

**Analysis of Black-White Differences in Traffic Stops and Searches  
in the NC Division of Motor Vehicles, 2002-2013**

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Table 1. Overview of the Data

Data Subsets	Observations
Total stops	154,654
-2014	2,657
-Passengers	1,468
-Checkpoint stops	390
Total number of cases deleted	97,068
Stops for analysis	57,586
Searches	857
Percent of stops leading to search (search rate)	1.49%

Search Rate = 1.49

Figure 1. Number of Traffic Stops per Year

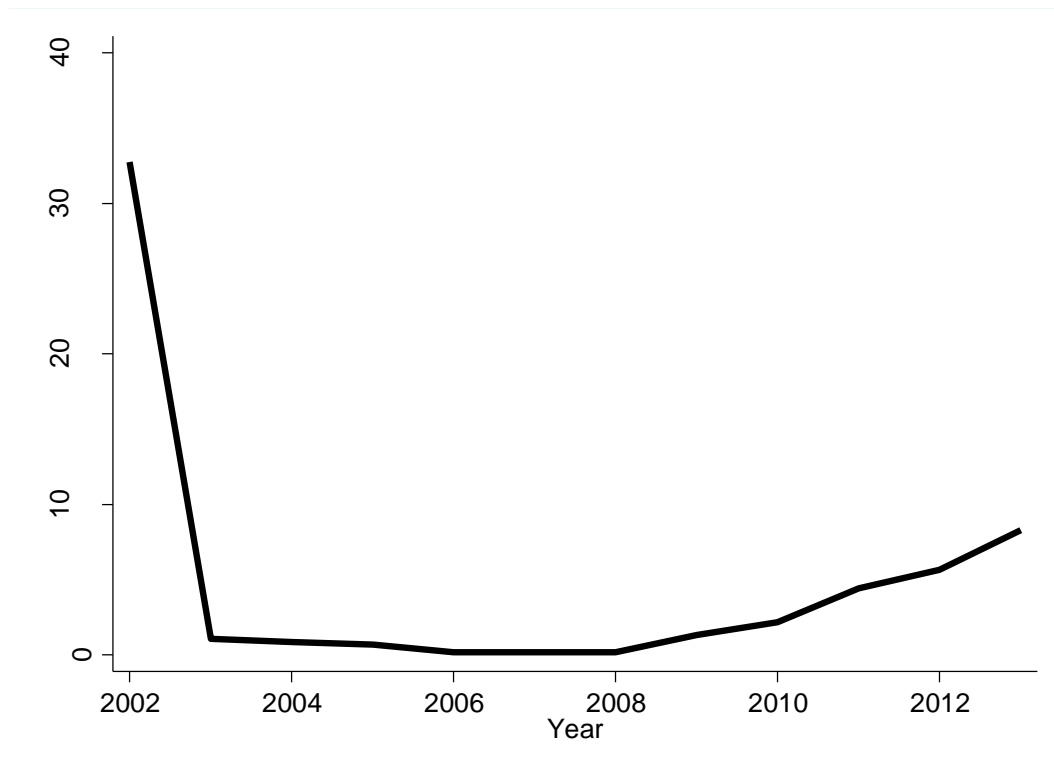


Figure 2. Racial Composition of Traffic Stops by Year

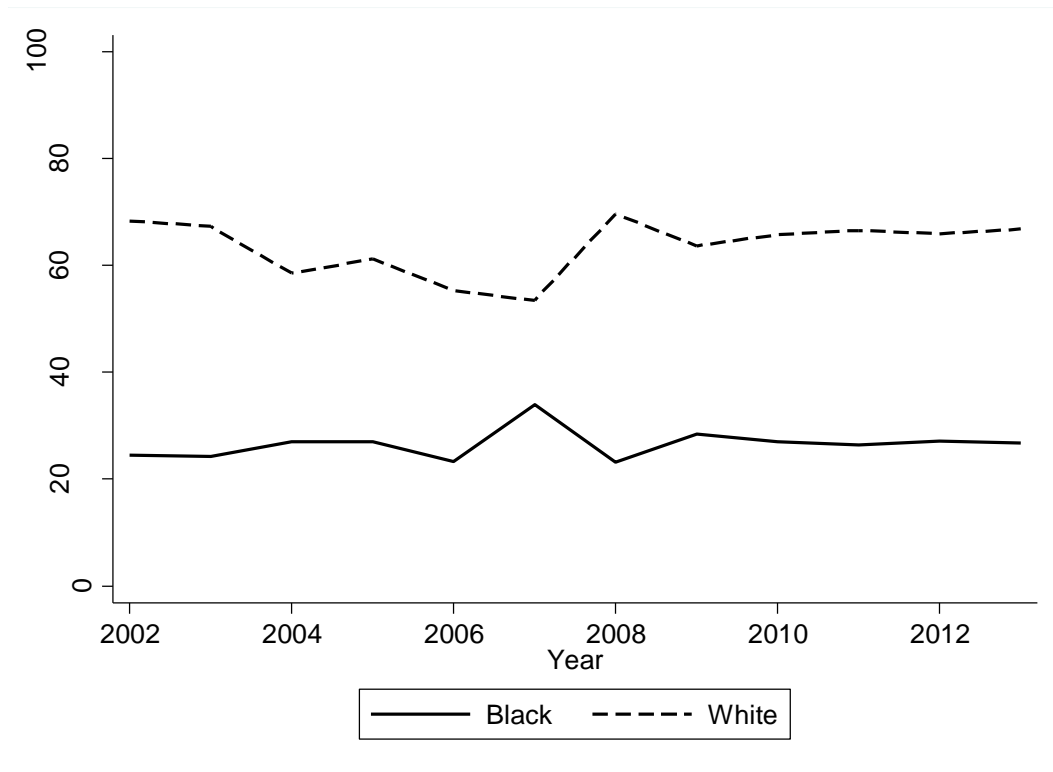


Table 2. Racial Composition of Traffic Stops by Purpose, Drivers

Purpose	Number	Percent	
		White	Black
Total Stops	57,686	67.24	25.47
Speed Limit	13,689	81.73	14.84
Stop Light/Sign	880	68.64	23.52
Driving Impaired	189	73.02	17.99
Safe Movement	2,419	67.30	23.81
Vehicle Equipment	4,451	64.61	27.66
Vehicle Regulatory	21,054	66.33	27.51
Seat Belt	4,704	75.30	18.41
Investigation	1,605	64.30	23.93
Other Vehicle	8,695	65.67	24.78

Note: Includes only drivers. Excludes 390 checkpoint stops. Excludes 1,468 passengers.

Table 3. Percent Searched by Race and Purpose of Stop

Purpose	Number	% Total	% White	% Black	Ratio
					Black:White
Total Stops	57,686	-	67.24	25.47	-
Total Searches	857	1.49	1.21	1.95	1.61
Speed Limit	13,689	0.77	0.62	1.04	1.68
Stop Light/Sign	880	0.57	0.50	0.97	1.94
Driving Impaired	189	39.68	37.68	41.18	1.09
Safe Movement	2,419	2.07	1.54	3.30	2.14
Vehicle Equipment	4,451	1.46	1.04	2.52	2.42
Vehicle Regulatory	21,054	1.72	1.42	2.02	1.42
Seat Belt	4,704	0.53	0.37	1.04	2.81
Investigation	1,605	5.30	4.65	7.29	1.57
Other Vehicle	8,695	0.97	0.74	1.39	1.88

