

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

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Table 1. Overview of the Data

Data Subsets	Observations
Total stops	106,010
-2014	2,617
-Passengers	5,408
-Checkpoint stops	263
Total number of cases deleted	8,213
Stops for analysis	97,797
Searches	8,194
Percent of stops leading to search (search rate)	8.38%

Figure 1. Number of Traffic Stops per Year

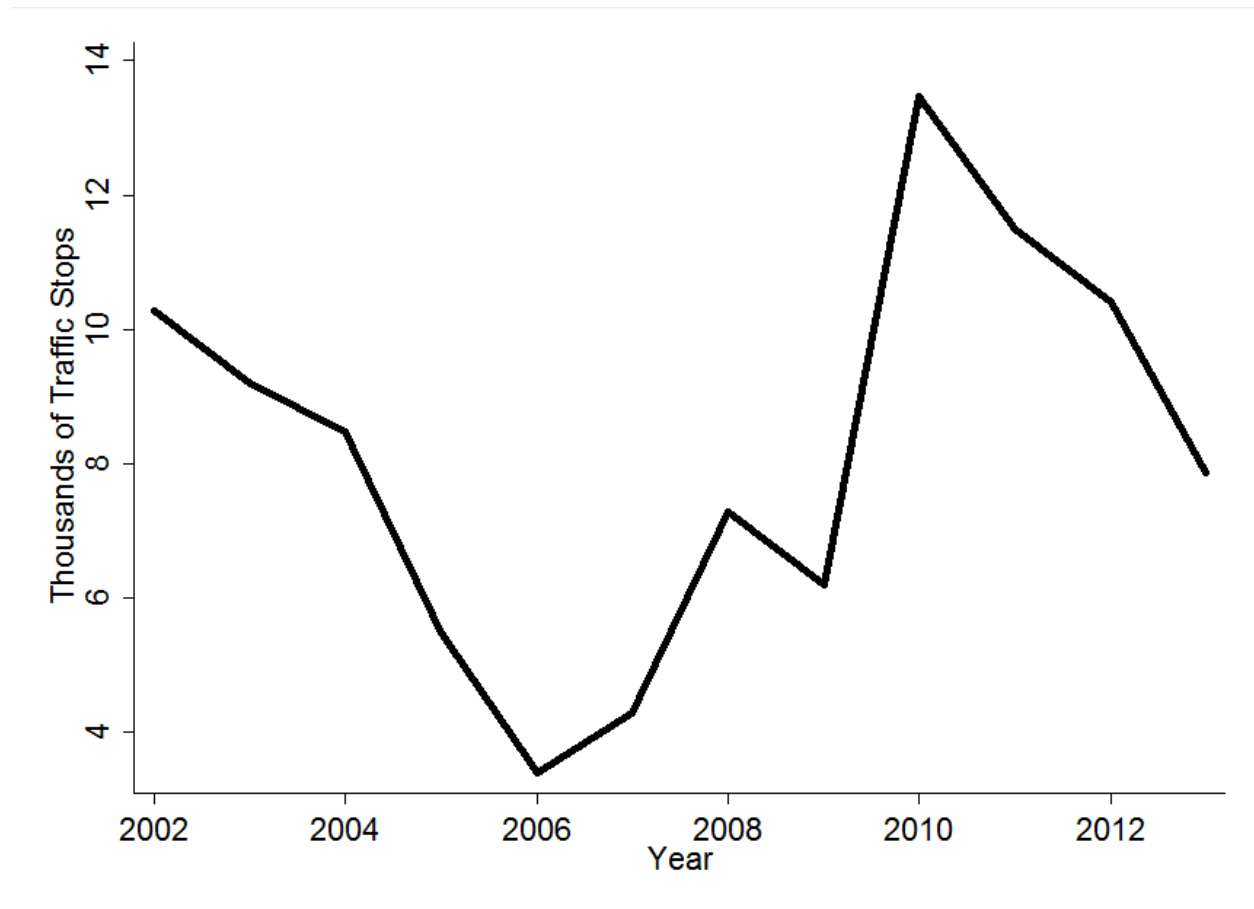


Figure 2. Racial Composition of Traffic Stops by Year

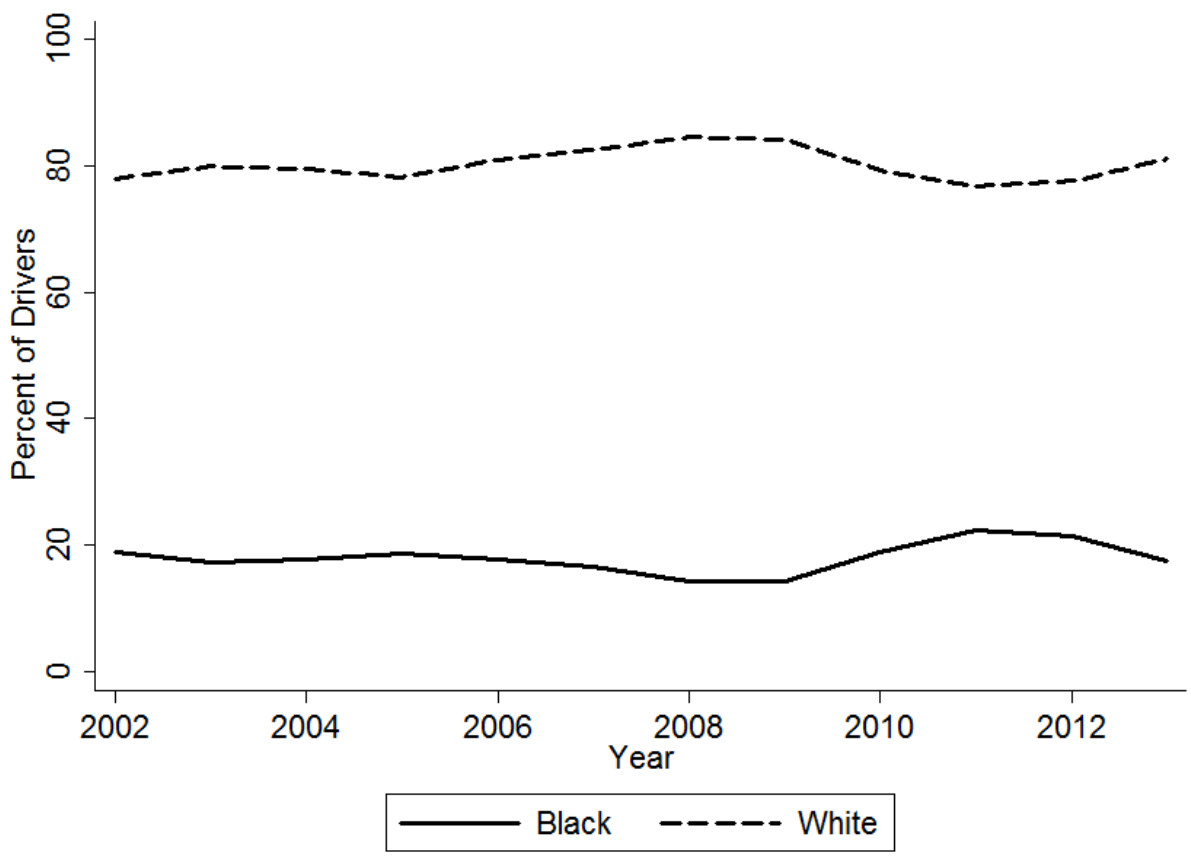


Table 2. Racial Composition of Traffic Stops by Purpose, Drivers

Purpose	Number	Percent	
		White	Black
Total Stops	97,797	79.77	18.39
Speed Limit	36,437	86.96	11.11
Stop Light/Sign	8,264	78.05	19.69
Driving Impaired	1,027	84.91	11.39
Safe Movement	10,756	79.36	18.44
Vehicle Equipment	8,295	73.25	25.09
Vehicle Regulatory	17,875	75.33	23.56
Seat Belt	3,749	79.75	18.83
Investigation	6,745	69.25	28.61
Other Vehicle	4,649	70.29	27.55

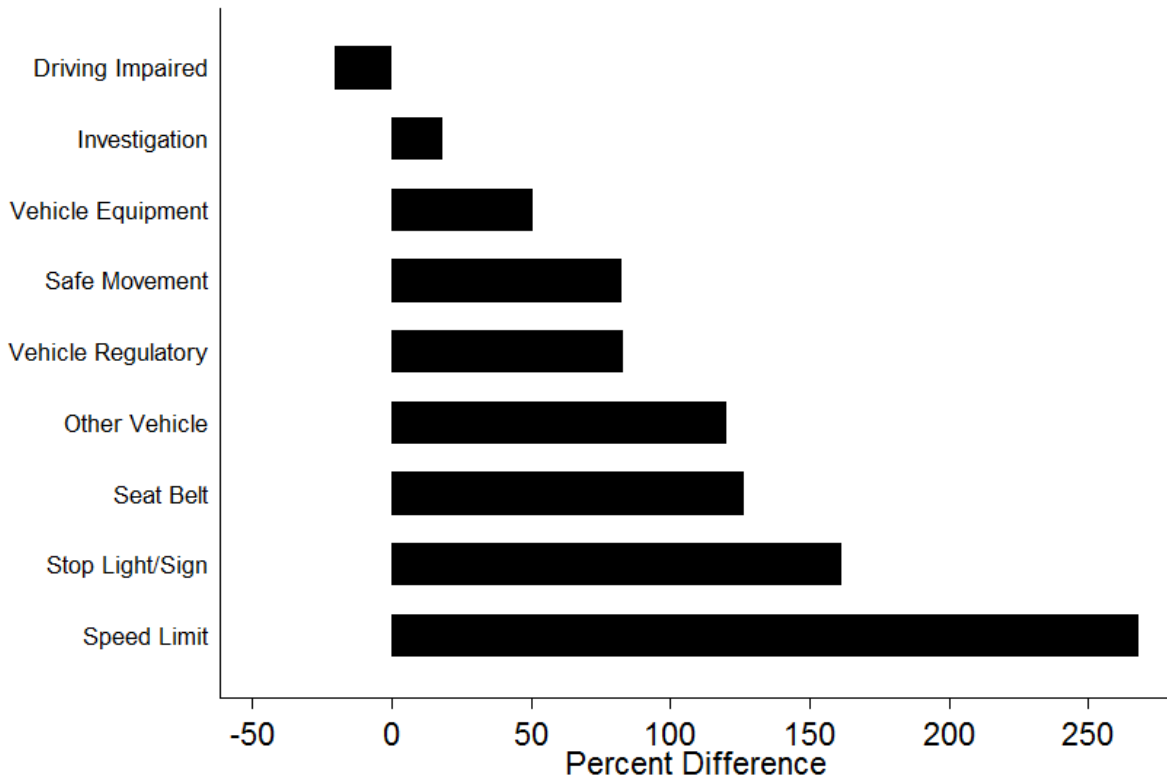
Note: Includes only drivers. Excludes 263 checkpoint stops. Excludes 5,408 passengers.

