

Analysis of Black-White Differences in Traffic Stops and Searches in Durham, NC, 2002-2013

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Table 1. Overview of the Data

Data Subsets	Observations
Total stops	250,520
-2001	1
-2014	8,934
-Passengers	9,515
-Checkpoint stops	3,166
Stops for analysis	229,551
Searches	14,067

Search Rate = 6.13

Figure 1. Number of Traffic Stops per Year

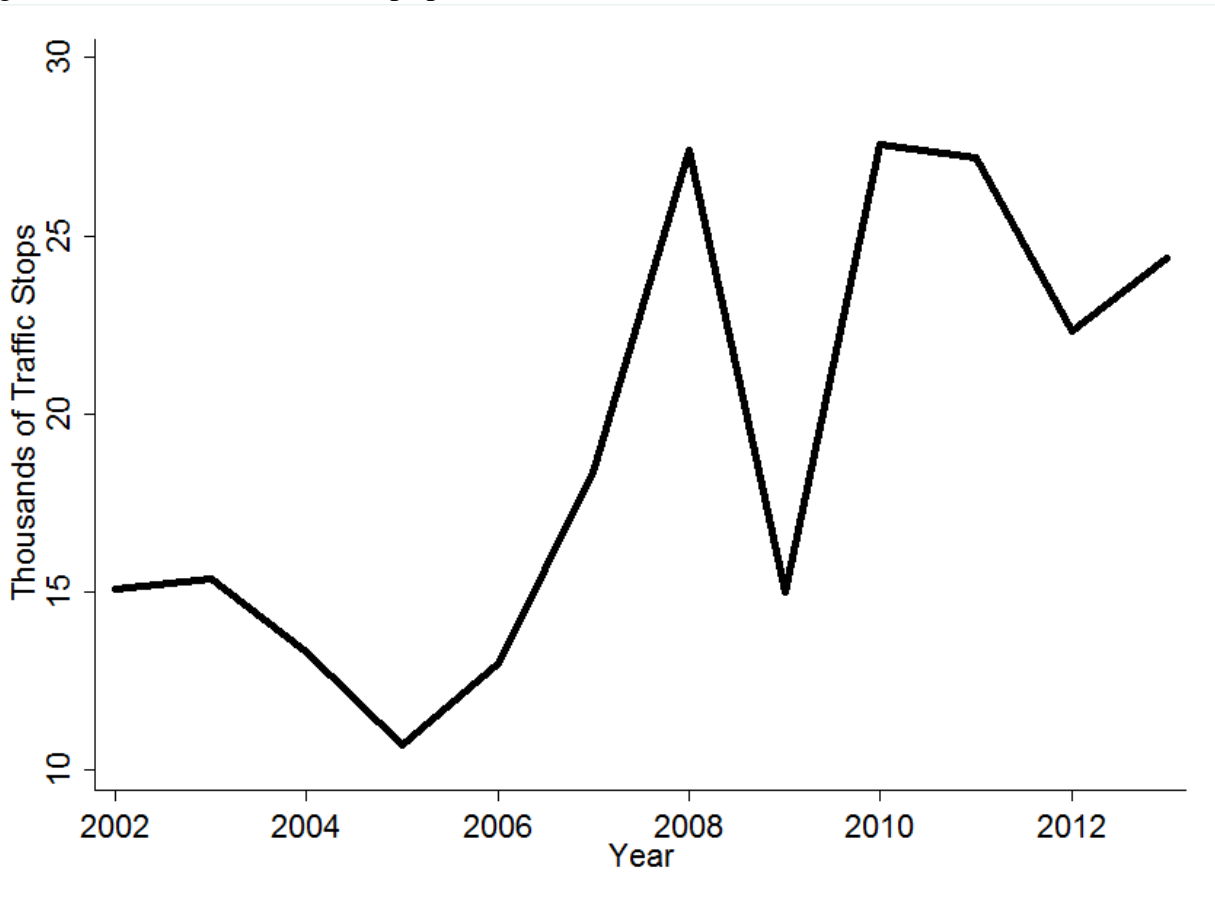


Figure 2. Racial Composition of Traffic Stops by Year

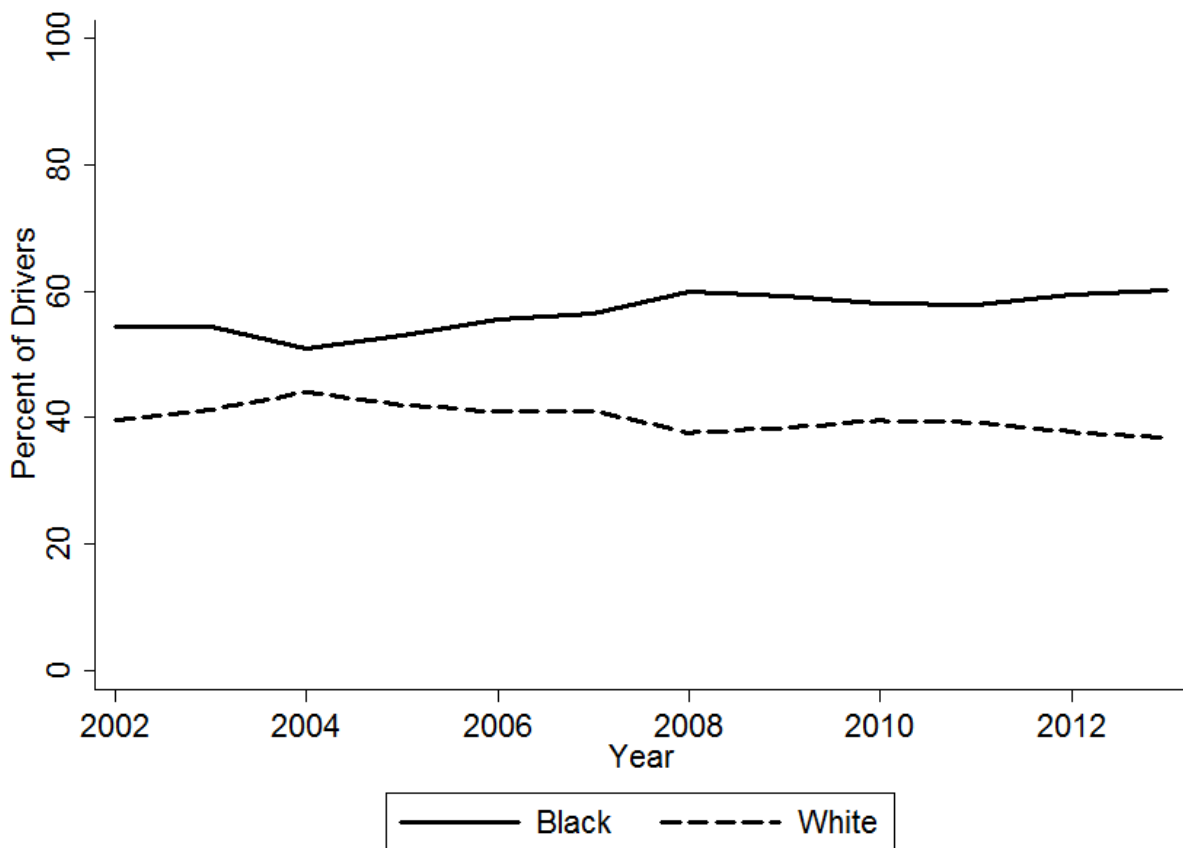


Table 2. Racial Composition of Traffic Stops by Purpose, Drivers

Purpose	Number	Percent	
		White	Black
Total Stops	229,551	39.43	57.32
Speed Limit	72,781	46.31	48.65
Stop Light/Sign	15,913	41.19	54.56
Driving Impaired	990	63.43	33.03
Safe Movement	17,050	41.44	54.93
Vehicle Equipment	33,373	31.21	66.81
Vehicle Regulatory	49,576	35.39	62.67
Seat Belt	8,621	34.24	63.39
Investigation	19,248	37.91	60.60
Other Vehicle	11,999	36.16	60.77

Note: Includes only drivers. Excludes 3,166 checkpoint stops. Excludes 9,515 passengers.