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

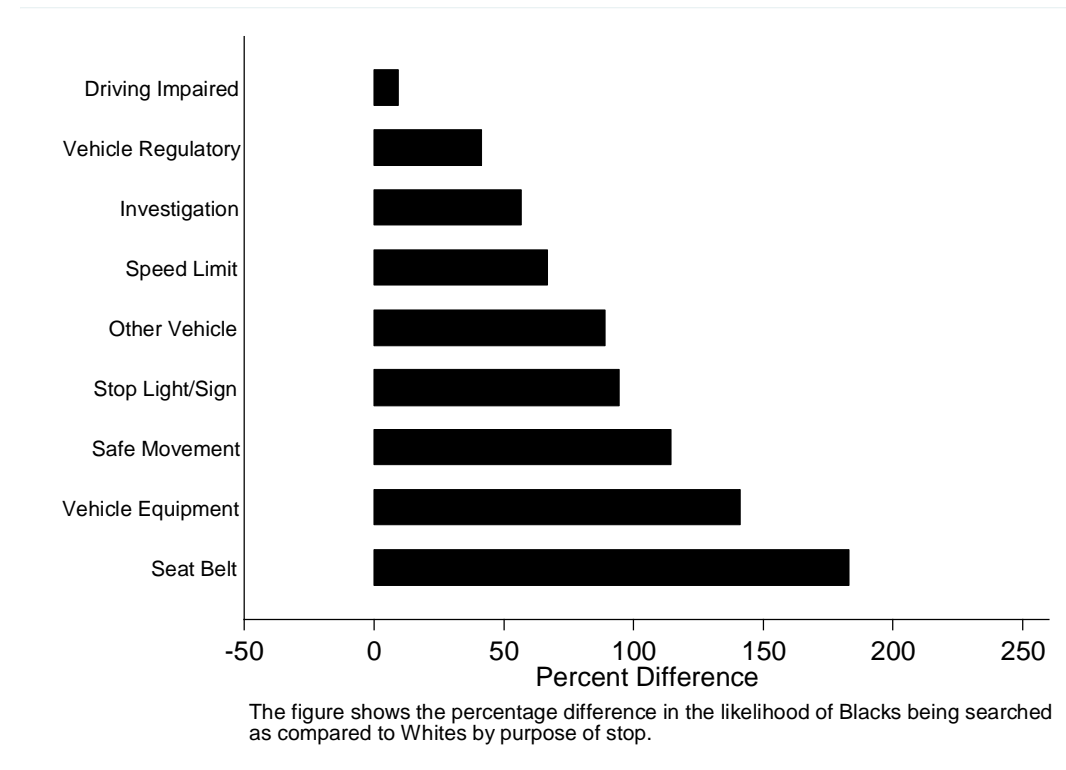
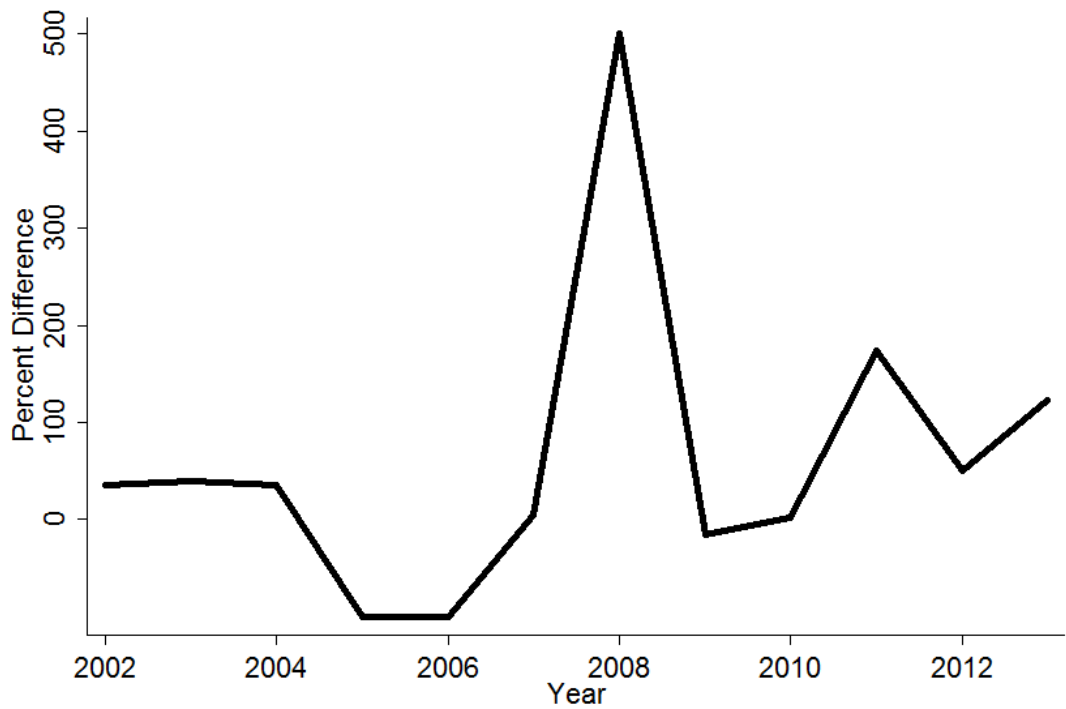
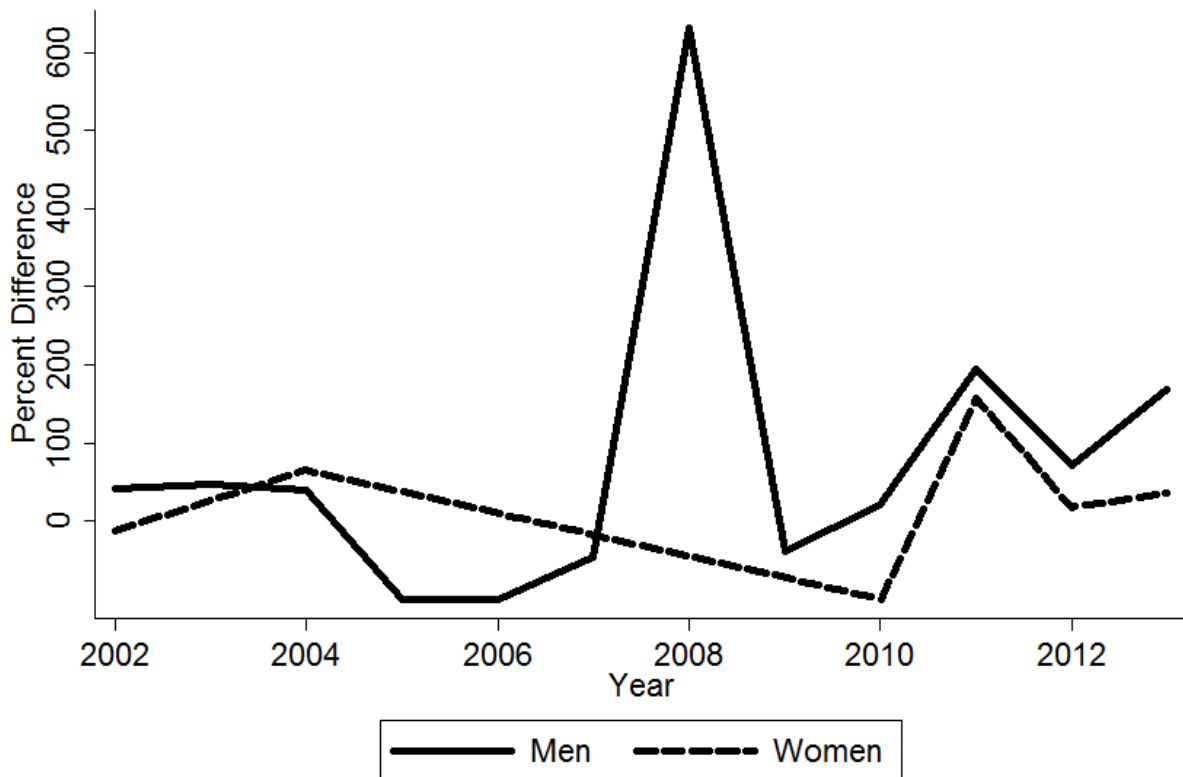