Table 3. Percent Searched by Race and Purpose of Stop

Purpose	Number	% Total	% White	% Black	Ratio
					Black:White
Total Stops	97,797	-	79.77	18.39	-
Total Searches	8,194	8.38	6.89	14.75	2.14
Speed Limit	36,437	2.31	1.77	6.52	3.68
Stop Light/Sign	8,264	6.44	4.87	12.72	2.61
Driving Impaired	1,027	53.55	54.70	43.59	0.80
Safe Movement	10,756	12.35	10.73	19.62	1.83
Vehicle Equipment	8,295	13.04	11.57	17.44	1.51
Vehicle Regulatory	17,875	9.20	7.65	14.01	1.83
Seat Belt	3,749	7.12	5.75	13.03	2.27
Investigation	6,745	20.61	19.57	23.11	1.18
Other Vehicle	4,649	12.02	8.90	19.59	2.20

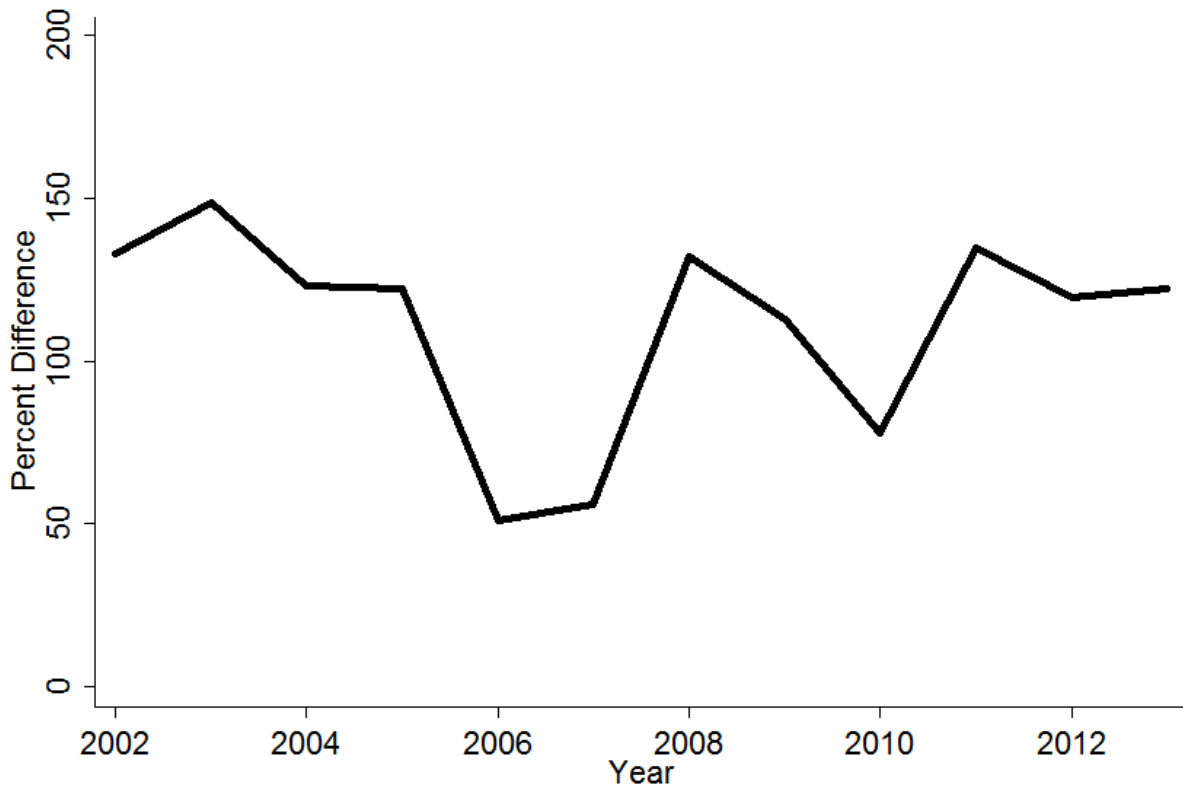
Note: See the appendix for this same table broken down for Men and Women.

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



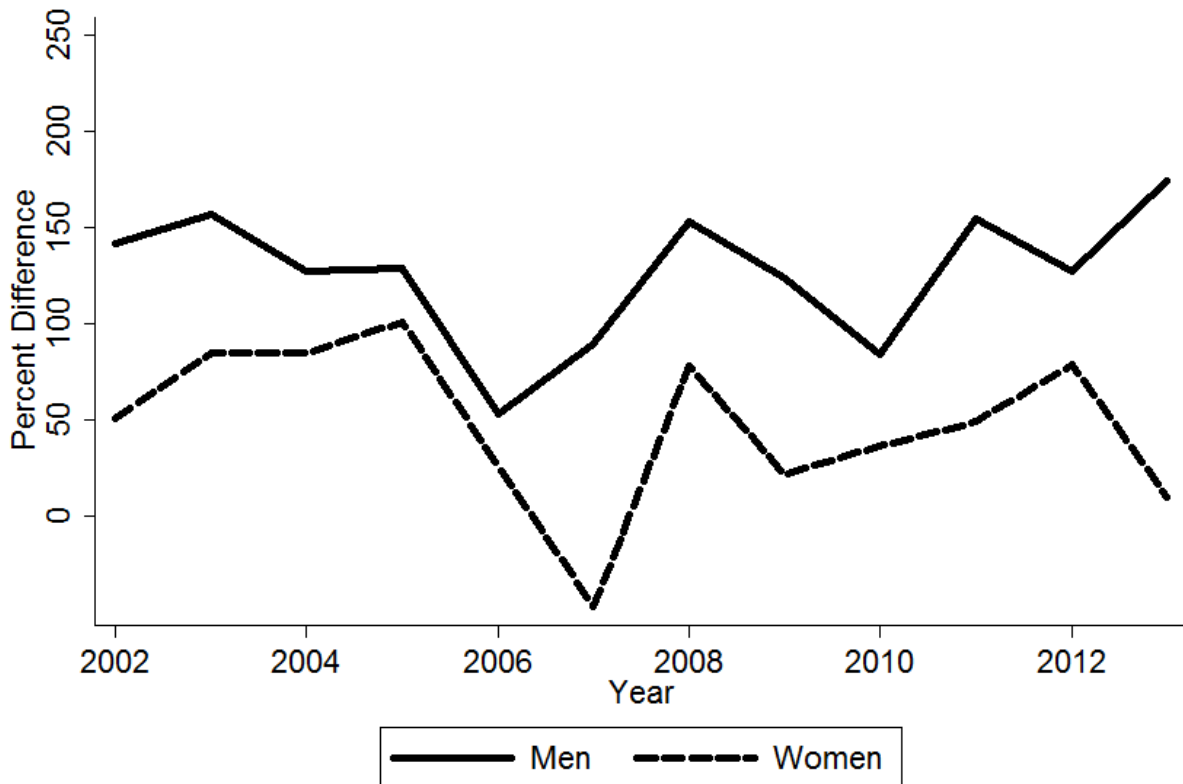
The figure shows the percentage difference in the likelihood of Blacks being searched as compared to Whites by purpose of stop.