Table 3. Percent Searched by Race and Purpose of Stop

Purpose	Number	% Total	% White	% Black	Ratio
					Black:White
Total Stops	229,551	-	39.43	57.32	-
Total Searches	14,067	6.13	3.86	7.90	2.05
Speed Limit	72,781	2.27	1.40	3.16	2.26
Stop Light/Sign	15,913	4.35	2.69	5.86	2.18
Driving Impaired	990	46.67	49.52	42.51	0.86
Safe Movement	17,050	8.08	6.82	9.28	1.36
Vehicle Equipment	33,373	8.53	6.04	9.86	1.63
Vehicle Regulatory	49,576	6.06	3.14	7.86	2.50
Seat Belt	8,621	7.42	3.25	9.79	3.01
Investigation	19,248	12.61	7.51	15.93	2.12
Other Vehicle	11,999	8.03	5.25	9.87	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

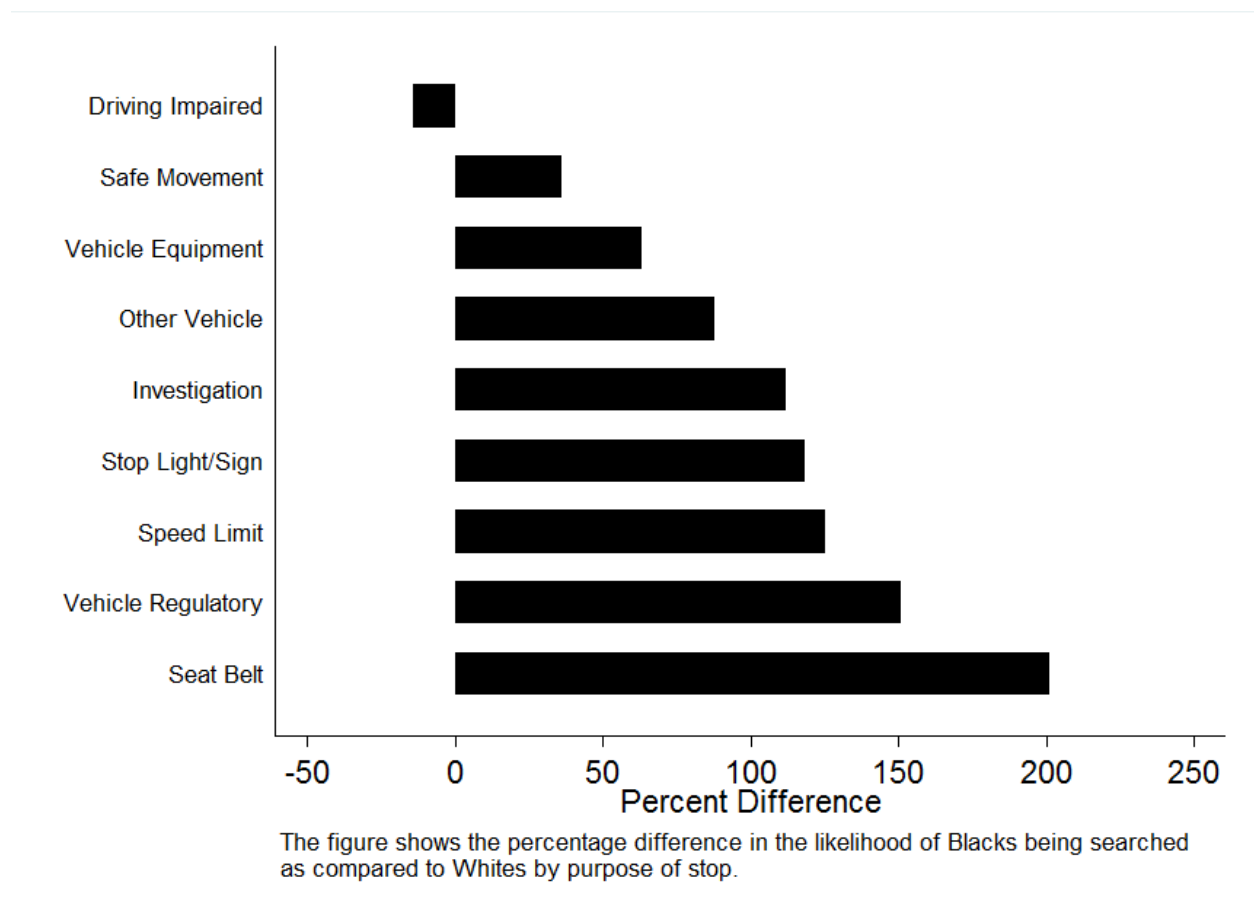
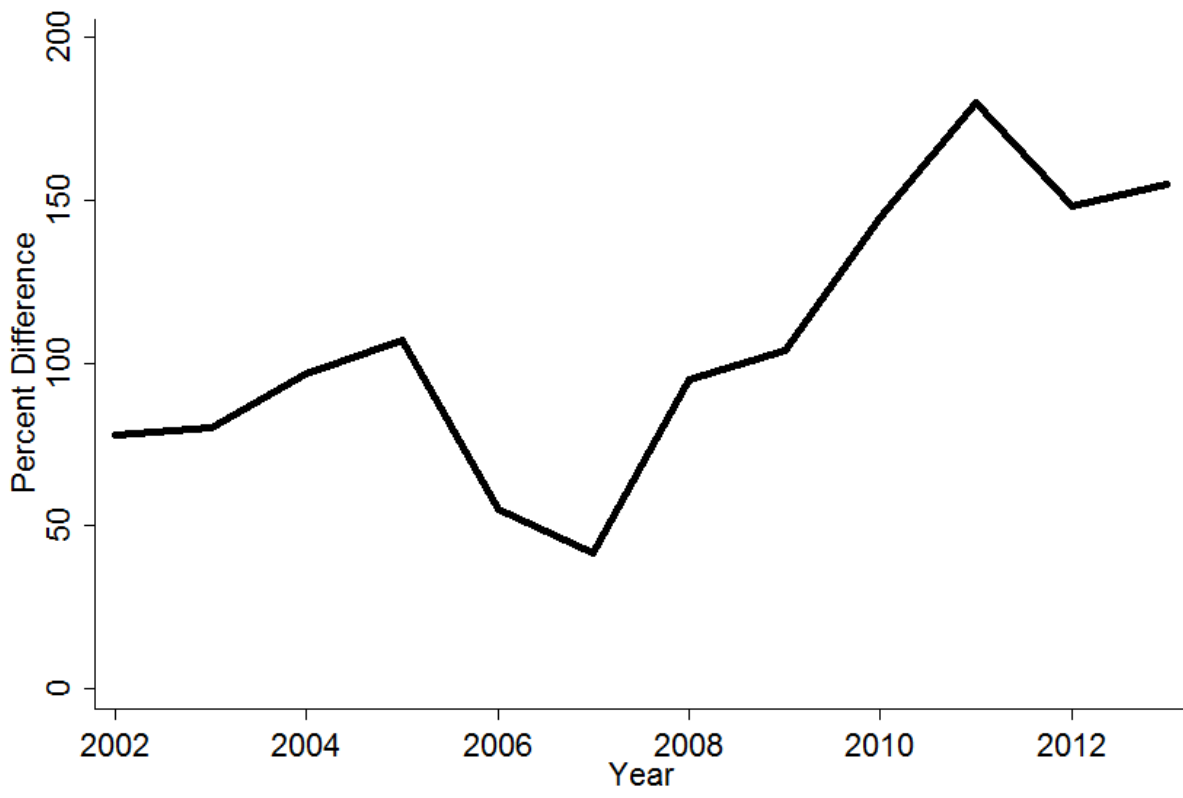


Figure 4. Racial Differences in the Likelihood of Search



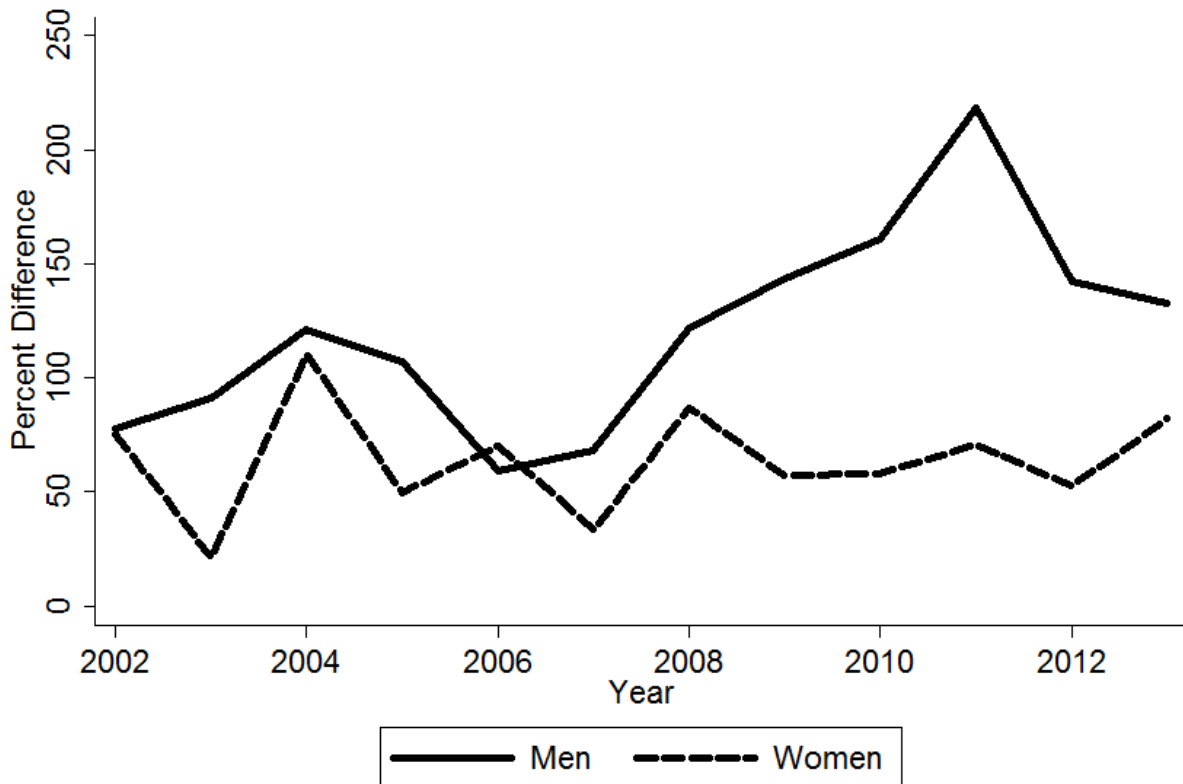
The figure shows the percentage difference in the likelihood of Blacks being searched as compared to Whites.