Figure 4. Racial Differences in the Likelihood of Search



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

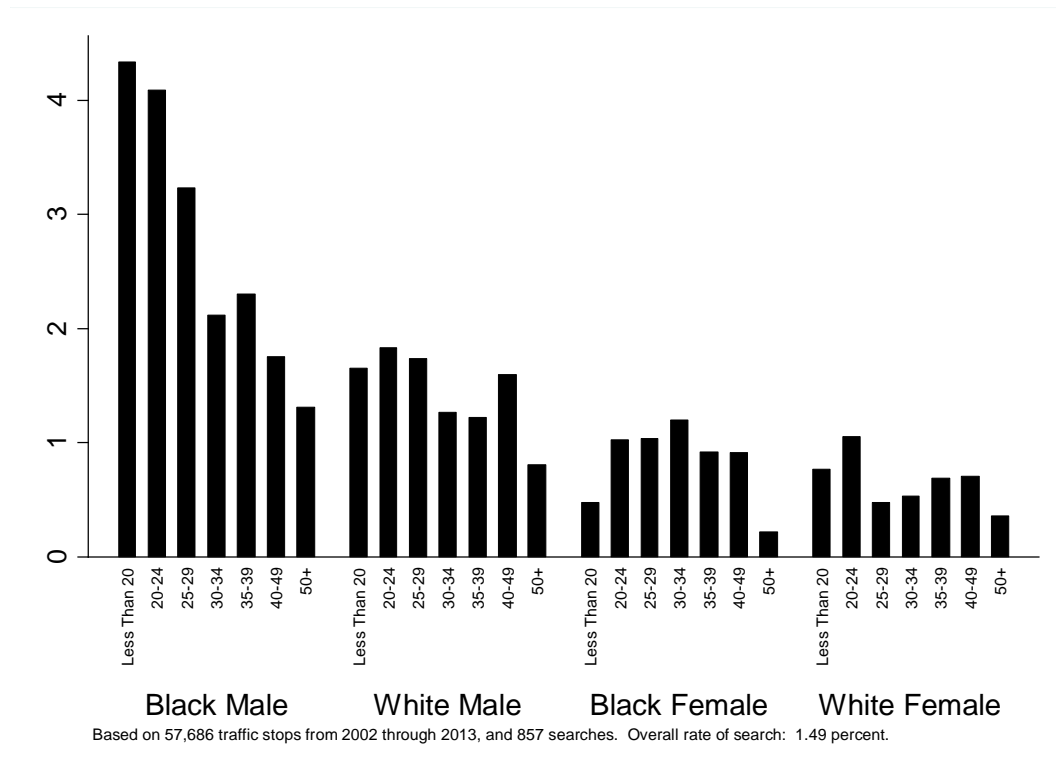


Figure 8. Number of Stops, by Race and Gender

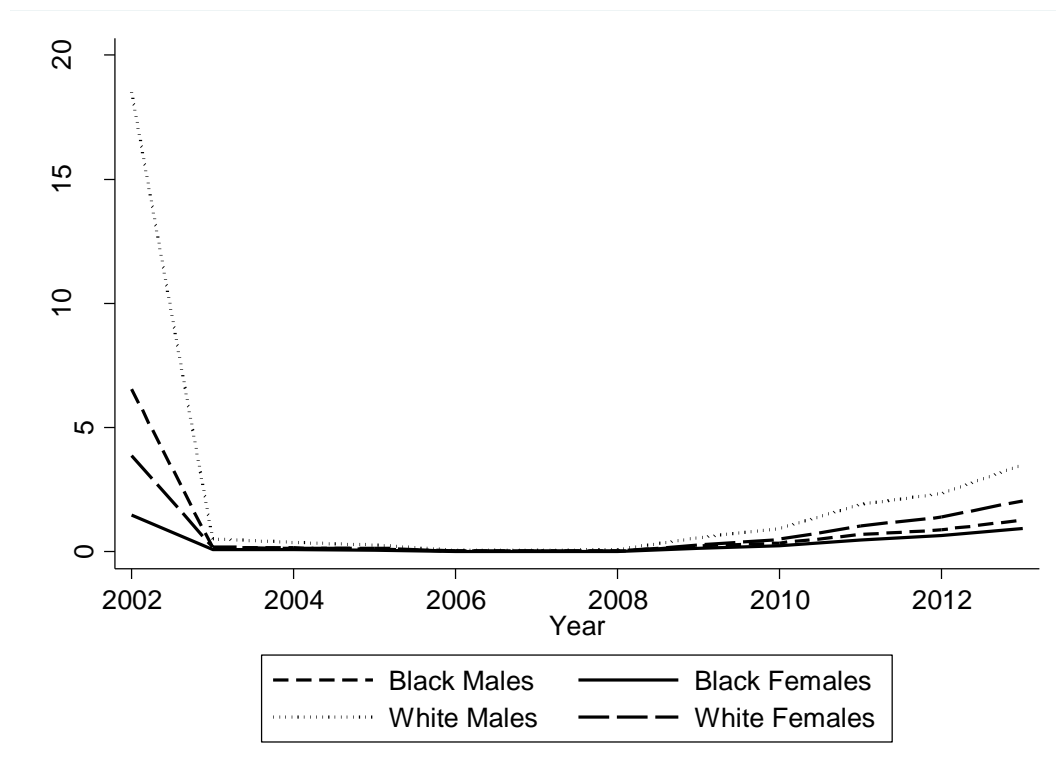




Figure 9. Percent of Stops Resulting in a Search, by Race and Gender

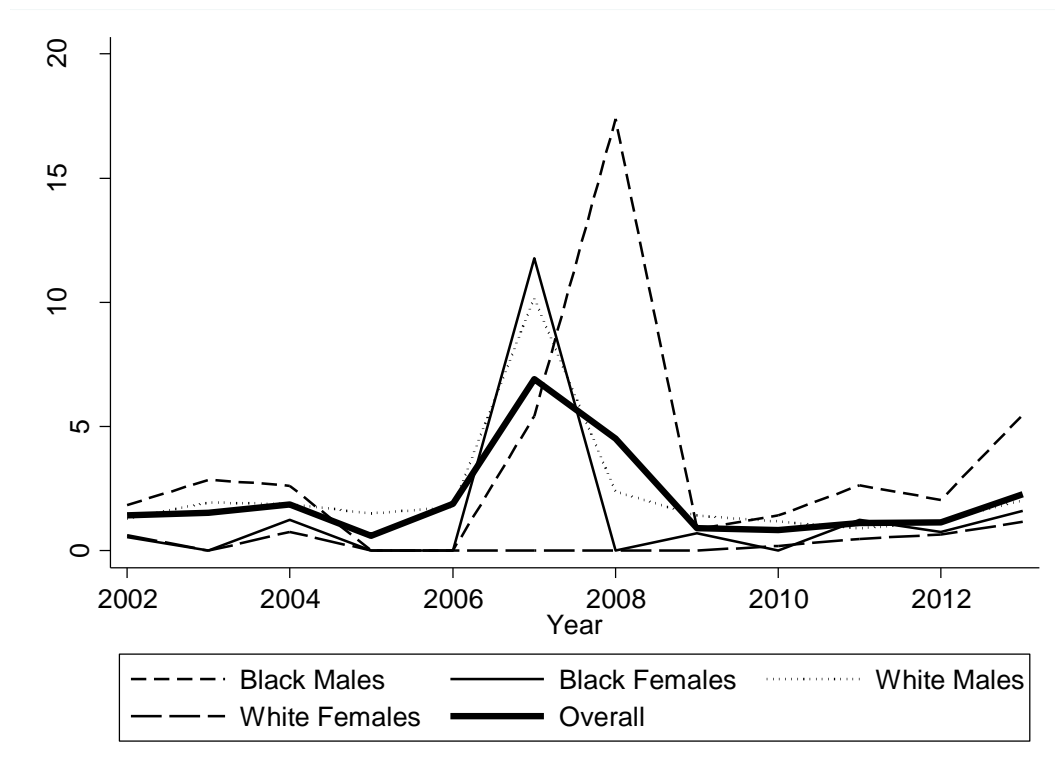


Table 4. Type of Search by Race

Search Type	Number	% Total	% White	% Black	Ratio
					Black:White
Total Stops	57,686	-	67.24	25.47	-
Total Searches	857	1.49	1.21	1.95	1.61
Consent	433	0.75	0.61	0.88	1.44
Search Warrant	2	-	-	-	-
Probable Cause	113	0.20	0.15	0.35	2.33
Incident to Arrest	262	0.45	0.39	0.62	1.59
Protective Frisk	47	0.08	0.06	0.10	1.67