Figure 4. Racial Differences in the Likelihood of Search



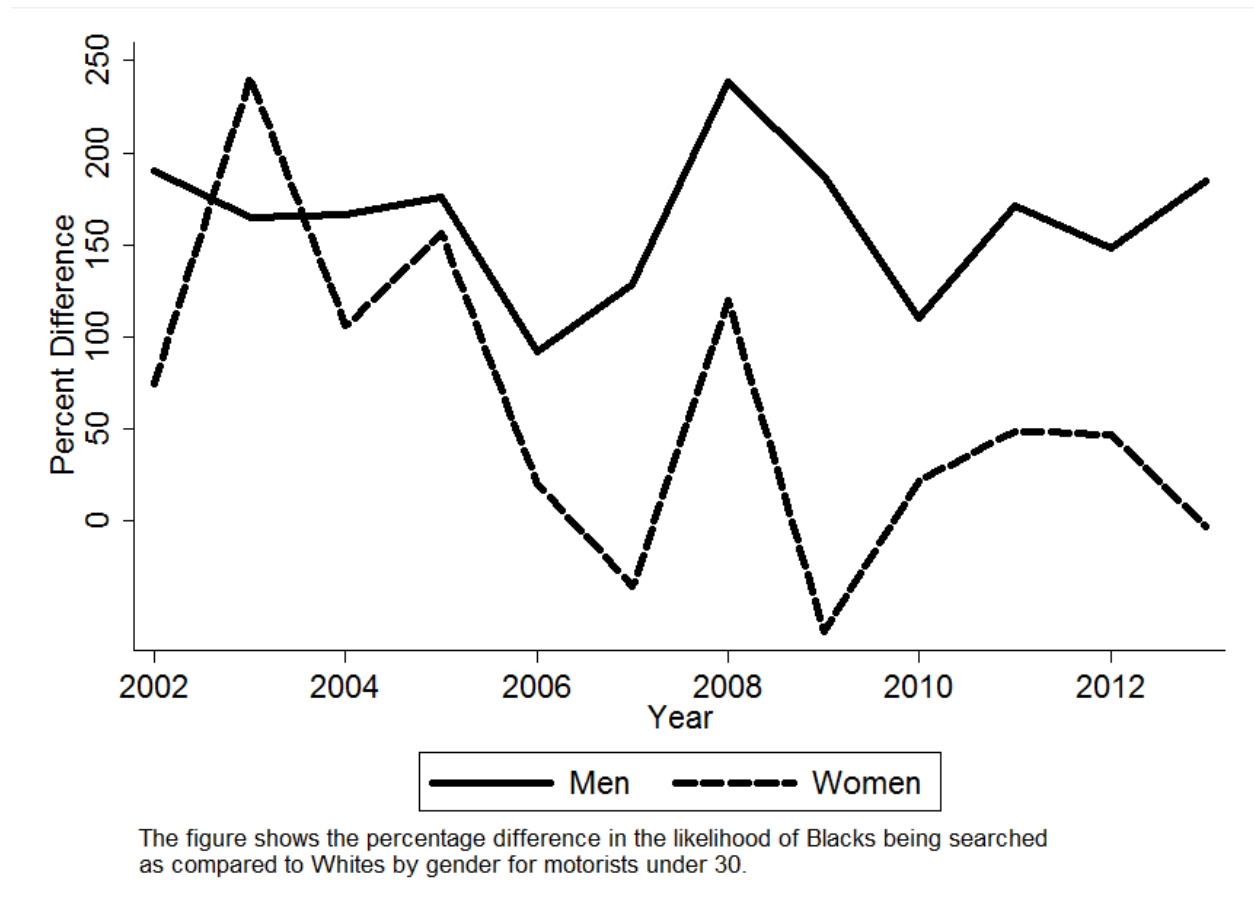
The figure shows the percentage difference in the likelihood of Blacks being searched as compared to Whites.

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



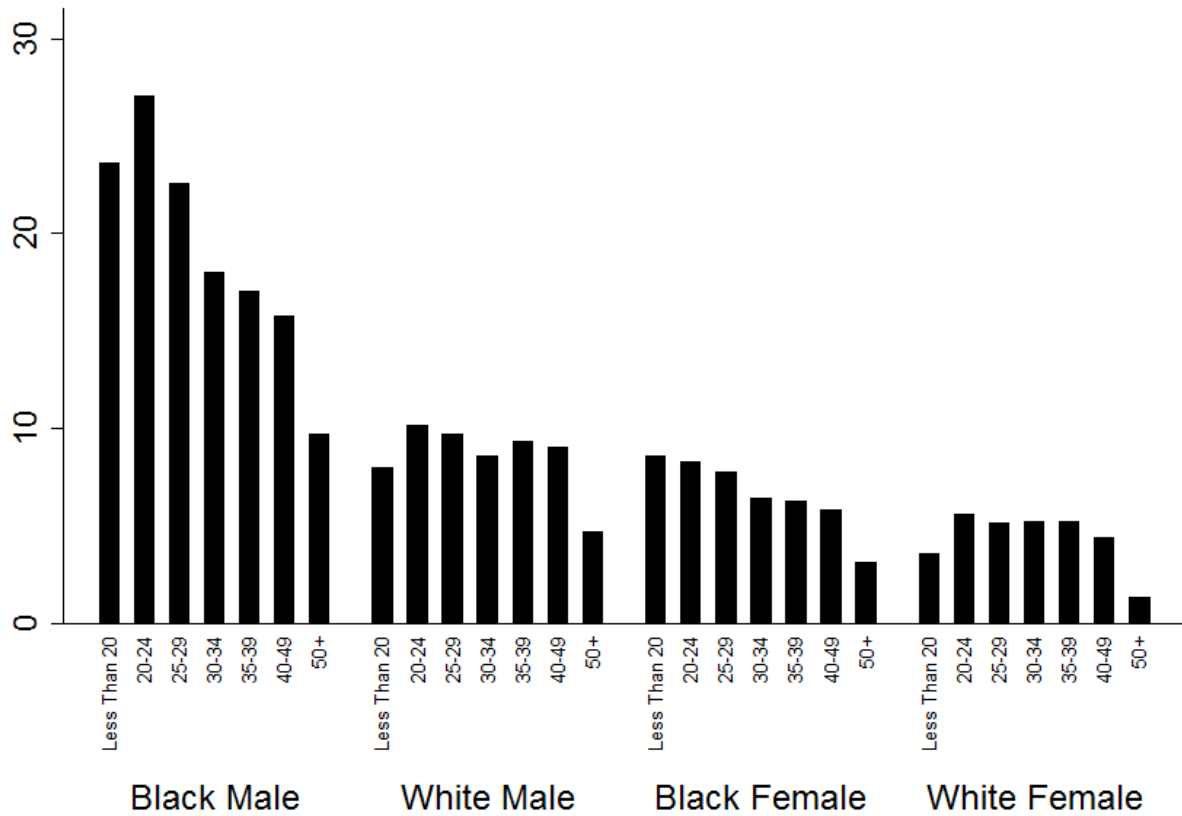
The figure shows the percentage difference in the likelihood of Blacks being searched as compared to Whites by gender.

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 97,797 traffic stops from 2002 through 2013, and 8,194 searches. Overall rate of search: 8.38 percent.