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



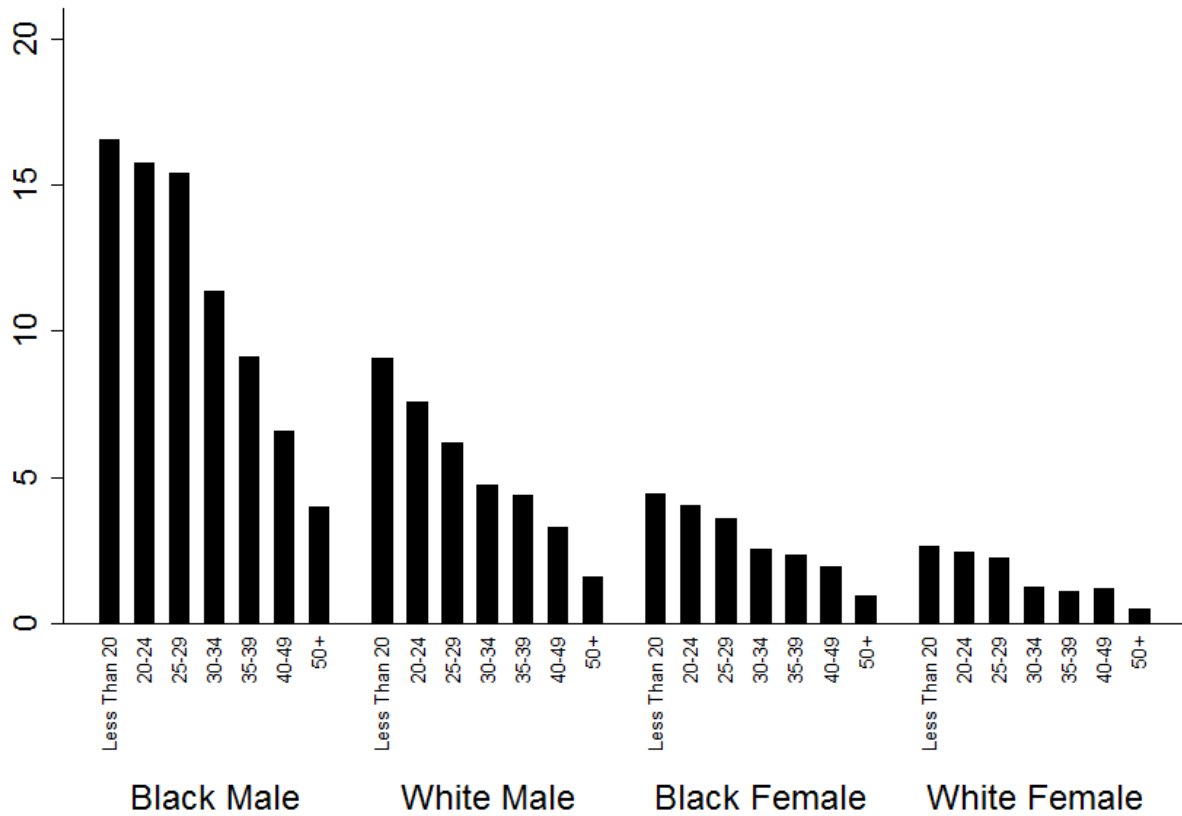
The figure shows the percentage difference in the likelihood of Blacks being searched as compared to Whites by gender.

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



Based on 229,551 traffic stops from 2002 through 2013, and 14,067 searches. Overall rate of search: 6.13 percent.

