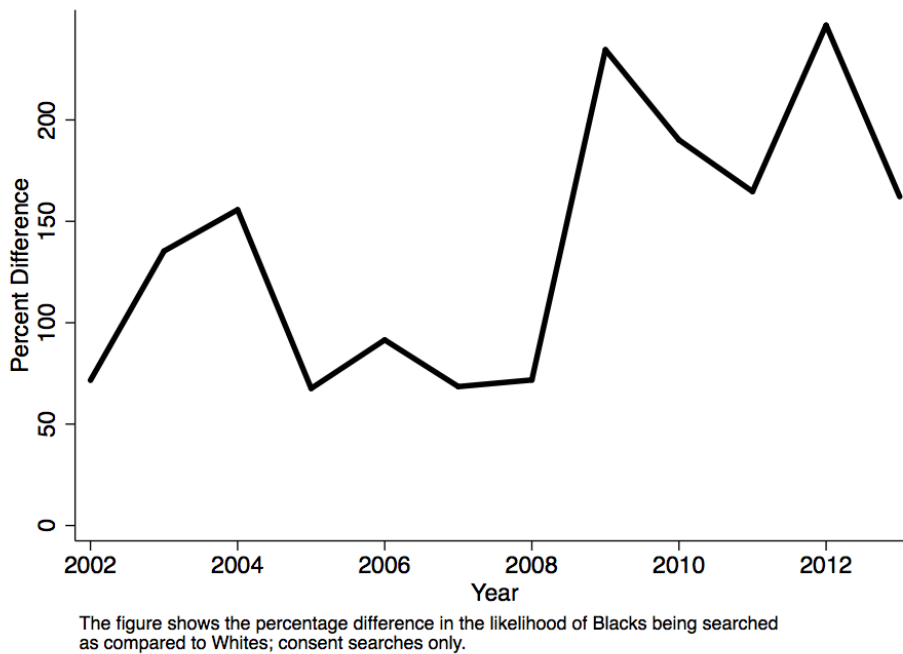


Table A6. Likelihood of Finding Contraband Given a Search, by Race

Contraband	Number	% Total	% White	% Black
Yes	1,247	18.05	17.51	19.02
No	5,662	81.95	82.49	80.98
Total	6,909	100.00	100.00	100.00

Table A7. Differential Outcomes by Whether or not a Search Occurs

Race	Search Occur	N	No Action	Verbal Warning	Written Warning	Citation Issued	Arrest	Total
White	No	102,305	1.72	13.19	22.02	62.25	0.82	100.0
Black	No	31,618	3.44	21.26	22.50	51.48	1.33	100.0
Total	No	135,805	2.12	15.12	22.11	59.72	0.93	100.0
White	Yes	3,877	2.42	8.90	7.17	30.31	51.20	100.0
Black	Yes	2,950	3.32	12.14	7.66	34.85	42.03	100.0
Total	Yes	6,909	2.85	10.22	7.37	32.23	47.33	100.0