Figure 8. Number of Stops, by Race and Gender

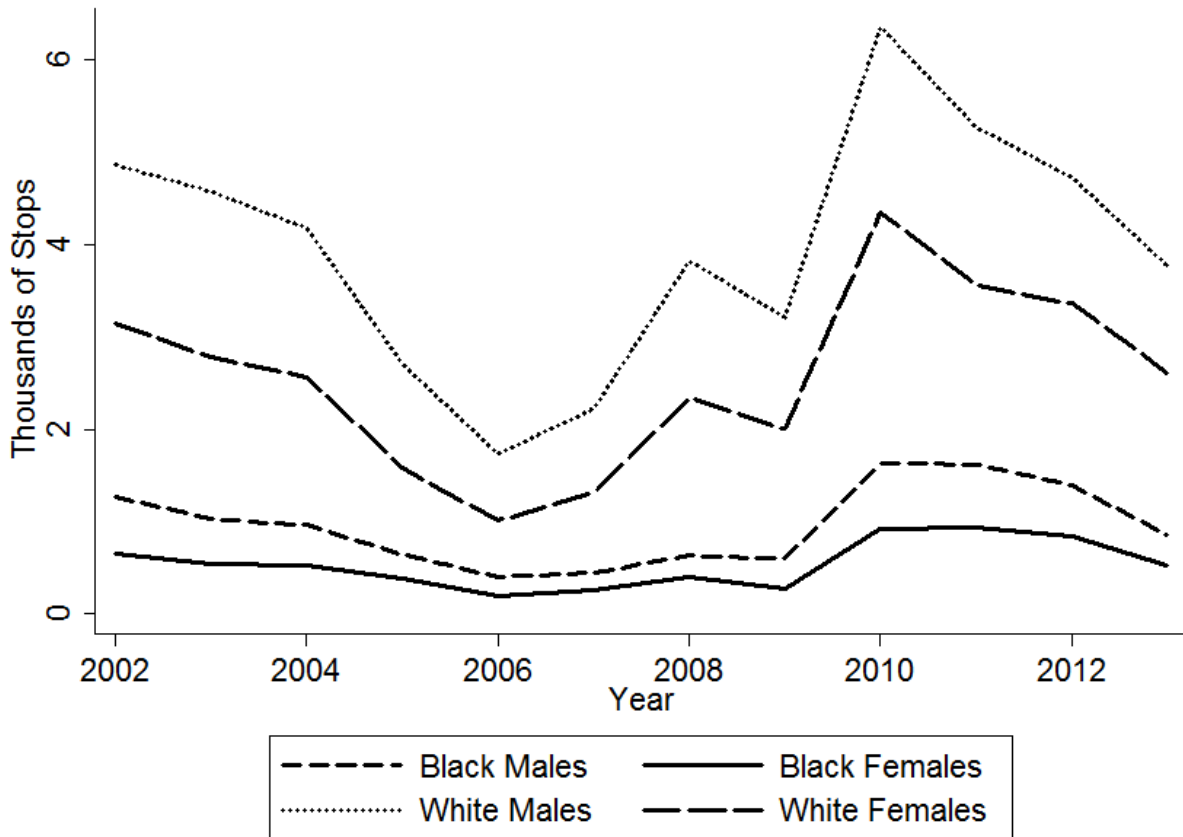


Figure 9. Percent of Stops Resulting in a Search, by Race and Gender

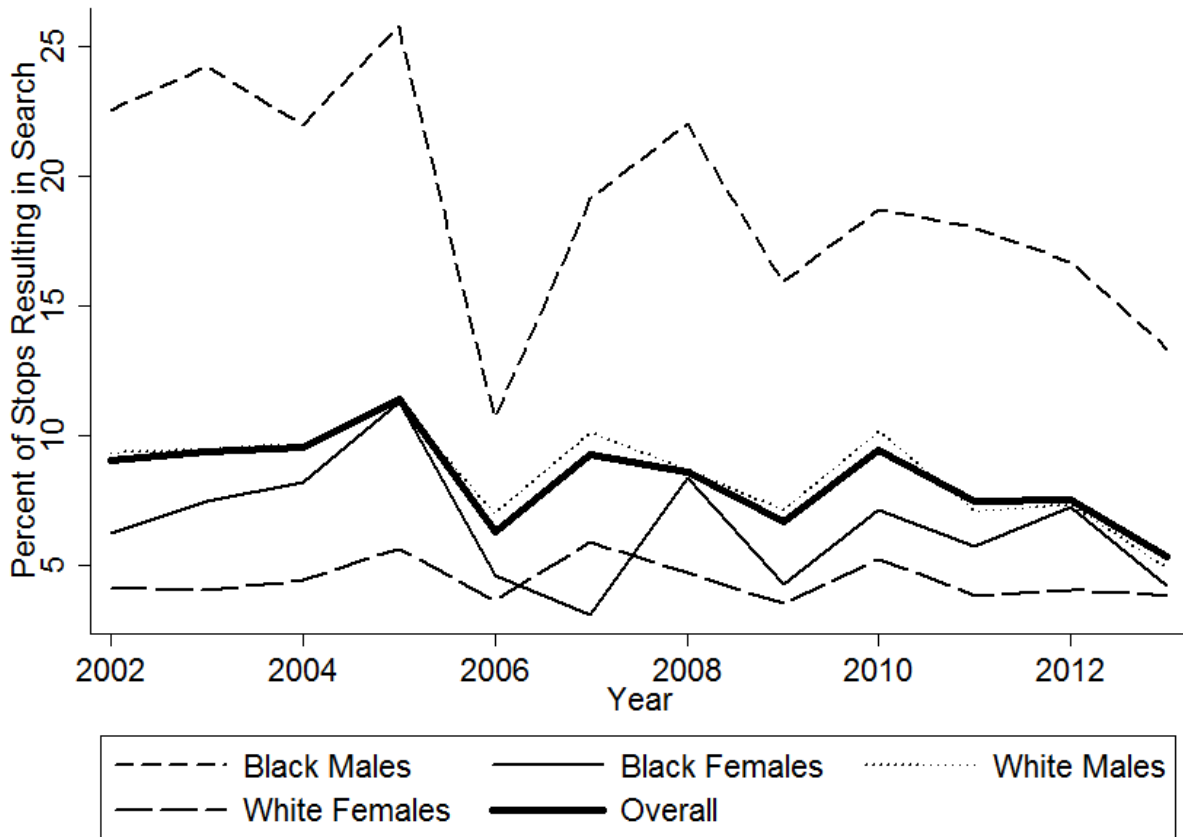


Table 4. Type of Search by Race

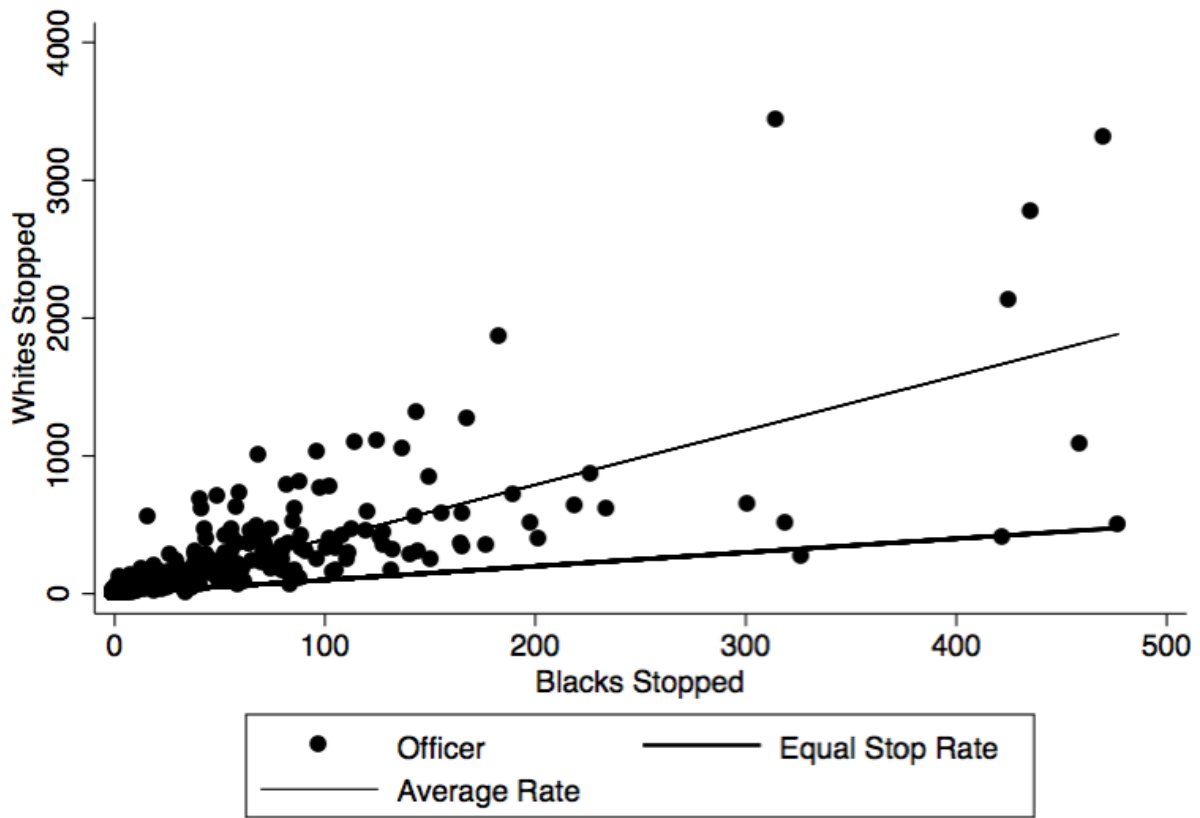
Search Type	Number	% Total	% White	% Black	Ratio Black:White
Total Stops	97,797	-	79.77	18.39	-
Total Searches	8,194	8.38	6.89	14.75	2.14
Consent	4,012	4.10	3.43	6.99	2.04
Search Warrant	10	0.01	0.01	0.02	2.00
Probable Cause	1,418	1.45	1.11	2.90	2.61
Incident to Arrest	2,382	2.44	2.04	4.18	2.05
Protective Frisk	372	0.38	0.30	0.67	2.23

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

Table 5. Distribution of Officer IDs by Stop

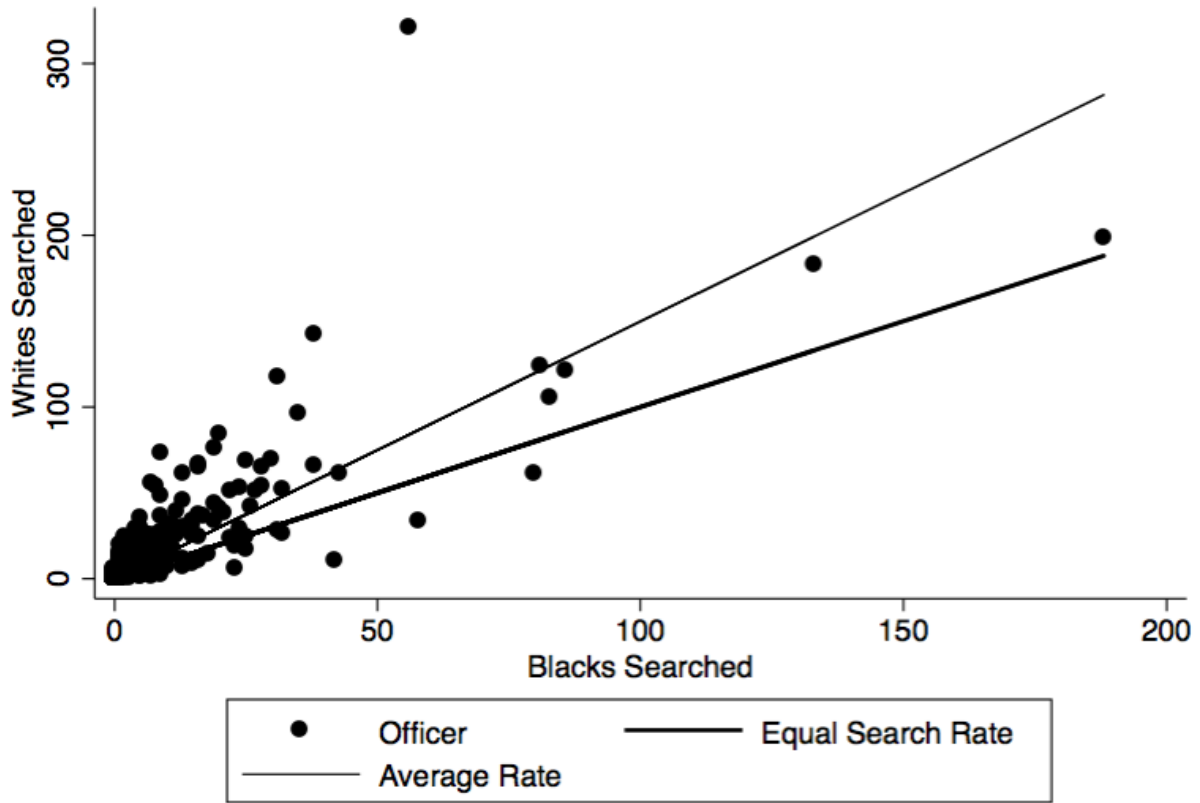
Number of Stops	Officers w/ this many Stops	Percent of Officers	Cumulative Percent	Percent of Stops	Cumulative Percent
1	418	40.94	40.94	0.43	0.43
2 – 10	258	25.27	66.21	1.01	1.44
11 - 100	156	15.28	81.49	6.62	8.06
101 – 1,000	173	16.94	98.43	62.10	70.16
1,001 +	16	1.57	100.00	29.84	100.00
Total	1,021	100	-	100	-