Figure 8. Number of Stops, by Race and Gender

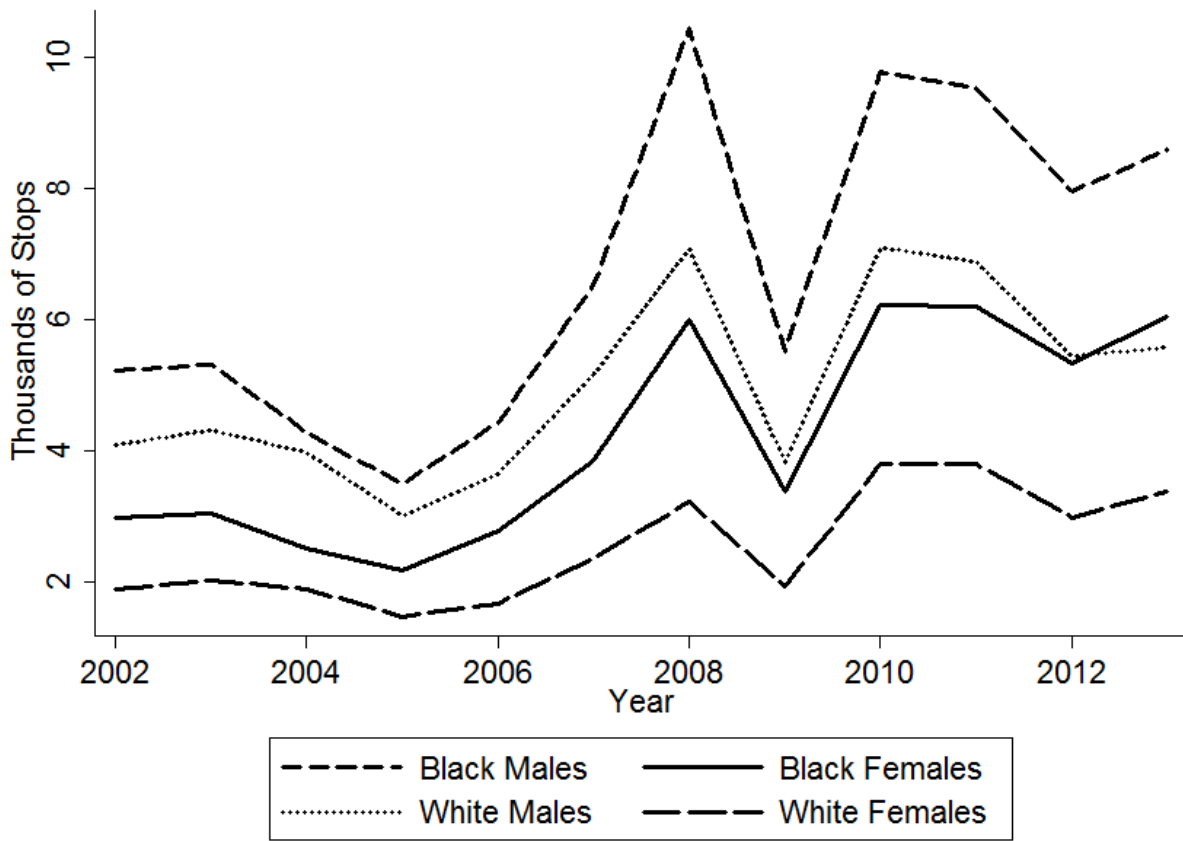


Figure 9. Percent of Stops Resulting in a Search, by Race and Gender

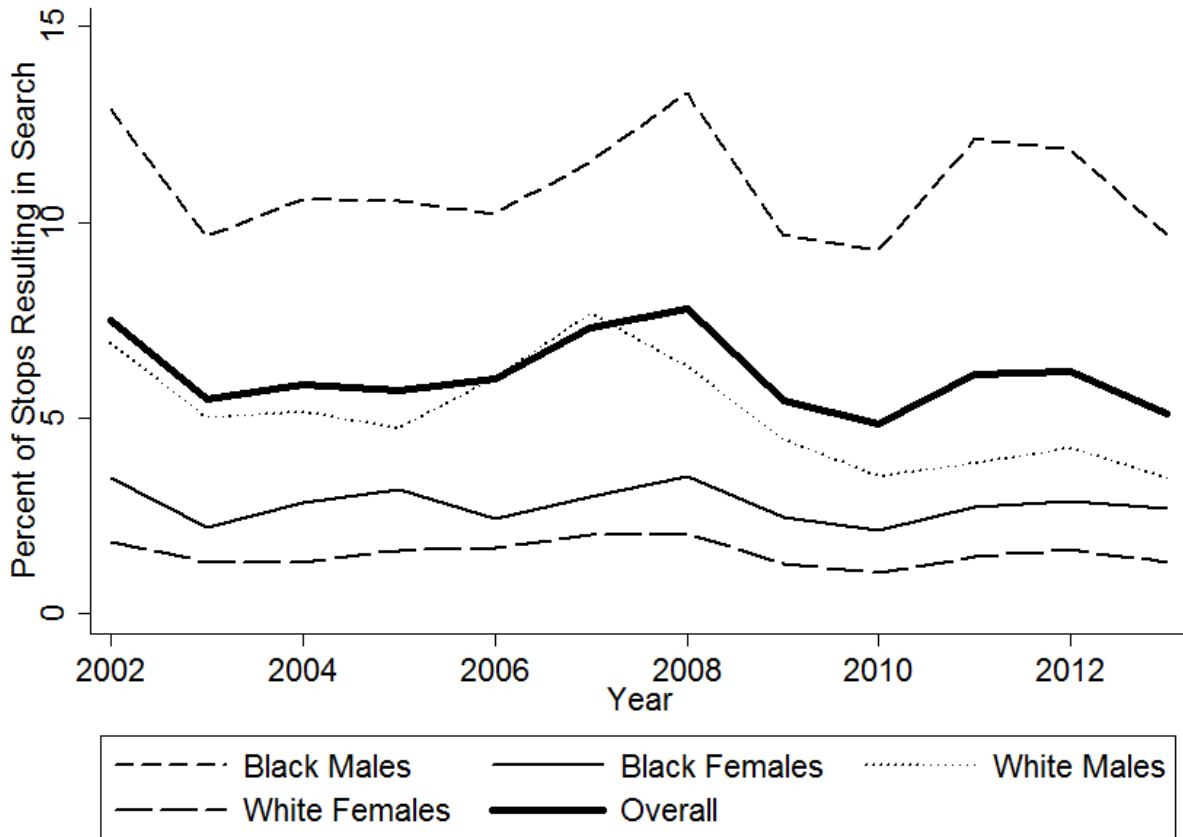


Table 4. Type of Search by Race

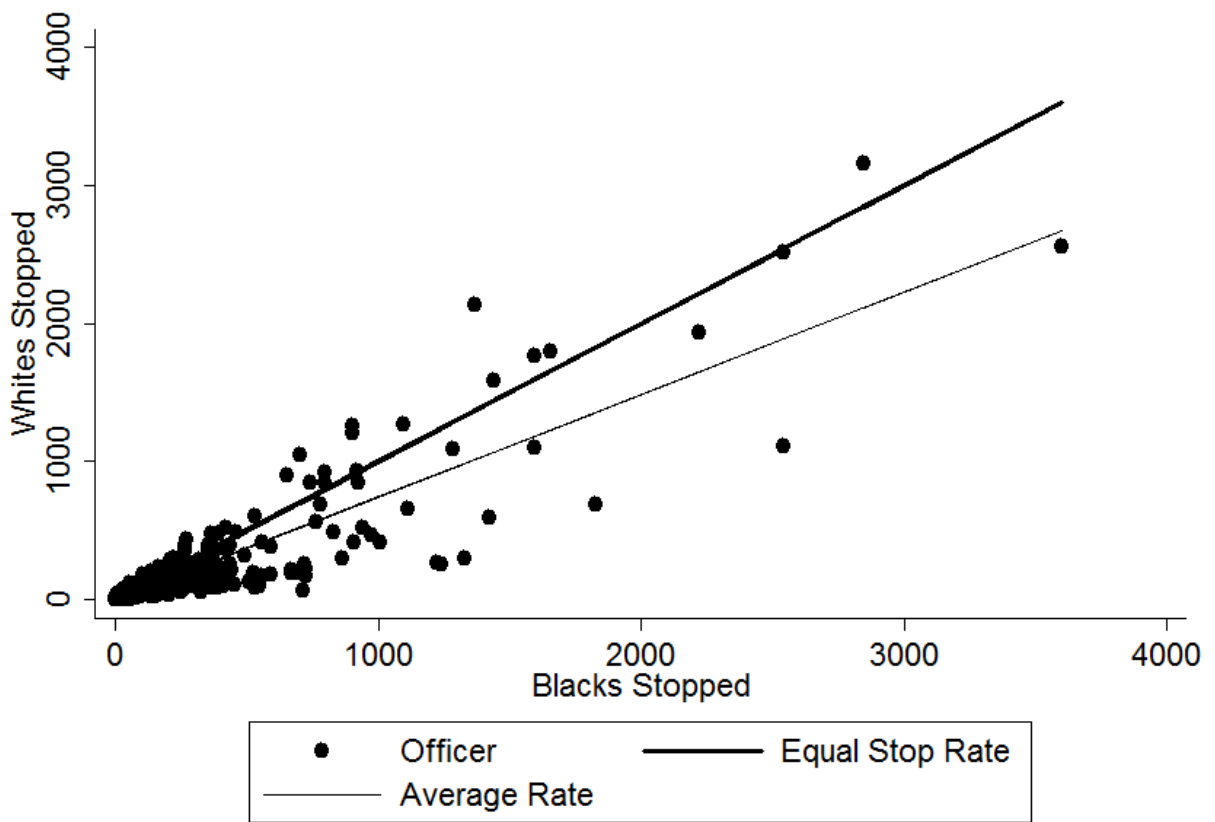
Search Type	Number	% Total	% White	% Black	Ratio Black:White
Total Stops	229,551	-	39.43	57.32	-
Total Searches	14,067	6.13	3.86	7.90	2.05
Consent	8,028	3.50	2.23	4.49	2.01
Search Warrant	10	0.00	0.00	0.01	-
Probable Cause	2,476	1.08	0.42	1.58	3.76
Incident to Arrest	3,042	1.33	1.09	1.51	1.39
Protective Frisk	511	0.22	0.11	0.31	2.82

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

Table 5. Distribution of Officer IDs by Stop

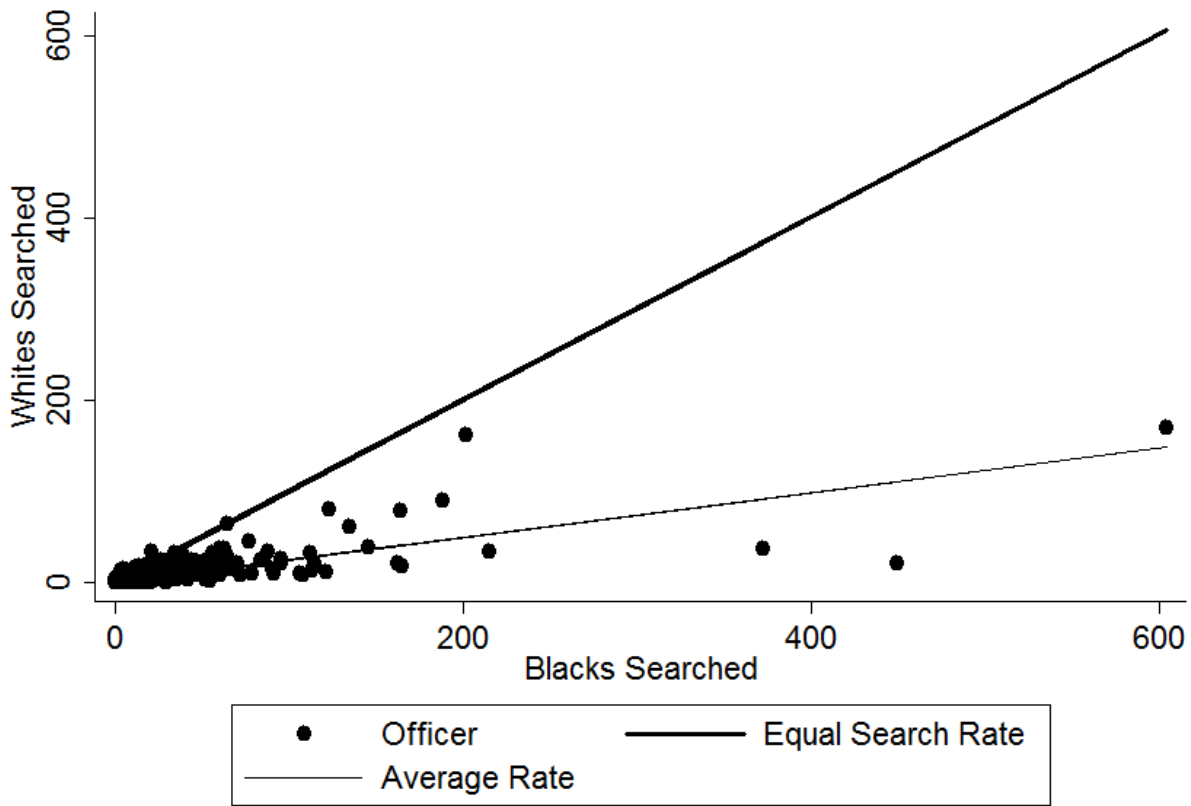
Number of Stops	Officers w/ this many Stops	Percent of Officers	Cumulative Percent	Percent of Stops	Cumulative Percent
1	233	20.69	20.69	0.10	0.10
2 – 10	186	16.52	37.21	0.34	0.44
11 - 100	290	25.75	62.97	5.85	6.29
101 – 1,000	379	33.66	96.63	54.32	60.61
1,001 +	38	3.37	100.00	39.39	100.00
Total	1,126	100	-	100	-