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	374	26.49	26.49	0.65	0.65
2 – 10	433	30.67	57.15	3.26	3.91
11 - 100	415	29.39	86.54	29.89	33.80
101 – 1,000	190	13.46	100.00	66.20	100.00
1,001 +	-	-	-	-	-
Total	1,412	100	-	100	-

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

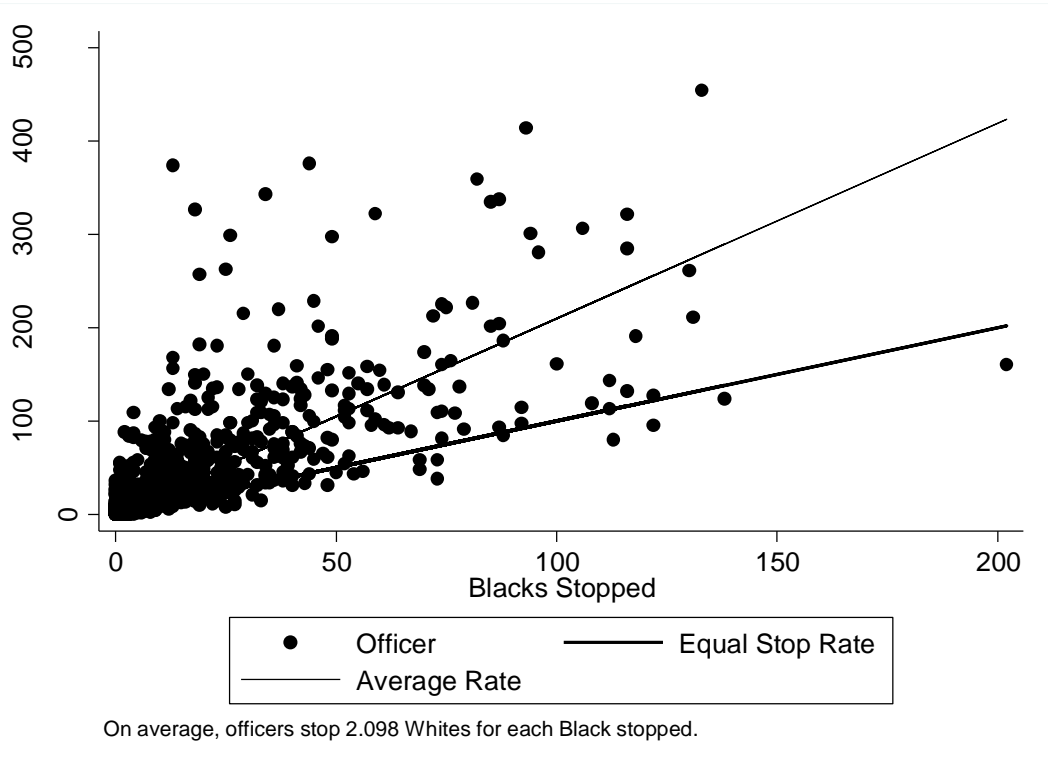


Figure 11. Number of Black and White Motorists Searched, by Officer

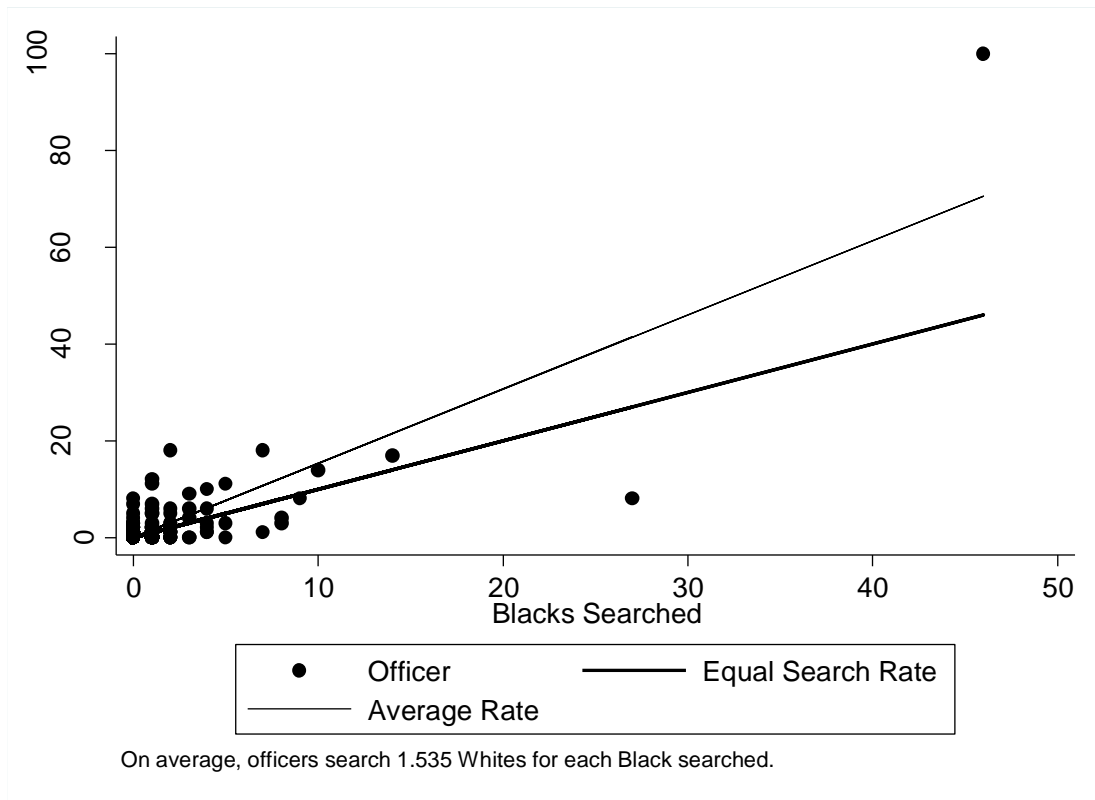
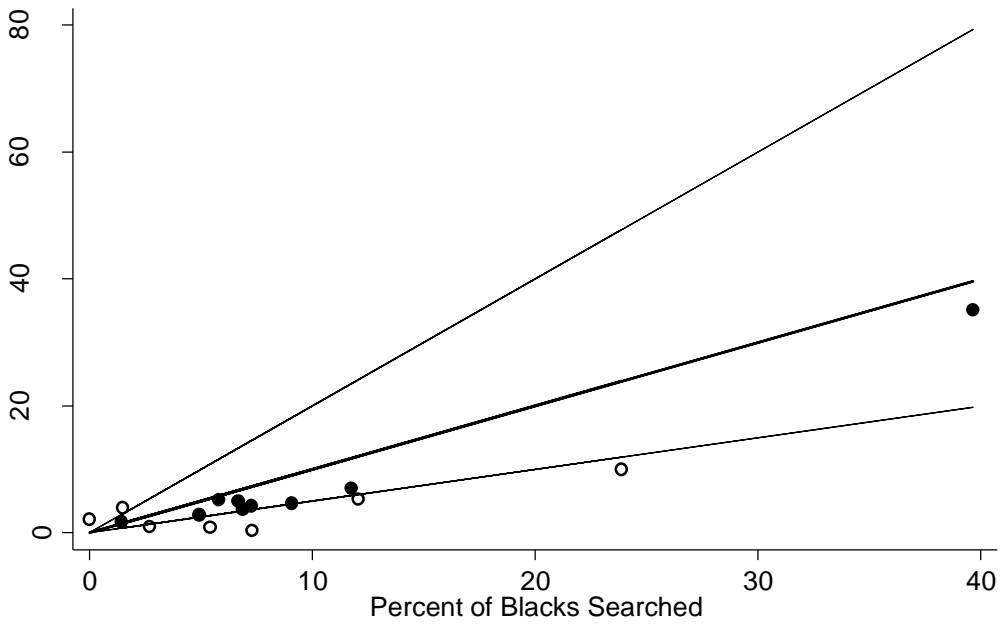