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



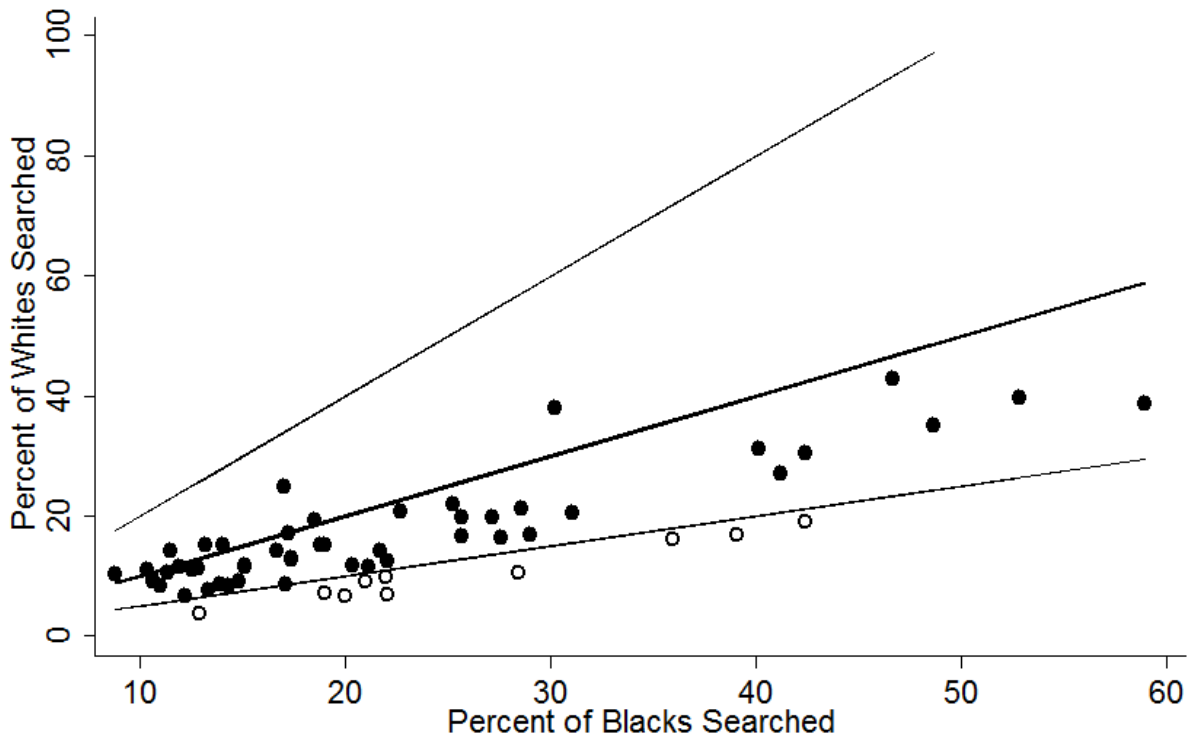
On average, officers stop 3.95 Whites for each Black stopped.

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



On average, officers search 1.50 Whites for each Black searched.

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



Includes 59 officers with a minimum of 50 White stops, 50 Black stops, and a search rate above the department average of 8.38. The hollow circles indicate high disparity officers. 0 officers search Whites at more than twice the rate that they search Blacks. 10 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	2.61*(0.08)	2.60*(0.08)	2.22*(0.07)	2.19*(0.07)	2.09*(0.08)
Hispanic	1.15*(0.07)	1.15*(0.07)	0.94(0.06)	0.94(0.06)	0.92(0.07)
Age	-	0.98*(0.00)	0.98*(0.00)	0.98*(0.00)	0.98*(0.00)
Stop Purpose					
Speed Limit	-	-	-	-	-
Stop Light	-	-	2.52*(0.17)	2.54*(0.17)	2.58*(0.21)
Impaired	-	-	43.37*(3.76)	43.55*(3.77)	39.47*(4.10)
Movement	-	-	5.15*(0.27)	5.09*(0.27)	4.72*(0.30)
Equipment	-	-	4.63*(0.26)	4.59*(0.25)	4.02*(0.28)
Regulatory	-	-	3.53*(0.18)	3.52*(0.18)	3.26*(0.21)
Seat Belt	-	-	2.55*(0.21)	2.58*(0.21)	2.48*(0.31)
Investigation	-	-	8.06*(0.43)	8.04*(0.43)	6.97*(0.46)
Other	-	-	4.34*(0.29)	4.34*(0.29)	4.40*(0.35)
Officer Type					
Black Disparity [†]	-	-	-	1.42*(0.08)	1.61*(0.10)
White Disparity [‡]	-	-	-	Omitted	Omitted
Time					
Hour of Day	-	-	-	-	Included
Day of Week	-	-	-	-	Included
Constant	0.09*(0.00)	0.18*(0.01)	0.06*(0.00)	0.06*(0.00)	0.06*(0.01)
N	58,901	58,901	58,901	58,901	44,102
Pseudo R²	0.03	0.03	0.11	0.11	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.

* = Significant at 0.05 p-value

† = Coded 1 for 10 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 0 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 Drivers

Variable	Model 1	Model 2	Model 3	Model 4	Model 5
Demographics					
Race	1.55*(0.09)	1.52*(0.09)	1.21*(0.07)	1.19*(0.07)	1.16*(0.08)
Hispanic	0.63*(0.12)	0.59*(0.12)	0.50*(0.10)	0.50*(0.10)	0.35*(0.09)
Age	-	0.98*(0.00)	0.98*(0.00)	0.98*(0.00)	0.98*(0.00)
Stop Purpose					
Speed Limit	-	-	-	-	-
Stop Light	-	-	3.70*(0.46)	3.73*(0.46)	2.93*(0.44)
Impaired	-	-	69.47*(10.20)	69.79*(10.26)	37.59*(6.58)
Movement	-	-	6.95*(0.73)	6.90*(0.72)	5.18*(0.63)
Equipment	-	-	8.70*(0.92)	8.65*(0.91)	6.21*(0.77)
Regulatory	-	-	5.67*(0.54)	5.68*(0.54)	4.63*(0.52)
Seat Belt	-	-	4.42*(0.70)	4.49*(0.71)	4.13*(0.94)
Investigation	-	-	15.29*(1.57)	15.33*(1.58)	9.99*(1.21)
Other	-	-	6.69*(0.86)	6.70*(0.86)	4.60*(0.72)
Officer Type					
Black Disparity [†]	-	-	-	1.51*(0.15)	1.61*(0.18)
White Disparity [‡]	-	-	-	Omitted	Omitted
Time					
Hour of Day	-	-	-	-	Included
Day of Week	-	-	-	-	Included
Constant	0.05*(0.00)	0.10*(0.01)	0.02*(0.00)	0.02*(0.00)	0.04*(0.18)
N	37,098	37,098	37,098	37,098	28,198
Pseudo R²	0.00	0.01	0.11	0.11	0.12