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



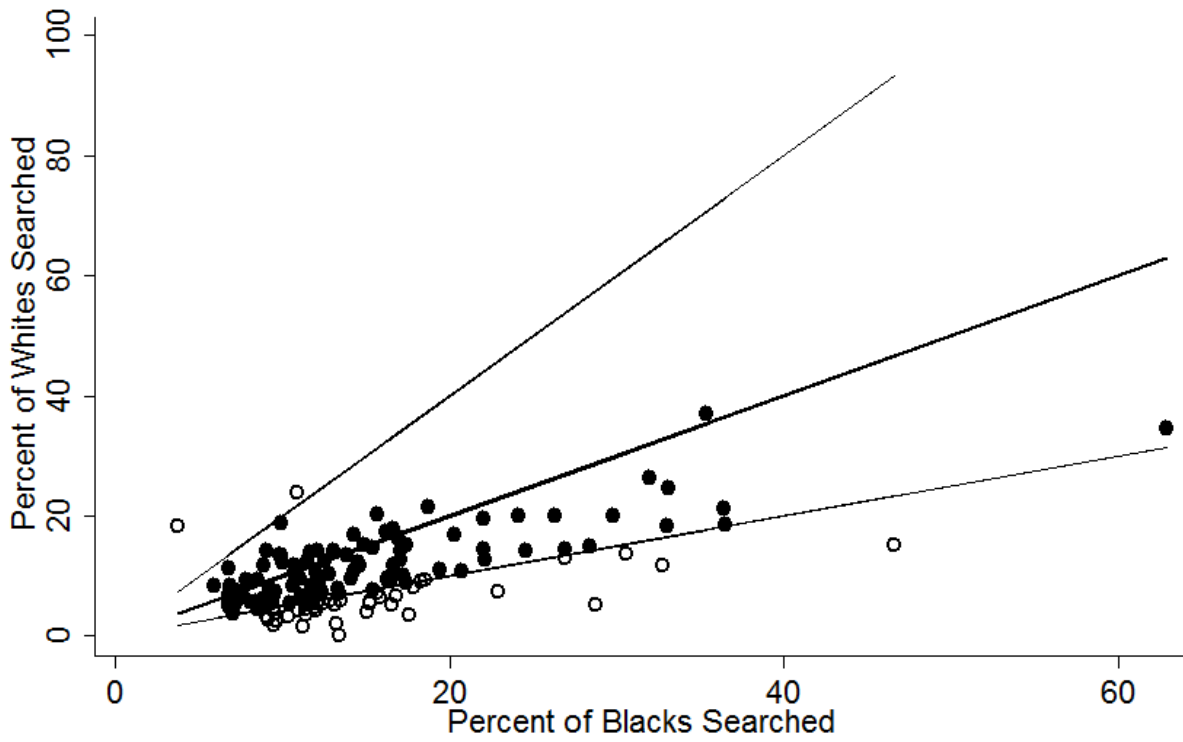
On average, officers stop 0.742 Whites for each Black stopped.

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



On average, officers search 0.245 Whites for each Black searched.

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



Includes 132 officers with a minimum of 50 White stops, 50 Black stops, and a search rate above the department average of 6.13. The hollow circles indicate high disparity officers. 2 officers search Whites at more than twice the rate that they search Blacks. 38 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
Demographics					
Race	3.33*(0.10)	3.12*(0.09)	2.71*(0.08)	2.65*(0.08)	2.61*(0.09)
Hispanic	2.27*(0.08)	1.86*(0.07)	1.33*(0.05)	1.31*(0.05)	1.28*(0.05)
Age	-	0.96*(0.00)	0.96*(0.00)	0.96*(0.00)	0.96*(0.00)
Stop Purpose					
Speed Limit	-	-	-	-	-
Stop Light	-	-	1.87*(0.10)	1.81*(0.09)	1.78*(0.10)
Impaired	-	-	34.26*(2.68)	33.62*(2.64)	29.77*(2.80)
Movement	-	-	3.24*(0.14)	3.17*(0.13)	3.02*(0.14)
Equipment	-	-	3.03*(0.11)	2.92*(0.10)	2.71*(0.11)
Regulatory	-	-	2.45*(0.09)	2.35*(0.08)	2.13*(0.08)
Seat Belt	-	-	2.46*(0.13)	2.37*(0.12)	2.42*(0.15)
Investigation	-	-	4.60*(0.17)	4.44*(0.17)	4.03*(0.17)
Other	-	-	2.95*(0.14)	2.80*(0.13)	2.52*(0.14)
Officer Type					
Black Disparity [†]	-	-	-	2.14*(0.06)	2.31*(0.07)
White Disparity [‡]	-	-	-	1.56*(0.14)	1.55*(0.14)
Time					
Hour of Day	-	-	-	-	Included
Day of Week	-	-	-	-	Included
Constant	0.04*(0.00)	0.15*(0.01)	0.08*(0.00)	0.07*(0.00)	0.06*(0.00)
N	141,210	141,210	141,210	141,210	113,553
Pseudo R²	0.03	0.06	0.09	0.10	0.11

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.

* = Significant at 0.05 p-value

† = Coded 1 for 38 officers who searched Blacks at twice the rate of Whites; otherwise zero. Officers with fewer than 50 searches of Black motorists are automatically coded zero.

‡ = Coded 1 for 2 officers who searched Whites at twice the rate of Blacks; otherwise zero. Officers with fewer than 50 searches of White motorists are automatically coded zero.

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

Variable	Model 1	Model 2	Model 3	Model 4	Model 5
Demographics					
Race	1.79*(0.10)	1.68*(0.10)	1.41*(0.08)	1.35*(0.08)	1.30*(0.09)
Hispanic	0.87 (0.11)	0.76 (0.10)	0.54*(0.07)	0.52*(0.07)	0.50*(0.07)
Age	-	0.96*(0.00)	0.96*(0.00)	0.96*(0.00)	0.96*(0.00)
Stop Purpose					
Speed Limit	-	-	-	-	-
Stop Light	-	-	2.09*(0.24)	1.95*(0.24)	1.74*(0.25)
Impaired	-	-	72.41*(14.65)	67.42*(13.76)	54.72*(12.63)
Movement	-	-	3.81*(0.41)	3.55*(0.38)	3.20*(0.38)
Equipment	-	-	3.82*(0.33)	3.57*(0.31)	2.95*(0.29)
Regulatory	-	-	3.29*(0.27)	3.08*(0.25)	2.82*(0.26)
Seat Belt	-	-	2.79*(0.44)	2.70*(0.42)	2.76*(0.50)
Investigation	-	-	8.56*(0.75)	7.98*(0.70)	6.38*(0.63)
Other	-	-	3.46*(0.42)	3.11*(0.38)	2.62*(0.37)
Officer Type					
Black Disparity [†]	-	-	-	2.53*(0.17)	2.84*(0.20)
White Disparity [‡]	-	-	-	3.79*(0.58)	3.86*(0.60)
Time					
Hour of Day	-	-	-	-	Included
Day of Week	-	-	-	-	Included
Constant	0.02*(0.00)	0.06*(0.01)	0.02*(0.00)	0.02*(0.00)	0.02*(0.00)
N	80,861	80,861	80,861	80,861	66,023
Pseudo R²	0.01	0.03	0.08	0.09	0.10

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

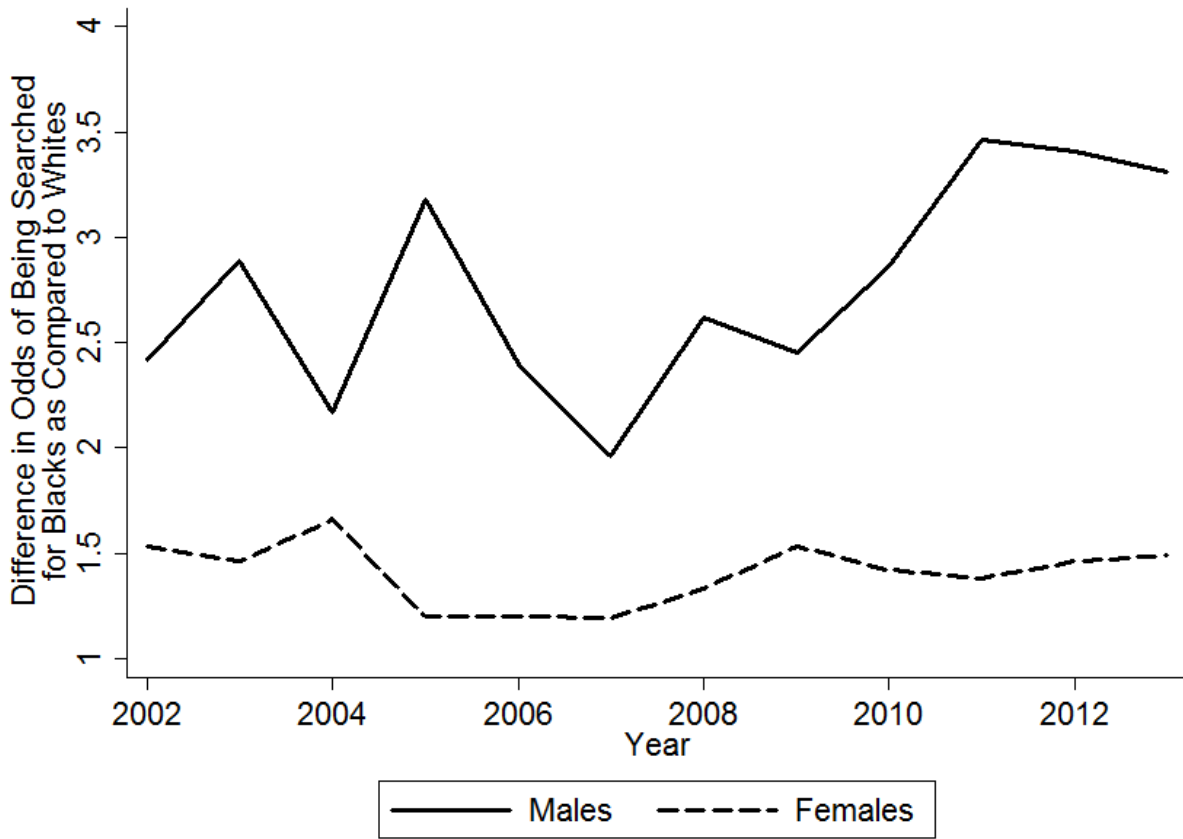
Note: The number of observations is smaller for Model 5 because the “hour of stop” variable is missing in some cases.