Figure 12. Percent of White and Black Drivers Searched, by Officer



Includes 16 officers with a minimum of 50 White stops, 50 Black stops, and a search rate above the department average of 1.49. The hollow circles indicate high disparity officers. 5 officers search Whites at more than twice the rate that they search Blacks. 2 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	1.80*(0.15)	1.81*(0.15)	1.84*(0.16)	1.81*(0.15)	1.78*(0.15)
Hispanic	2.64*(0.45)	2.37*(0.40)	1.90*(0.34)	1.79*(0.32)	1.89*(0.34)
Age	-	0.98*(0.00)	0.98*(0.00)	0.98*(0.00)	0.98*(0.00)
<b>Stop Purpose</b>					
Speed Limit	-	-	-	-	-
Stop Light	-	-	0.43*(0.31)	0.38*(0.28)	0.45*(0.33)
Impaired	-	-	75.39*(15.50)	76.87*(15.91)	54.71*(12.05)
Movement	-	-	2.67*(0.55)	2.55*(0.52)	2.83*(0.59)
Equipment	-	-	1.68*(0.30)	1.40*(0.26)	1.50*(0.28)
Regulatory	-	-	2.39*(0.30)	2.34*(0.30)	2.75*(0.36)
Seat Belt	-	-	0.75*(0.19)	0.79*(1.24)	0.97*(0.25)
Investigation	-	-	7.23*(1.24)	7.20*(1.24)	7.84*(1.38)
Other	-	-	1.26*(0.21)	1.28*(0.21)	1.41*(0.24)
<b>Officer Type</b>					
Black Disparity <sup>†</sup>	-	-	-	5.15*(0.71)	6.02*(0.85)
White Disparity <sup>†</sup>	-	-	-	2.19*(0.48)	2.41*(0.54)
<b>Time</b>					
Hour of Day	-	-	-	-	Included
Day of Week	-	-	-	-	Included
<b>Constant</b>	0.01*(0.00)	0.03*(0.00)	0.02*(0.00)	0.02*(0.00)	0.04*(0.02)
<b>N</b>	39,607	39,607	39,607	39,607	39,273
<b>Pseudo R<sup>2</sup></b>	0.01	0.02	0.08	0.10	0.12

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	1.44*(0.30)	1.43*(0.30)	1.52*(0.33)	1.48*(0.32)	1.52*(0.33)
Hispanic	2.81*(1.21)	2.70*(1.16)	1.61*(0.76)	1.56*(0.73)	1.62*(0.78)
Age	-	0.98*(0.01)	0.98*(0.01)	0.98*(0.01)	0.98*(0.01)
<b>Stop Purpose</b>					
Speed Limit	-	-	-	-	-
Stop Light	-	-	3.46*(2.25)	3.43*(2.23)	3.93*(2.59)
Impaired	-	-	285.32*(152.22)	291.66*(156.89)	230.95*(143.29)
Movement	-	-	3.89*(1.73)	3.84*(1.70)	4.54*(2.06)
Equipment	-	-	3.61*(1.52)	3.00*(1.28)	3.06*(1.32)
Regulatory	-	-	1.99*(0.66)	1.93*(0.64)	2.22*(0.77)
Seat Belt	-	-	0.51*(0.39)	0.53*(0.40)	0.66*(0.51)
Investigation	-	-	8.50*(3.65)	8.58*(3.68)	8.94*(3.91)
Other	-	-	0.92*(0.49)	0.97*(0.52)	0.99*(0.53)
<b>Officer Type</b>					
Black	-	-	-	3.09*(1.02)	3.72*(1.24)
Disparity <sup>†</sup>					
White	-	-	-	1.66*(0.99)	1.77*(1.07)
Disparity <sup>†</sup>					
<b>Time</b>					
Hour of Day	-	-	-	-	Included
Day of Week	-	-	-	-	Included
<b>Constant</b>	0.01*(0.00)	0.01*(0.00)	0.01*(0.00)	0.01*(0.00)	0.00*(0.00)
<b>N</b>	13,878	13,878	13,878	13,878	13,620
<b>Pseudo R<sup>2</sup></b>	0.01	0.01	0.10	0.11	0.14

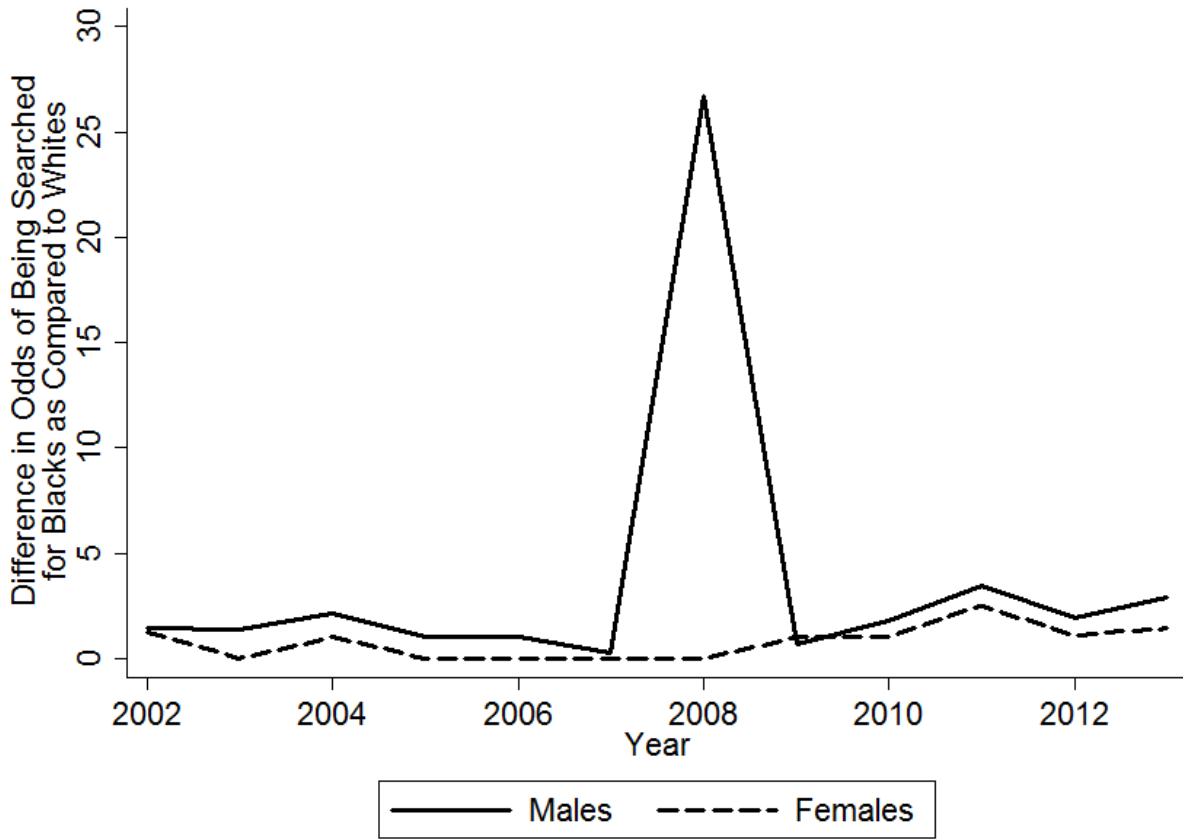
Note: Entries are odds-ratios, with standard errors in parenthesis.