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

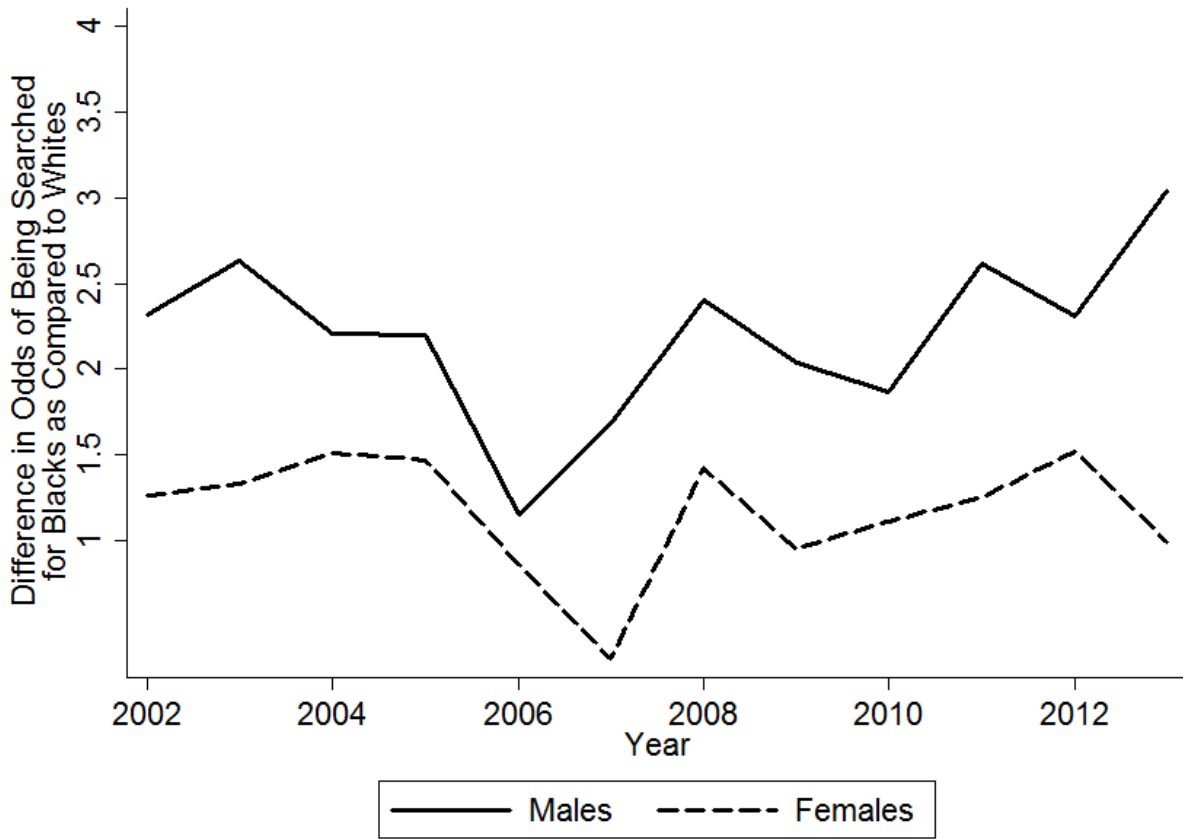
Note: The number of observations is smaller for Model 5 because the “hour of stop” variable is missing in some cases.

* = Significant at 0.05 p-value

† = Coded 1 for 10 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 0 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	5,408	57.93	40.83
Speed Limit	538	62.08	36.99
Stop Light/Sign	298	51.34	48.32
Driving Impaired	132	83.33	12.12
Safe Movement	925	61.62	36.76
Vehicle Equipment	843	56.35	42.70
Vehicle Regulatory	1,107	54.83	44.35
Seat Belt	225	58.22	39.56
Investigation	988	57.59	40.89
Other Vehicle	345	51.59	47.54

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

Purpose	Number	% Total	% White	% Black	Ratio
					Black:White
Total Stops	60,203	-	78.74	19.10	-
Total Searches	6,408	10.64	8.53	19.31	2.26
Speed Limit	21,141	3.24	2.43	9.38	3.86
Stop Light/Sign	5,034	8.20	5.92	16.91	2.86
Driving Impaired	747	57.83	59.19	46.81	0.79
Safe Movement	7,061	15.27	13.09	24.69	1.89
Vehicle Equipment	5,524	15.13	12.98	21.42	1.65
Vehicle Regulatory	10,479	11.61	9.35	18.40	1.97
Seat Belt	2,534	8.33	6.48	16.18	2.50
Investigation	4,649	23.45	21.26	28.73	1.35
Other Vehicle	3,034	17.73	10.56	24.40	2.31

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

Purpose	Number	% Total	% White	% Black	Ratio
					Black:White
Total Stops	37,612	-	81.43	17.25	-
Total Searches	1,786	4.75	4.36	6.68	2.53
Speed Limit	15,296	1.03	0.87	2.36	2.71
Stop Light/Sign	3,230	3.68	3.27	5.74	1.76
Driving Impaired	280	42.14	43.65	30.43	0.70
Safe Movement	3,695	6.77	6.42	8.41	1.31
Vehicle Equipment	2,771	8.88	8.83	9.17	1.04
Vehicle Regulatory	7,396	5.79	5.30	7.49	1.41
Seat Belt	1,215	4.61	4.27	6.25	1.46
Investigation	2,096	14.31	15.92	10.34	0.65
Other Vehicle	1,615	6.93	6.03	9.00	1.49

Table A4. Type of Search by Race: Men

Search Type	Number	% Total	% White	% Black	Ratio Black:White
Total Stops	60,203	-	78.74	19.10	-
Total Searches	6,408	10.64	8.53	19.31	2.26
Consent	3,128	5.20	4.22	9.22	2.18
Search Warrant	8	0.01	0.01	0.02	2.00
Probable Cause	1,097	1.82	1.34	3.77	2.81
Incident to Arrest	1,854	3.08	2.53	5.40	2.13
Protective Frisk	321	0.53	0.43	0.90	2.09

Table A5. Type of Search by Race: Women

Search Type	Number	% Total	% White	% Black	Ratio Black:White
Total Stops	37,612	-	81.43	17.25	-
Total Searches	1,786	4.75	4.36	6.68	1.53
Consent	884	2.35	2.22	3.04	1.37
Search Warrant	2	0.01	0.00	0.02	-
Probable Cause	321	0.85	0.76	1.34	1.76
Incident to Arrest	528	1.40	1.28	2.00	1.56
Protective Frisk	51	0.14	0.10	0.28	2.80