* = Significant at 0.05 p-value

† = Coded 1 for 38 officers who searched Blacks at twice the rate of Whites; otherwise zero. Officers with fewer than 50 searches of Black motorists are automatically coded zero.

‡ = Coded 1 for 2 officers who searched Whites at twice the rate of Blacks; otherwise zero. Officers with fewer than 50 searches of White motorists are automatically coded zero.

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	9,515	21.22	78.17
Speed Limit	979	25.43	72.83
Stop Light/Sign	503	24.65	74.95
Driving Impaired	134	61.19	38.06
Safe Movement	827	28.42	70.37
Vehicle Equipment	2,090	19.52	80.14
Vehicle Regulatory	2,080	17.07	82.60
Seat Belt	501	13.17	86.63
Investigation	1,659	20.80	78.66
Other Vehicle	658	22.19	77.20

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

Purpose	Number	% Total	% White	% Black	Ratio
					Black:White
Total Stops	146,492	-	41.03	55.36	-
Total Searches	12,174	8.31	5.03	11.07	2.20
Speed Limit	43,238	3.28	1.93	4.87	2.52
Stop Light/Sign	9,846	6.08	3.49	8.67	2.48
Driving Impaired	858	48.60	51.58	43.97	0.85
Safe Movement	11,885	10.33	8.69	12.03	1.38
Vehicle Equipment	22,312	11.16	7.38	13.35	1.81
Vehicle Regulatory	29,990	8.37	4.01	11.24	2.80
Seat Belt	6,364	9.22	3.86	12.34	3.20
Investigation	13,752	15.03	8.45	19.59	2.32
Other Vehicle	8,247	10.42	6.44	13.28	2.06

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

Purpose	Number	% Total	% White	% Black	Ratio
					Black:White
Total Stops	83,058	-	36.59	60.76	-
Total Searches	1,893	2.28	1.54	2.79	1.81
Speed Limit	29,542	0.79	0.55	1.00	1.82
Stop Light/Sign	6,067	1.55	1.18	1.89	1.60
Driving Impaired	132	34.09	30.00	37.14	1.24
Safe Movement	6,165	2.90	2.02	3.53	1.75
Vehicle Equipment	11,061	3.24	2.78	3.45	1.24
Vehicle Regulatory	19,586	2.53	1.62	3.05	1.88
Seat Belt	2,257	2.35	1.46	2.80	1.92
Investigation	5,496	6.55	4.72	7.64	1.62
Other Vehicle	3,752	2.80	2.21	3.14	1.42

Table A4. Type of Search by Race: Men

Search Type	Number	% Total	% White	% Black	Ratio
					Black:White
Total Stops	146,492	-	41.03	55.36	-
Total Searches	12,174	8.31	5.03	11.07	2.20
Consent	6,953	4.75	2.87	6.34	2.21
Search Warrant	8	0.01	0.00	0.01	-
Probable Cause	2,135	1.46	0.53	2.23	4.21
Incident to Arrest	2,607	1.78	1.49	2.03	1.36
Protective Frisk	471	0.32	0.15	0.46	3.07

Table A5. Type of Search by Race: Women

Search Type	Number	% Total	% White	% Black	Ratio Black:White
Total Stops	83,058	-	36.59	60.76	-
Total Searches	1,893	2.28	1.54	2.79	1.81
Consent	1,075	1.29	0.98	1.52	1.55
Search Warrant	2	0.00	0.00	0.00	-
Probable Cause	341	0.41	0.22	0.54	2.45
Incident to Arrest	435	0.52	0.31	0.66	2.13
Protective Frisk	40	0.05	0.03	0.06	2.00