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	1,468	19.35	11.58
Speed Limit	312	20.83	11.22
Stop Light/Sign	9	0.00	11.11
Driving Impaired	179	11.17	5.03
Safe Movement	47	36.17	19.15
Vehicle Equipment	107	21.50	17.76
Vehicle Regulatory	328	16.16	10.67
Seat Belt	31	48.39	16.13
Investigation	213	26.29	13.62
Other Vehicle	240	14.17	11.25
	2	50.00	50.00

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

Purpose	Number	% Total	% White	% Black	Ratio
					Black:White
Total Stops	42,994	-	67.72	24.40	-
Total Searches	752	1.75	1.39	2.36	1.70
Speed Limit	10,192	0.92	0.73	1.25	1.71
Stop Light/Sign	602	0.33	0.48	0.00	0.00
Driving Impaired	167	38.92	35.83	41.94	1.17
Safe Movement	1,696	2.42	1.82	3.77	2.07
Vehicle Equipment	3,566	1.51	0.96	2.87	2.99
Vehicle Regulatory	15,047	2.13	1.74	2.57	1.48
Seat Belt	3,480	0.66	0.42	1.50	3.57
Investigation	1,220	6.07	5.28	8.39	1.59
Other Vehicle	7,024	1.12	0.84	1.66	1.98



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

Purpose	Number	% Total	% White	% Black	Ratio
					Black:White
Total Stops	14,692	-	65.85	28.61	-
Total Searches	105	0.71	0.66	0.90	1.36
Speed Limit	3,497	0.34	0.30	0.51	1.70
Stop Light/Sign	278	1.08	0.52	2.82	5.42
Driving Impaired	22	45.45	50.00	33.33	0.66
Safe Movement	723	1.24	0.85	2.44	2.87
Vehicle Equipment	885	1.24	1.38	1.18	0.86
Vehicle Regulatory	6,007	0.70	0.59	0.86	1.46
Seat Belt	1,224	0.16	0.22	0.00	0.00
Investigation	385	2.86	2.73	4.08	1.49
Other Vehicle	1,671	0.30	0.28	0.43	1.54

Table A4. Type of Search by Race: Men

Search Type	Number	% Total	% White	% Black	Ratio
					Black:White
Total Stops	42,994	-	67.72	24.40	-
Total Searches	752	1.75	1.39	2.36	1.70
Consent	384	0.89	0.71	1.05	1.48
Search Warrant	2	-	-	-	-
Probable Cause	100	0.23	0.17	0.46	2.71
Incident to Arrest	224	0.52	0.44	0.72	1.64
Protective Frisk	42	0.10	0.07	0.13	1.86

Table A5. Type of Search by Race: Women

Search Type	Number	% Total	% White	% Black	Ratio Black:White
Total Stops	14,692	-	65.85	28.61	-
Total Searches	105	0.71	0.66	0.90	1.36
Consent	49	0.33	0.31	0.45	1.45
Search Warrant	-	-	-	-	-
Probable Cause	13	0.09	0.10	0.07	0.70
Incident to Arrest	38	0.26	0.22	0.36	1.64
Protective Frisk	5	0.03	0.03	0.02	0.67