Figure A6. Stops by Day of the Week

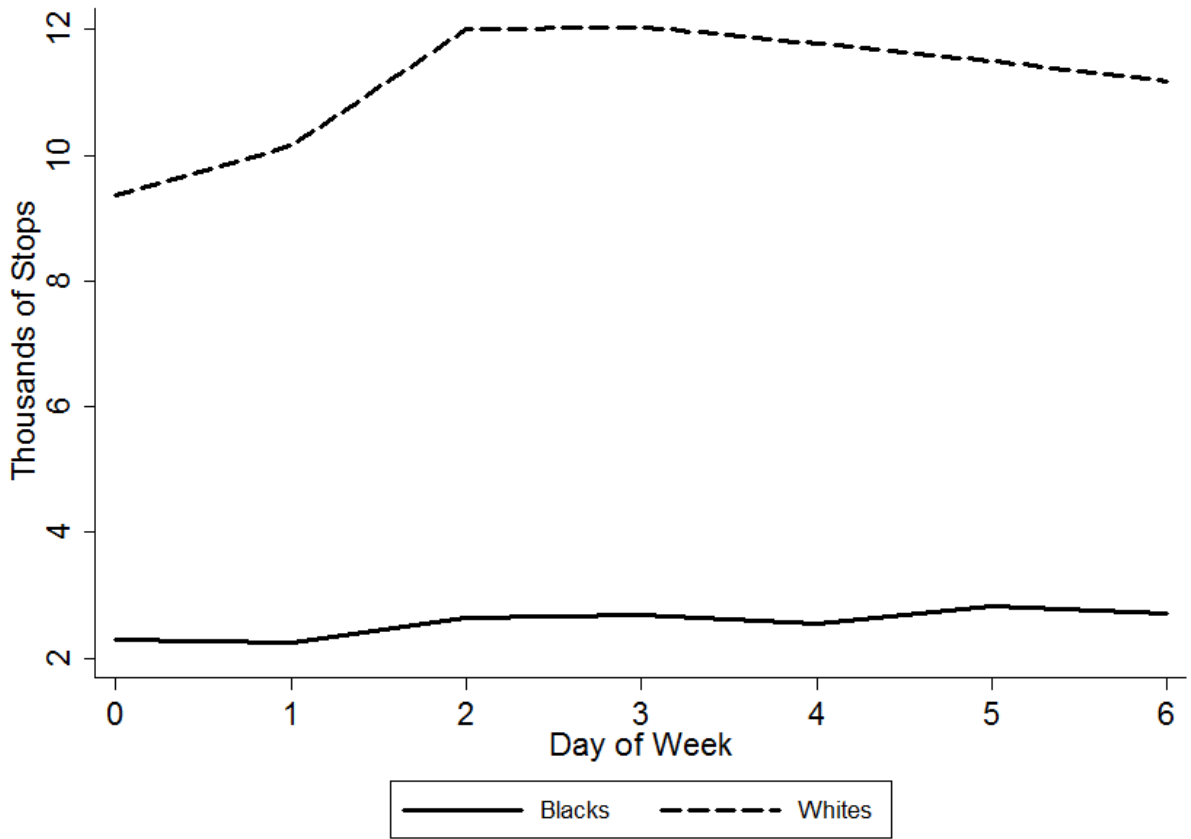


Figure A7. Searches by Day of the Week

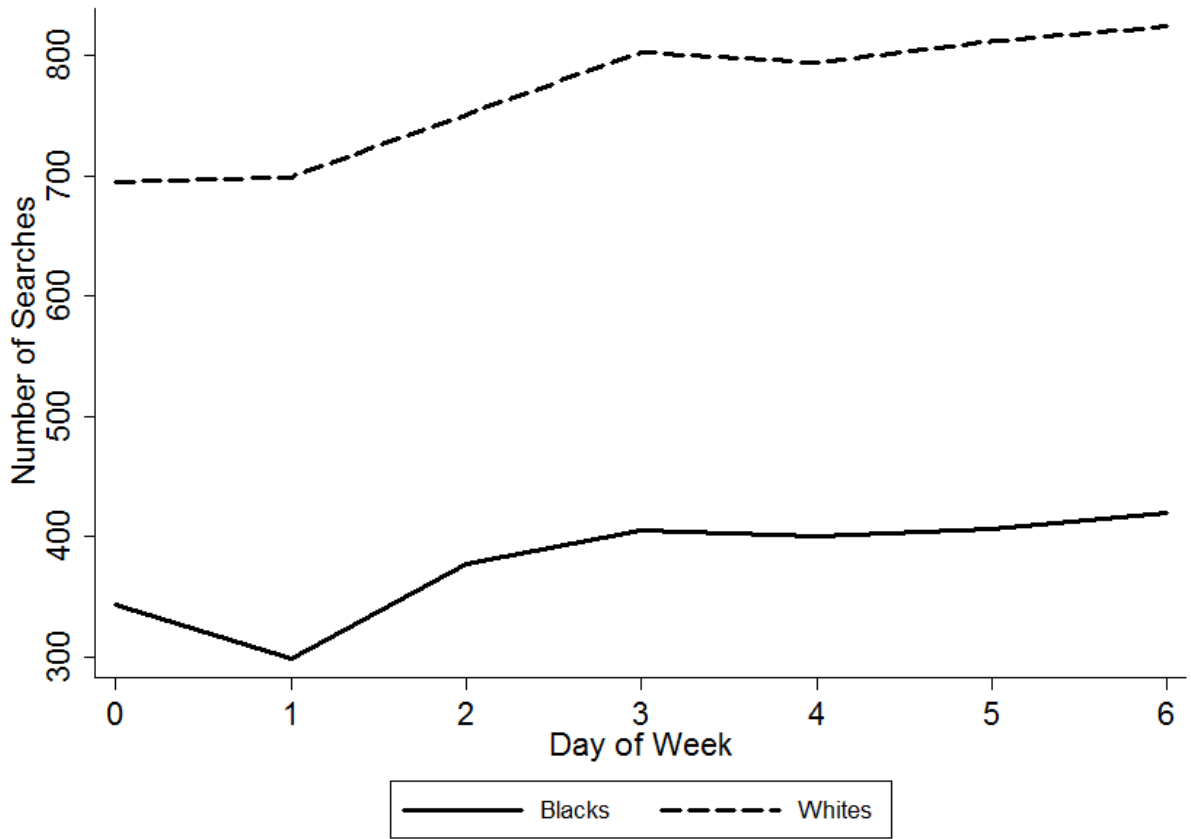
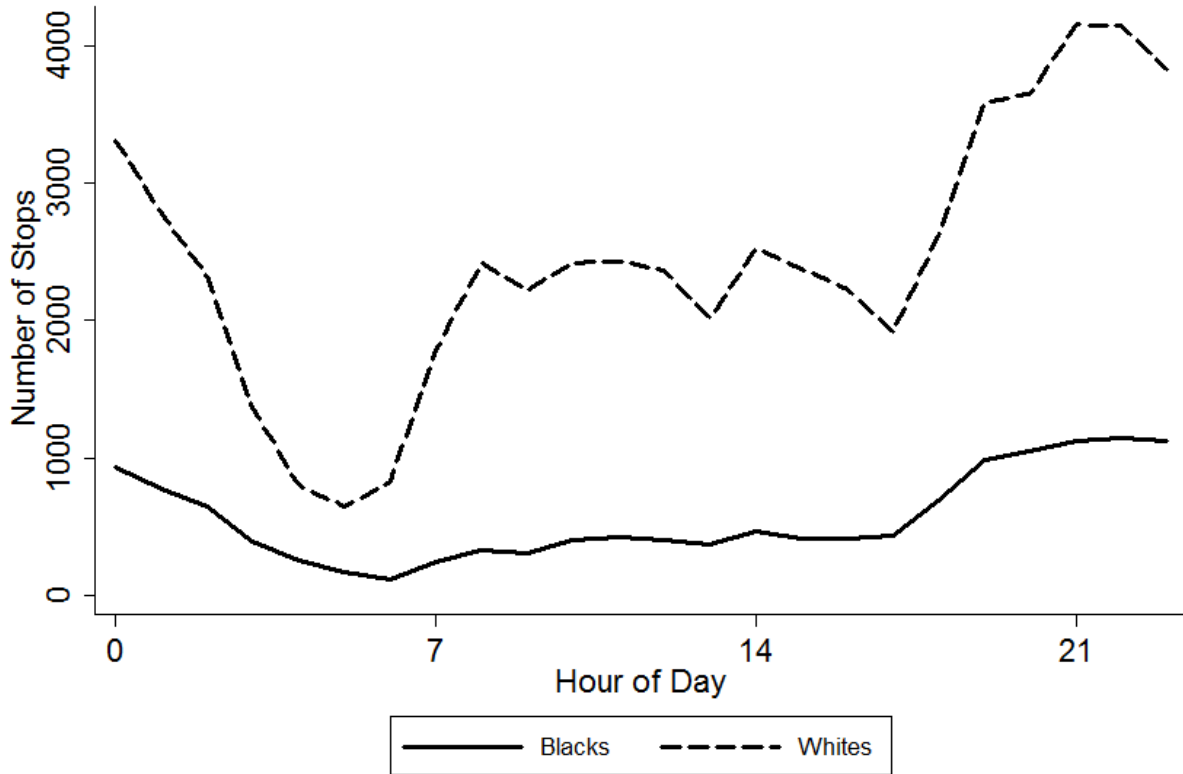
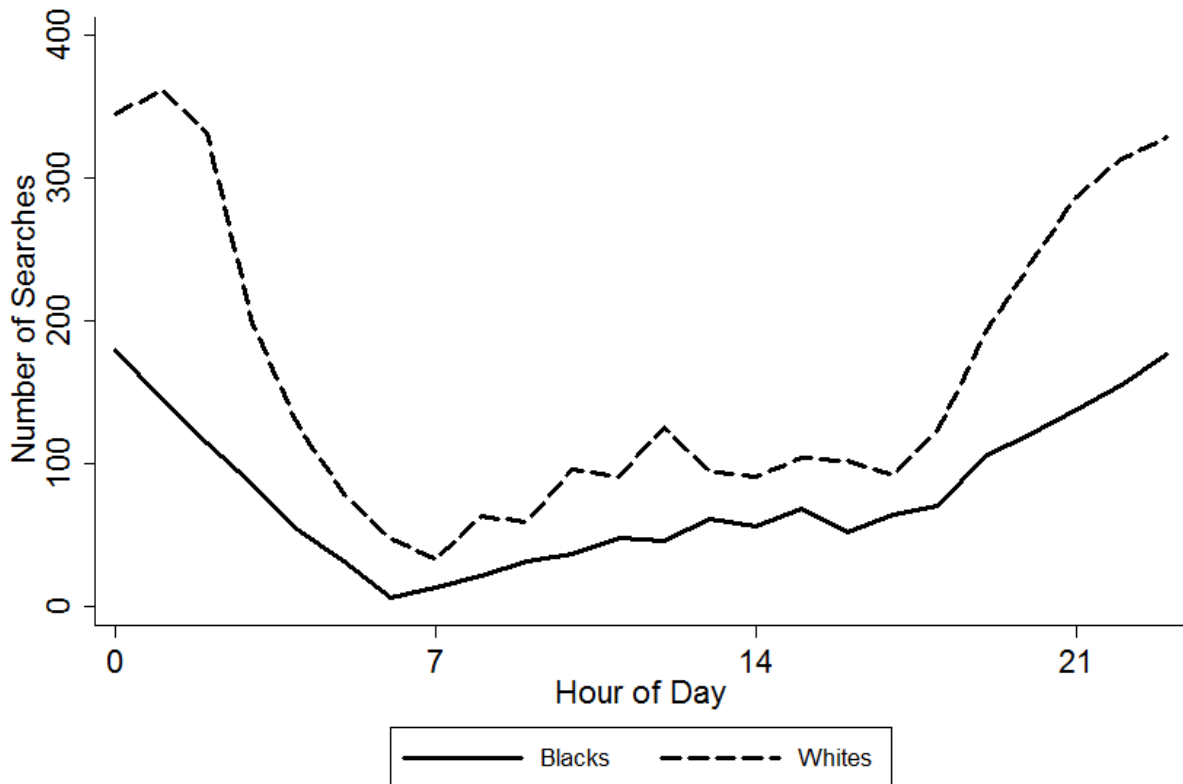