Figure A6. Stops by Day of the Week

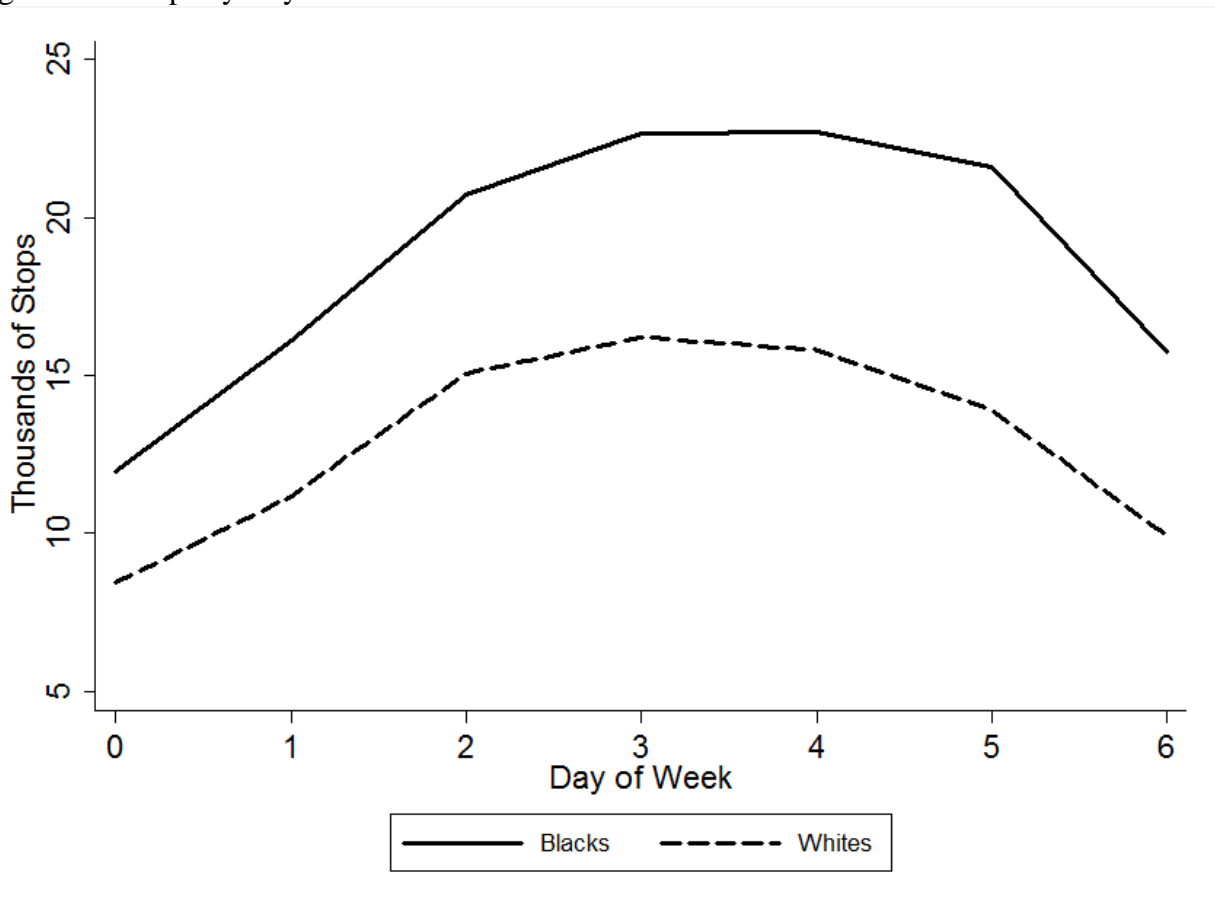


Figure A7. Searches by Day of the Week

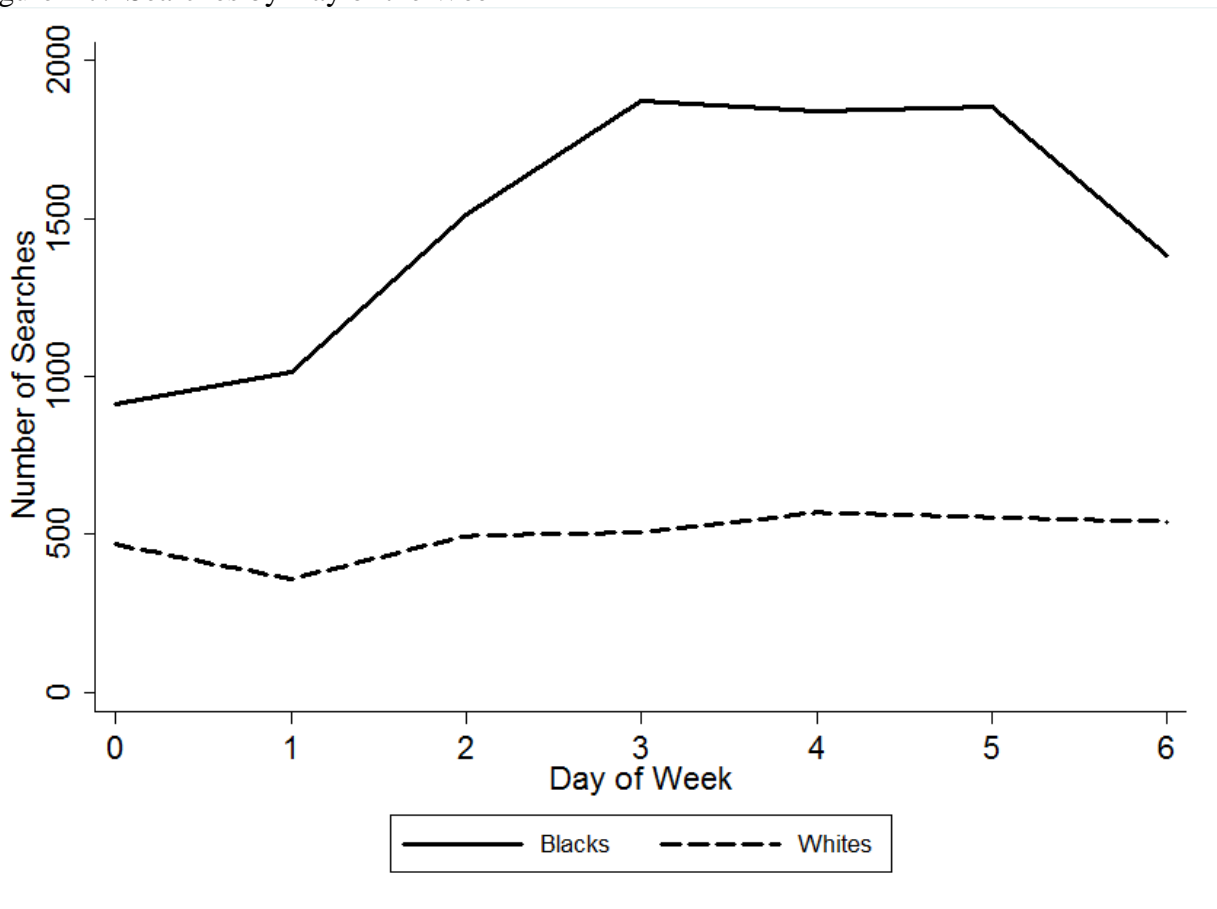
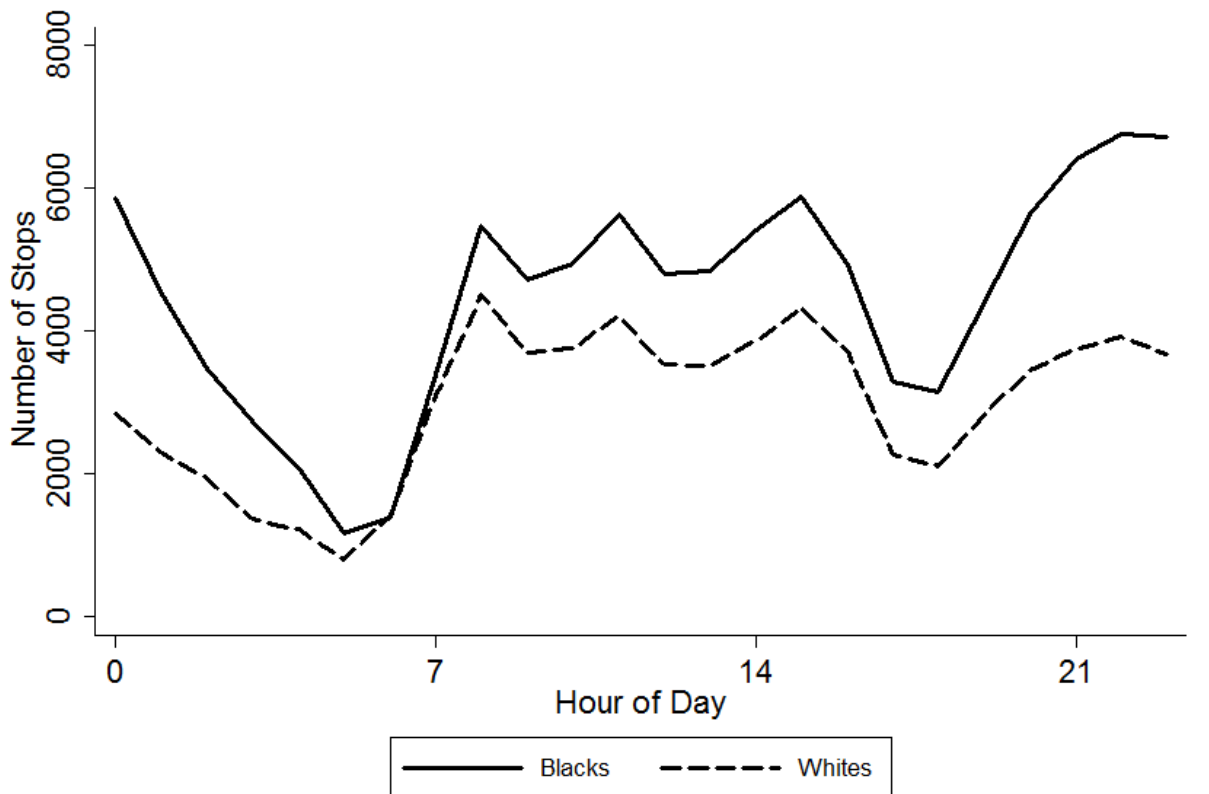
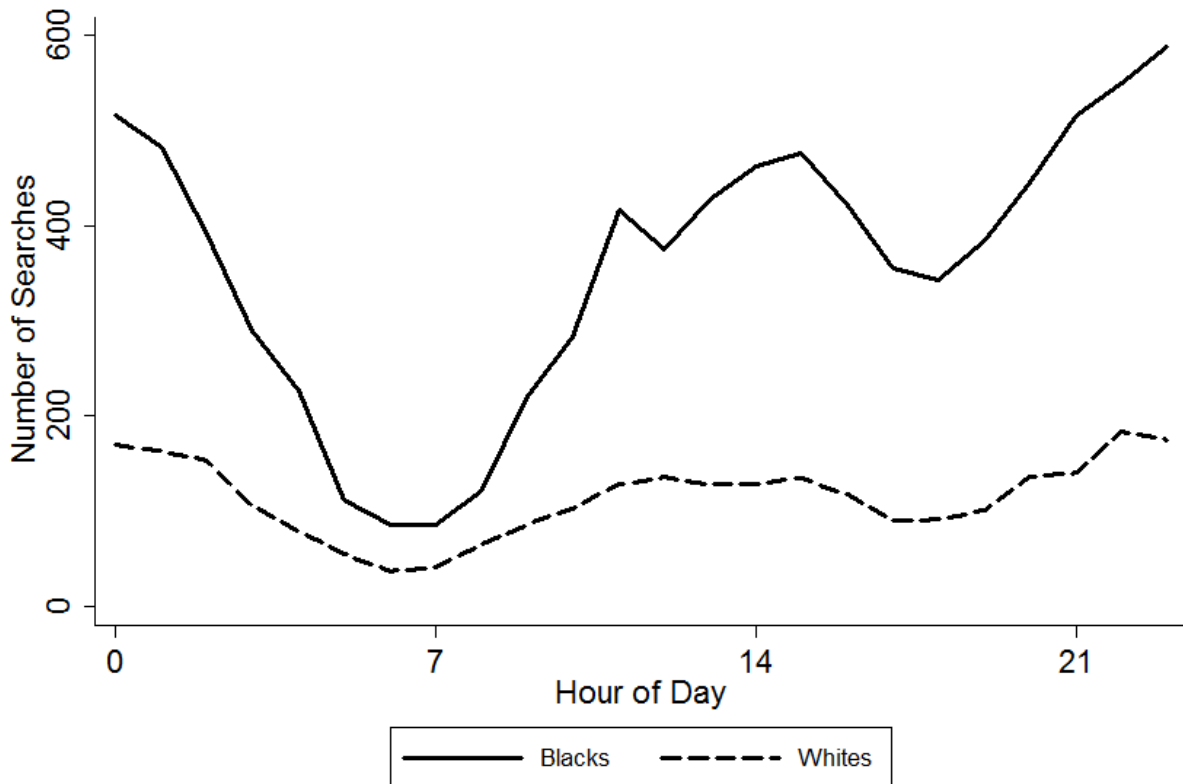