Figure A6. Stops by Day of the Week

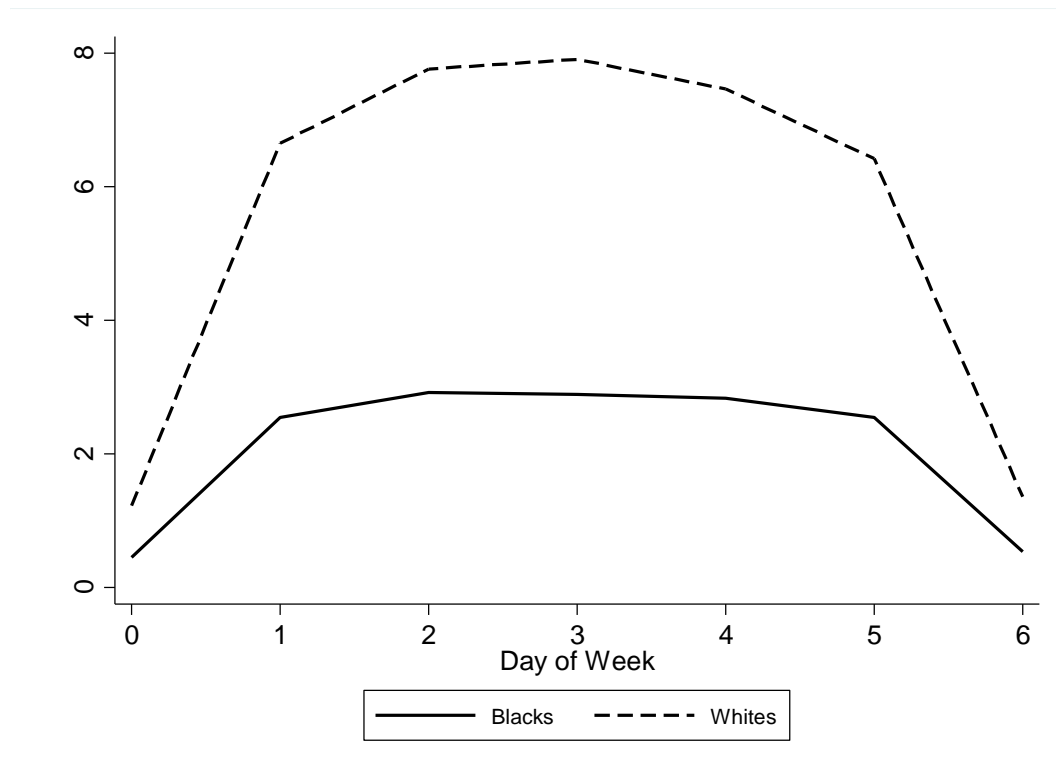


Figure A7. Searches by Day of the Week

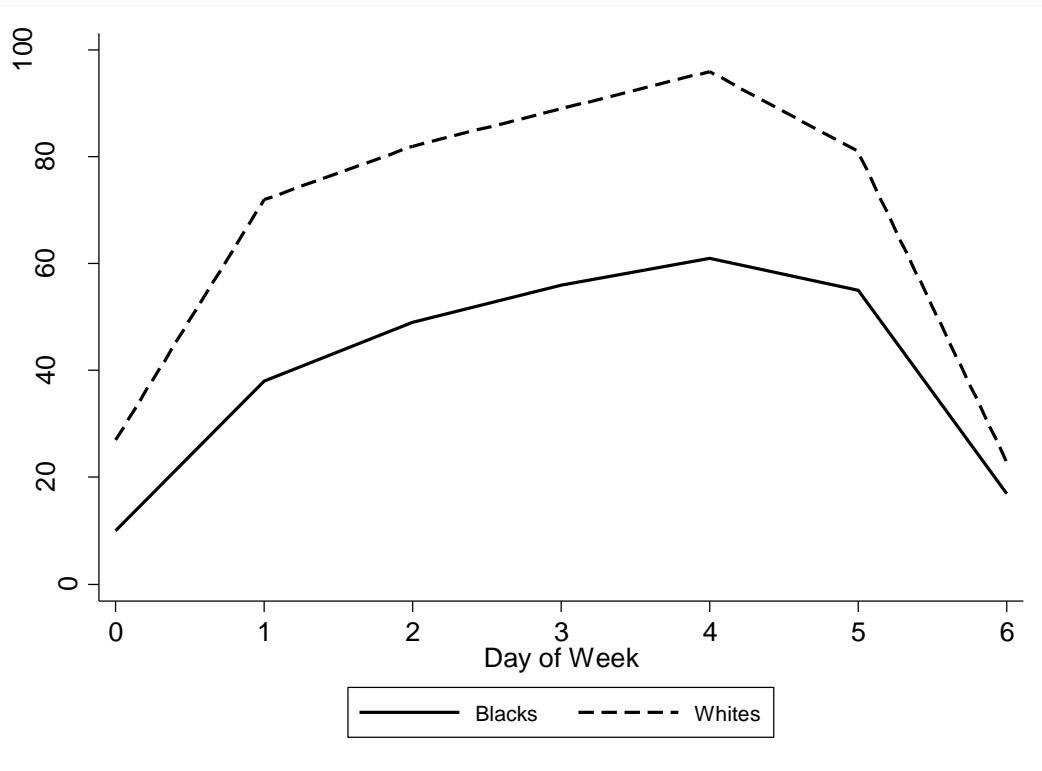


Figure A8. Stops by Hour of the Day

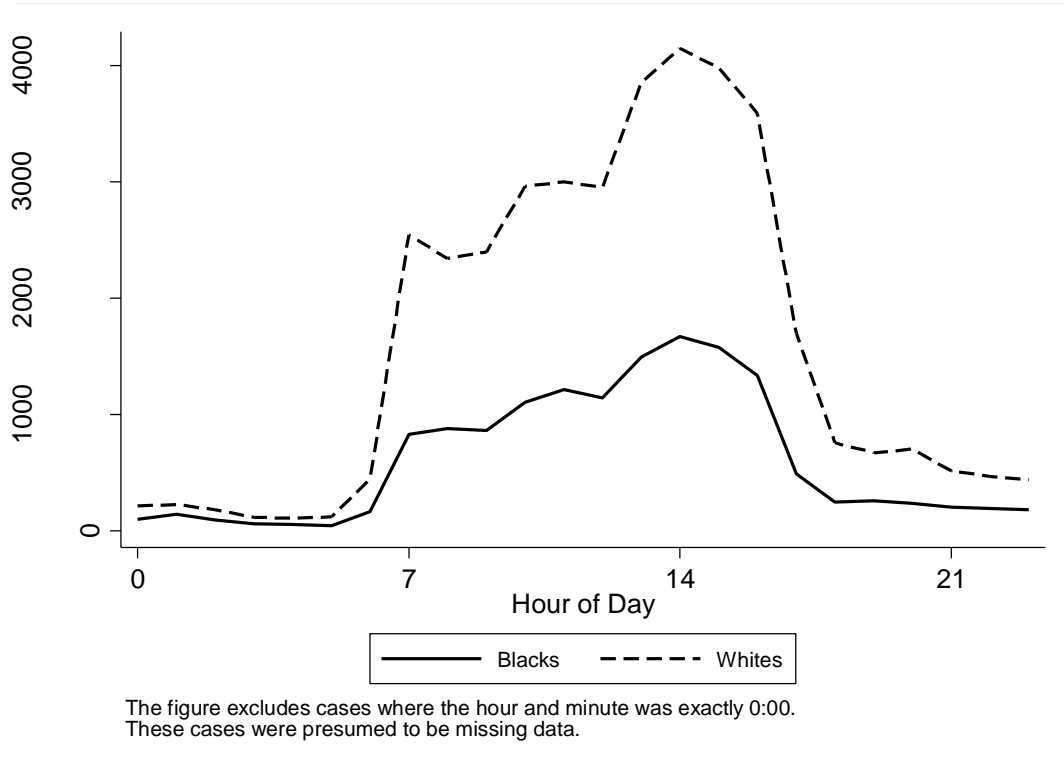


Figure A9. Searches by Hour of the Day

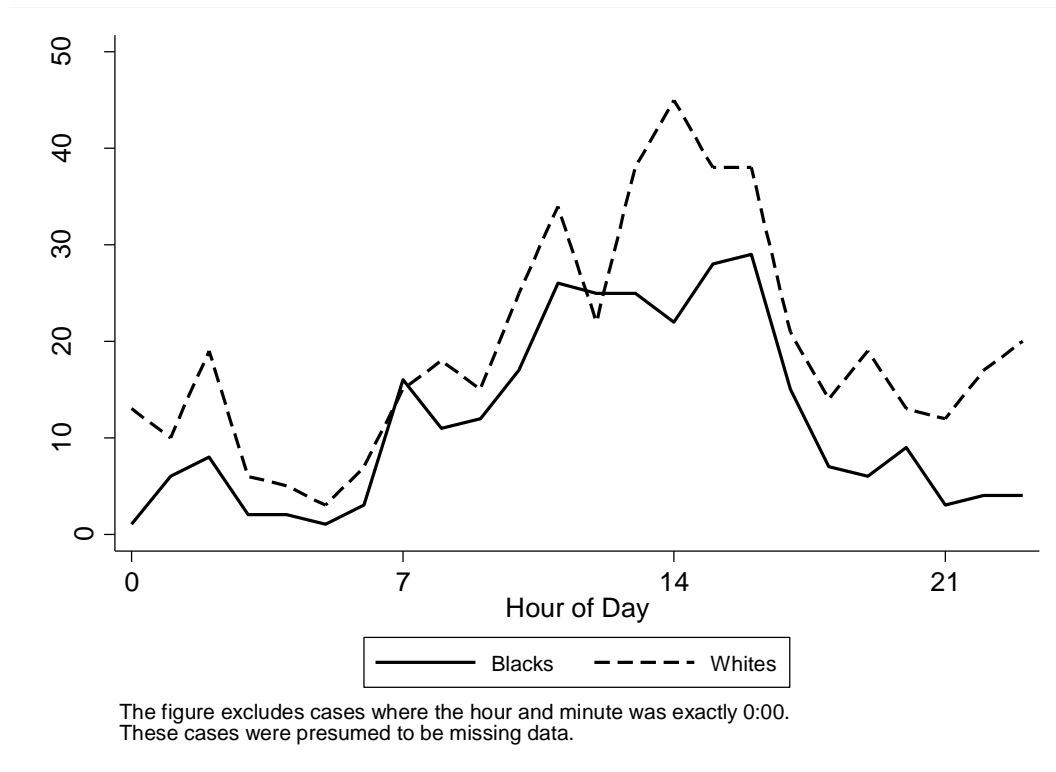


Figure A10. Correlation Between Percent Difference in Likelihood of Black Men being Searched as Compared to Whites and Odds-Ratios from Logistic Regression