Figure A8. Stops by Hour of the Day



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

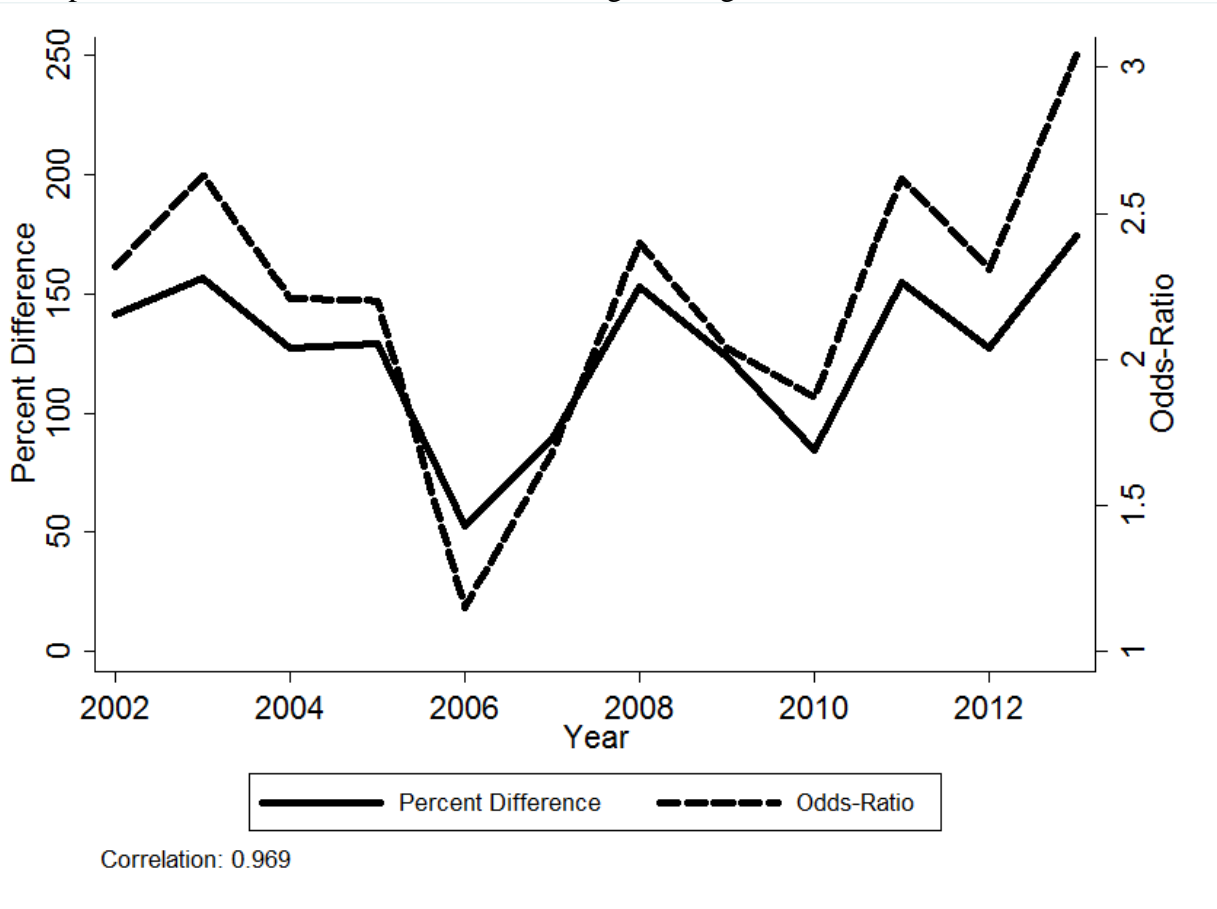


Figure A11. Correlation Between Percent Difference in Likelihood of Black Women being Searched as Compared to Whites and Odds-Ratios from Logistic Regression

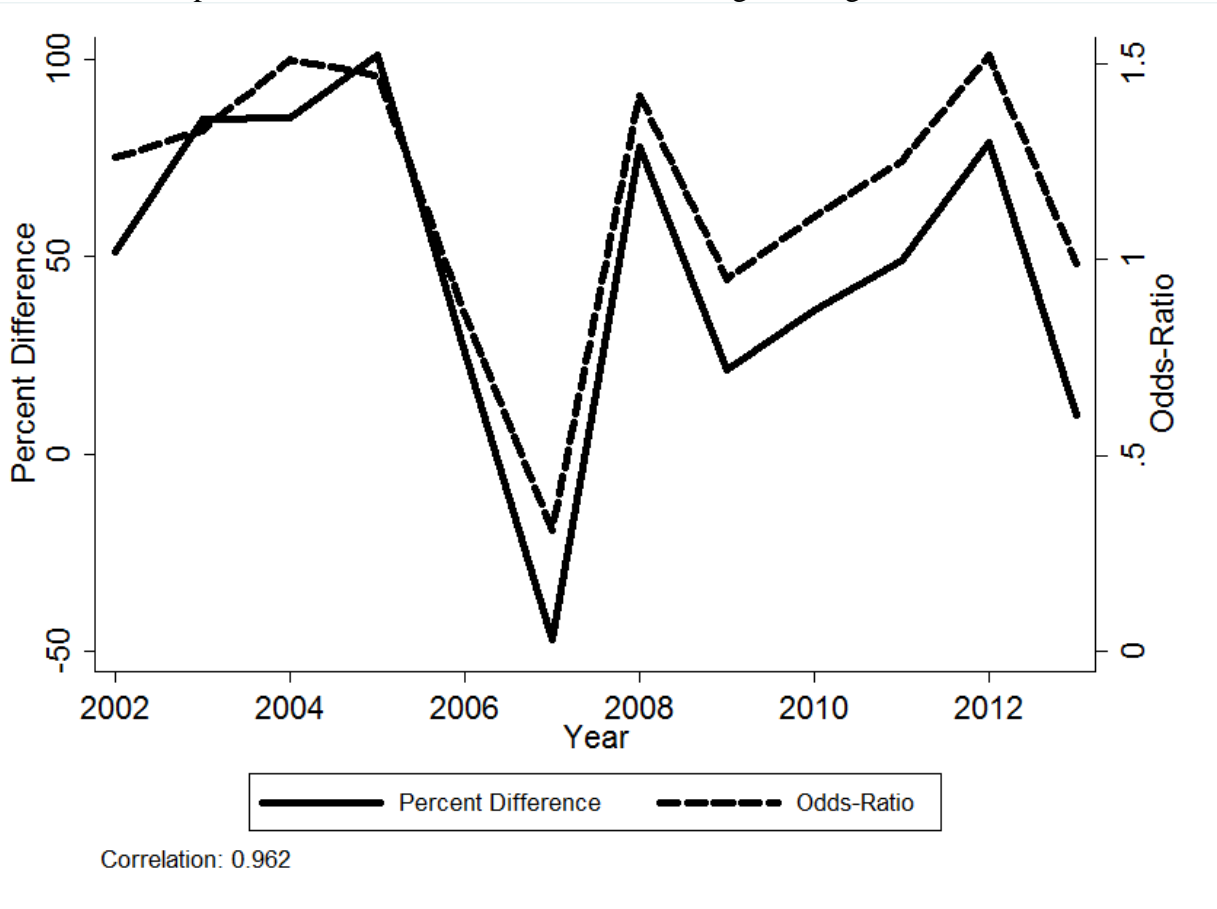
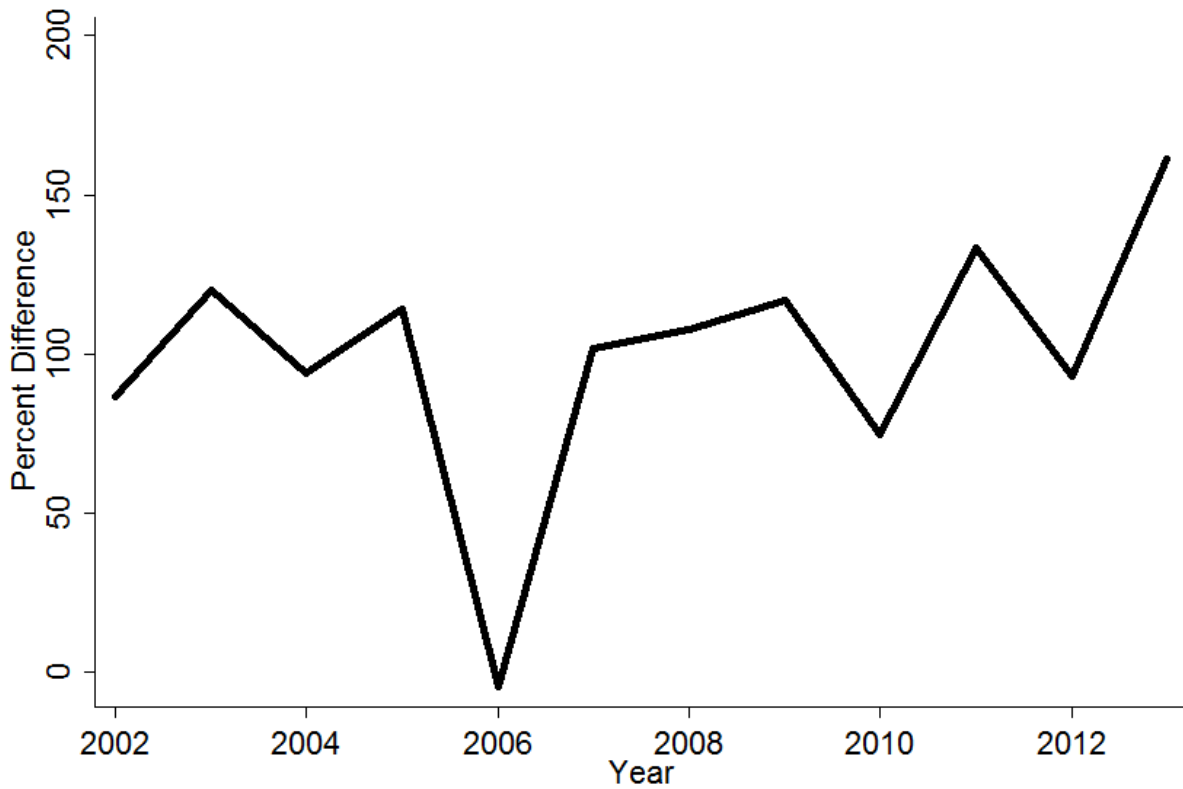


Figure A12. Racial Differences in the Likelihood of Search: Consent Searches Only



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	2,318	28.29	29.16	27.40
No	5,876	71.71	70.84	72.60
Total	8,194	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	72,636	3.31	23.45	3.90	68.25	1.09	100.0
Black	No	15,332	5.78	32.71	3.93	55.64	1.94	100.0
Total	No	89,603	3.72	24.97	3.91	66.16	1.24	100.0
White	Yes	5,378	1.51	12.07	3.83	45.31	37.28	100.0
Black	Yes	2,653	1.43	13.68	4.11	48.66	32.11	100.0
Total	Yes	8,194	1.45	12.55	3.98	46.64	35.38	100.0