Figure A8. Stops by Hour of the Day



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



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

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

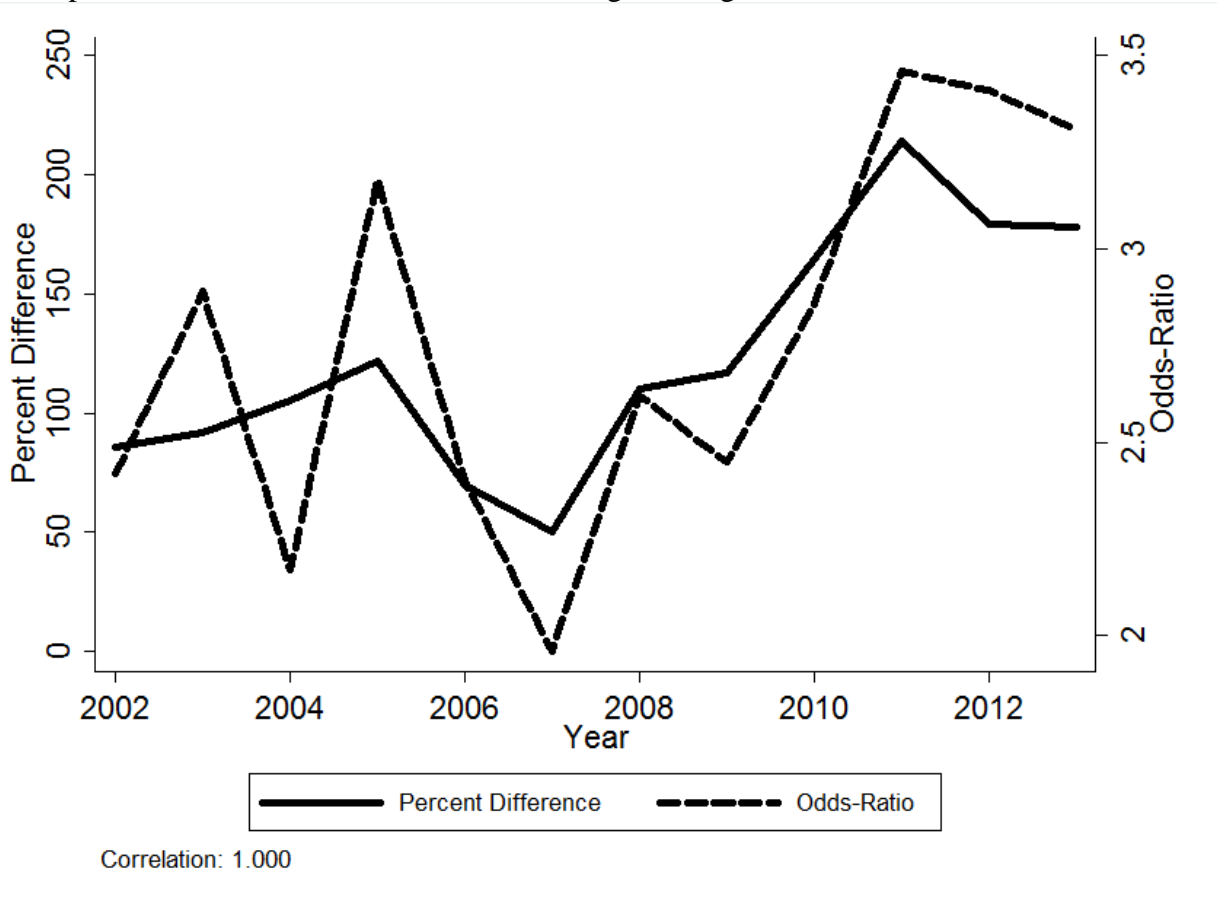
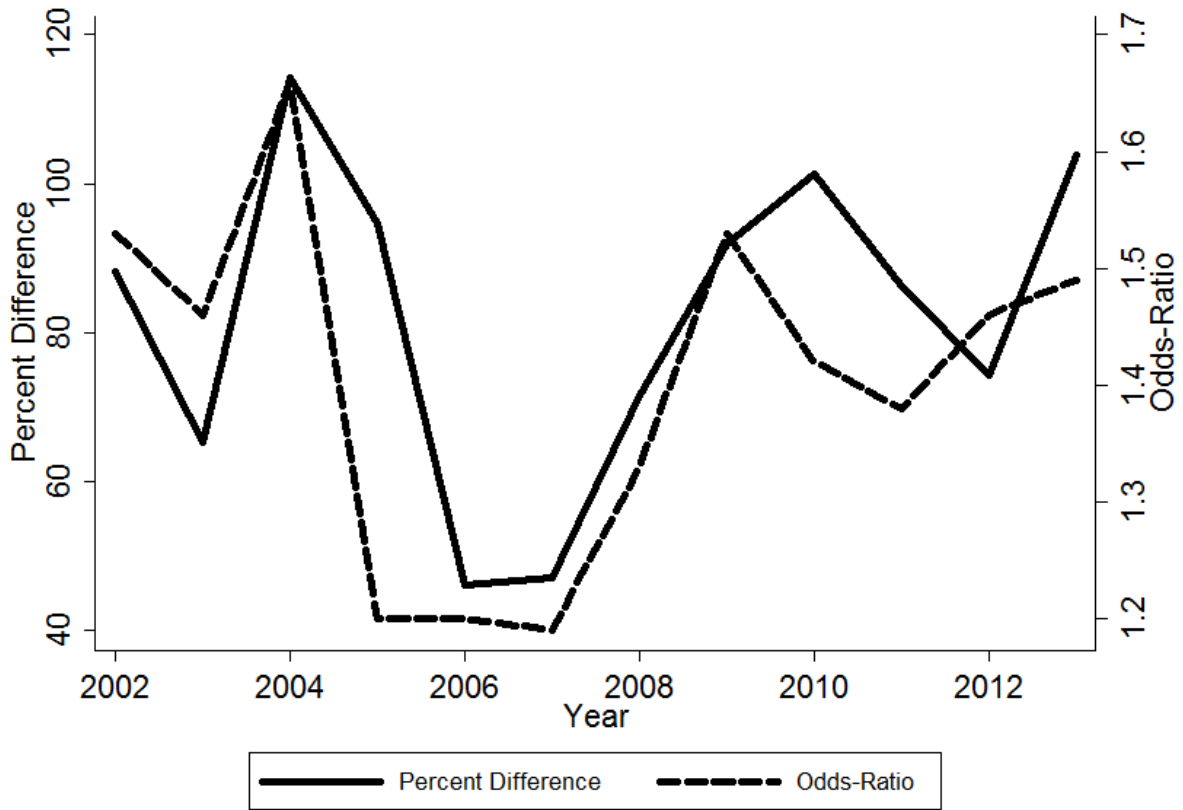
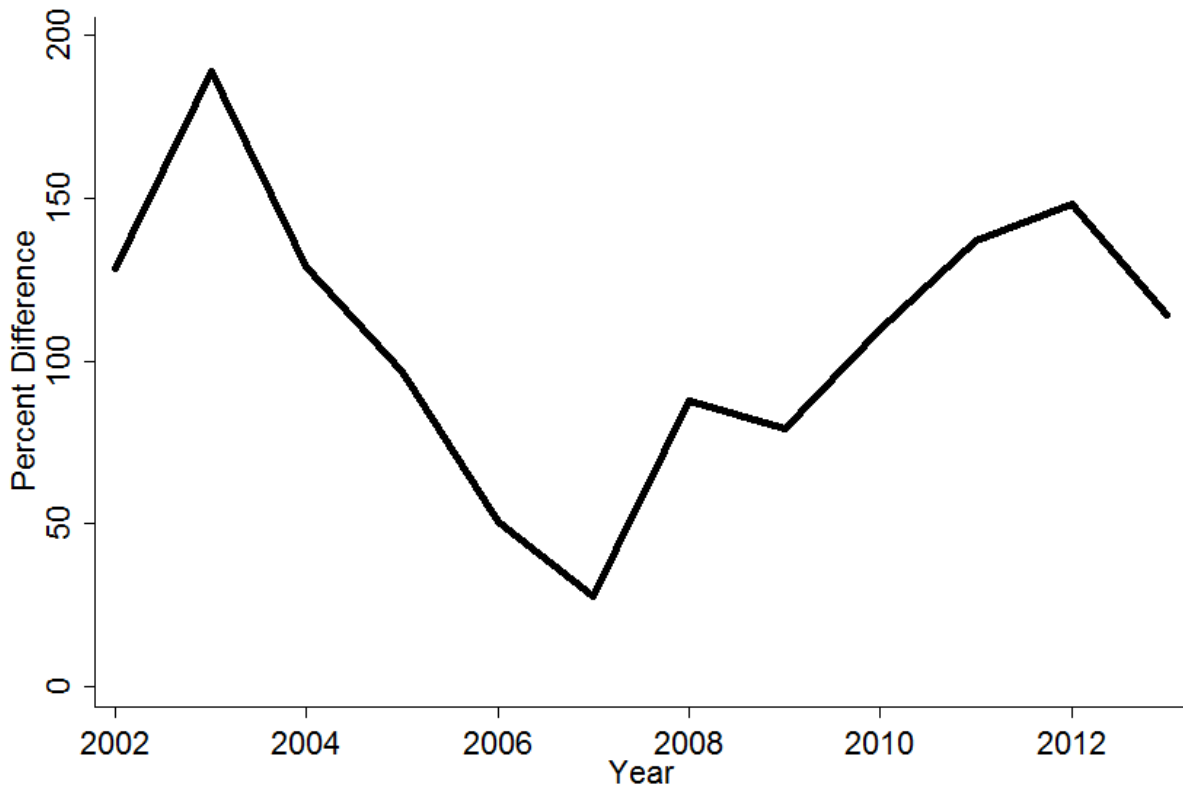


Figure A11. Correlation Between Percent Difference in Likelihood of Black Women being Searched as Compared to Whites and Odds-Ratios from Logistic Regression



Correlation: 1.000

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	3,409	24.23	19.12	26.10
No	10,658	75.77	80.88	73.90
Total	14,067	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	87,009	3.11	32.16	6.30	57.73	0.70	100.0
Black	No	121,180	4.49	39.12	6.36	49.35	0.69	100.0
Total	No	215,483	3.87	35.96	6.31	53.18	0.69	100.0
White	Yes	3,493	2.75	22.30	7.21	35.96	31.78	100.0
Black	Yes	10,389	2.98	22.41	6.14	43.41	25.06	100.0
Total	Yes	14,067	2.93	22.41	6.42	41.37	26.88	100.0