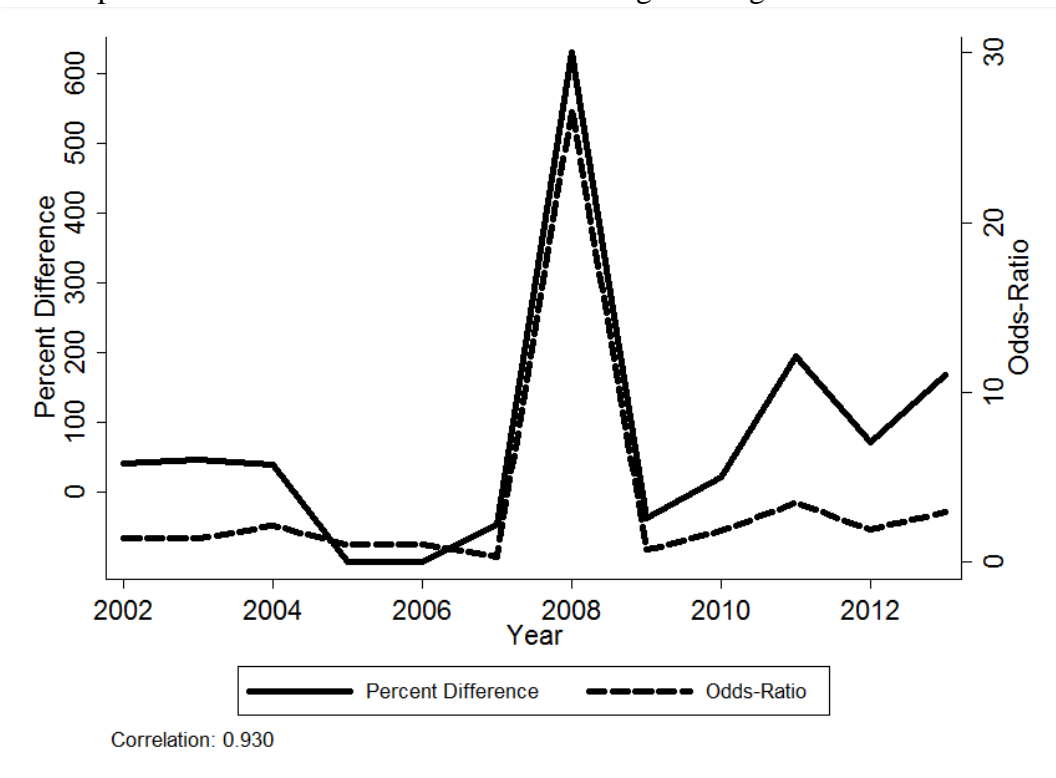


Figure A11. Correlation Between Percent Difference in Likelihood of Black Women being Searched as Compared to Whites and Odds-Ratios from Logistic Regression

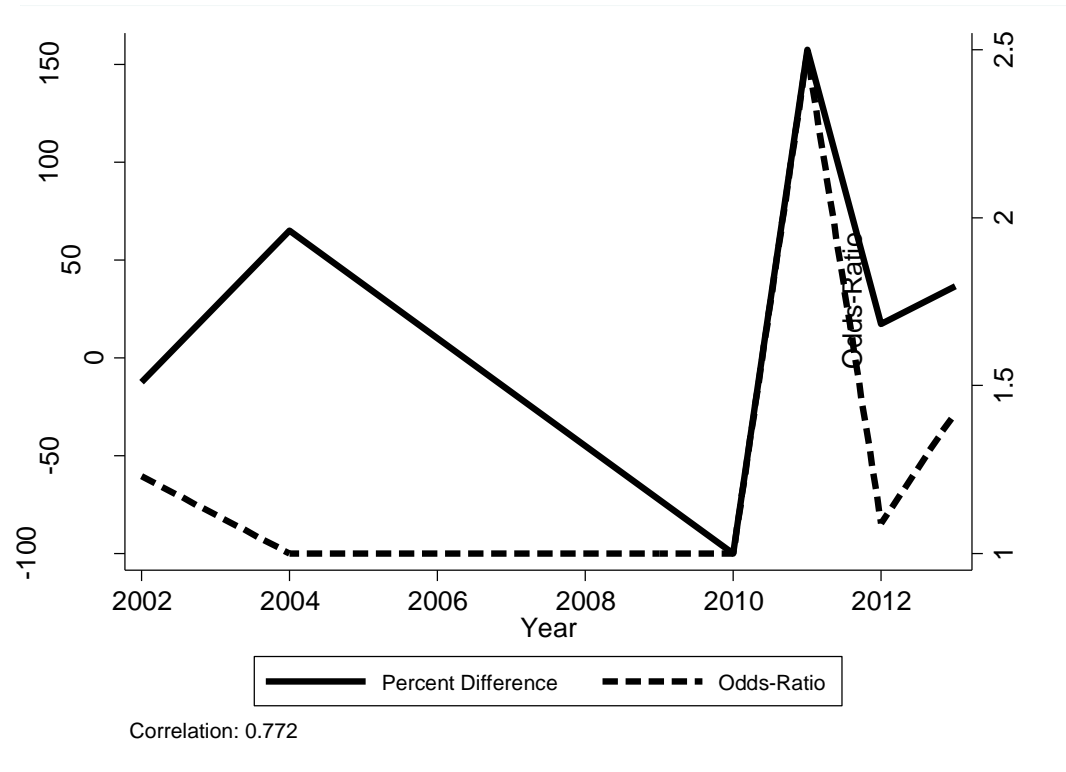
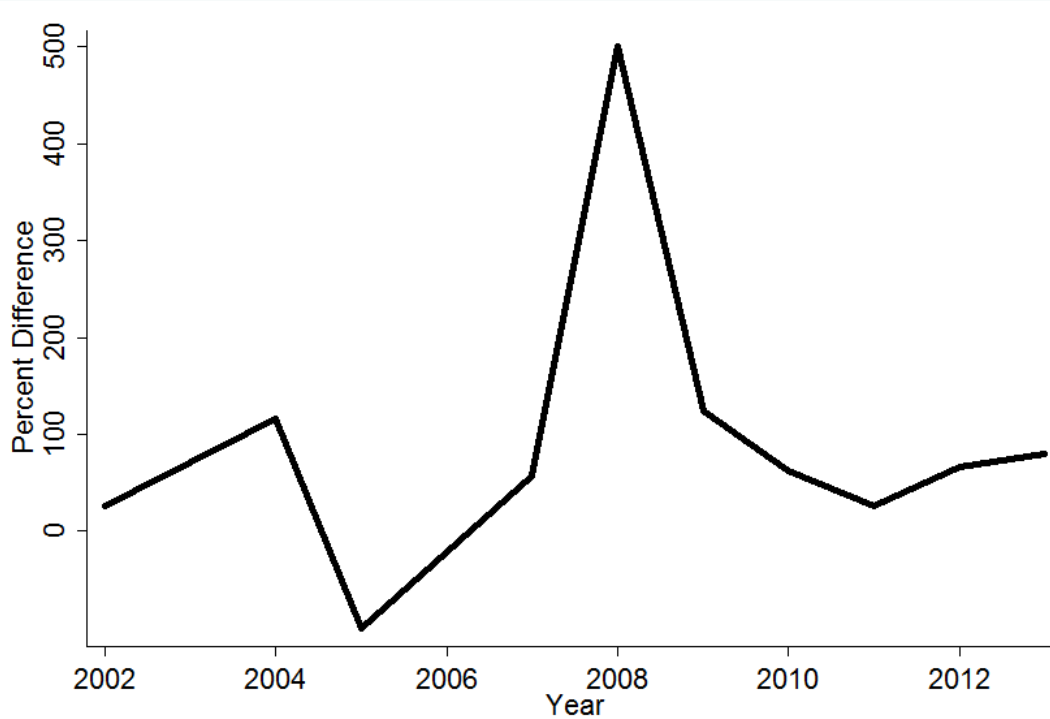


Figure A12. Racial Differences in the Likelihood of Search: Consent Searches Only



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

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

Contraband	Number	% Total	% White	% Black
Yes	193	22.52	24.26	23.78
No	664	77.48	75.74	76.22
Total	857	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	38,320	0.91	3.17	20.92	74.77	0.24	100.0
Black	No	14,409	0.91	3.07	18.45	77.17	0.40	100.0
Total	No	56,829	0.90	3.10	19.83	75.89	0.29	100.0
White	Yes	470	9.36	0.00	12.55	48.72	29.36	100.0
Black	Yes	286	4.90	1.40	10.84	49.30	33.57	100.0
Total	Yes	857	9.22	0.58	12.49	47.84	29.87	100.0