

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

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[report prepared by Katherine Elliott]

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Table 1. Overview of the Data

Data Subsets	Observations
Total stops	82,595
-2014	1,670
-Passengers	3,661
-Checkpoint stops	0
Total number of cases deleted	5,277
Stops remaining for analysis	77,318
Searches	5,616
Percent of stops leading to search (search rate)	7.26

Figure 1. Number of Traffic Stops per Year

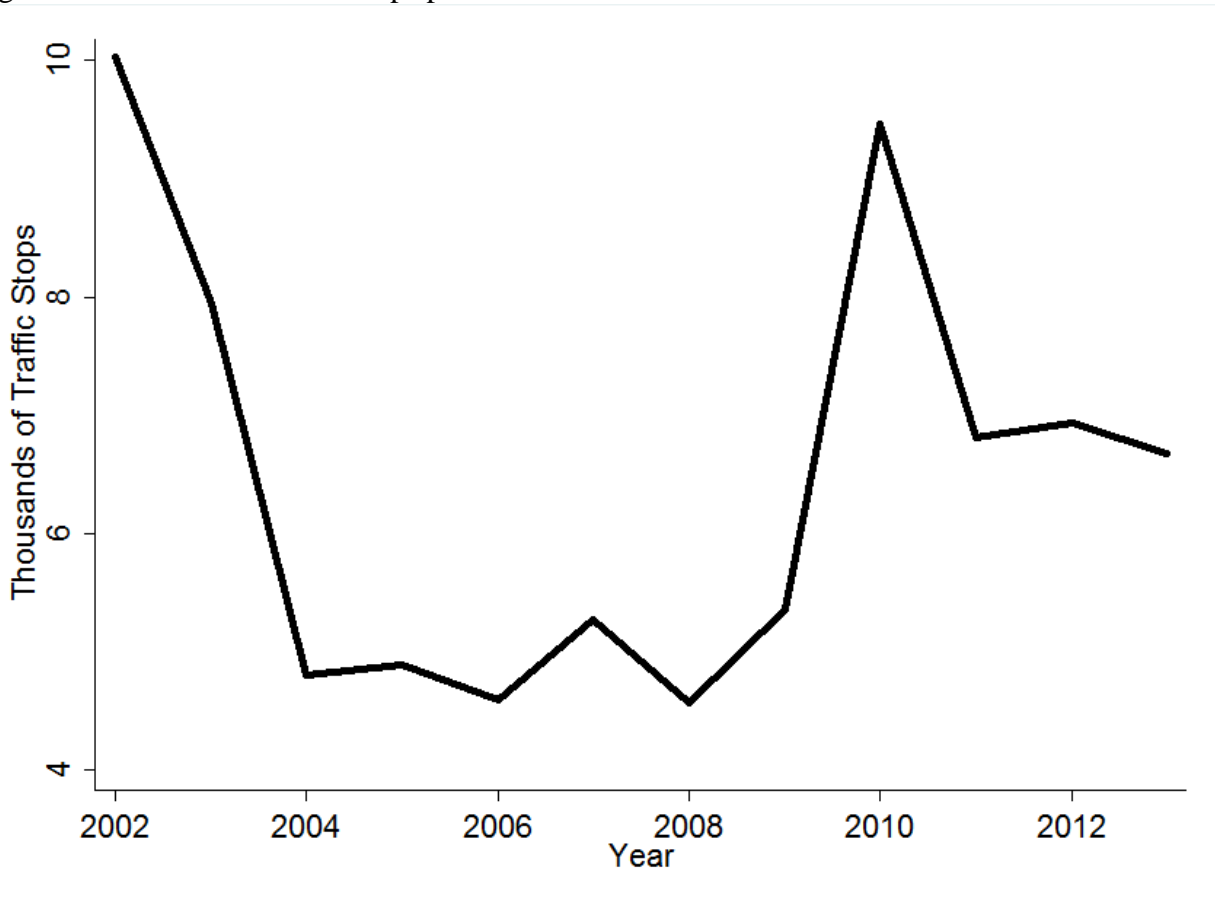


Figure 2. Racial Composition of Traffic Stops by Year

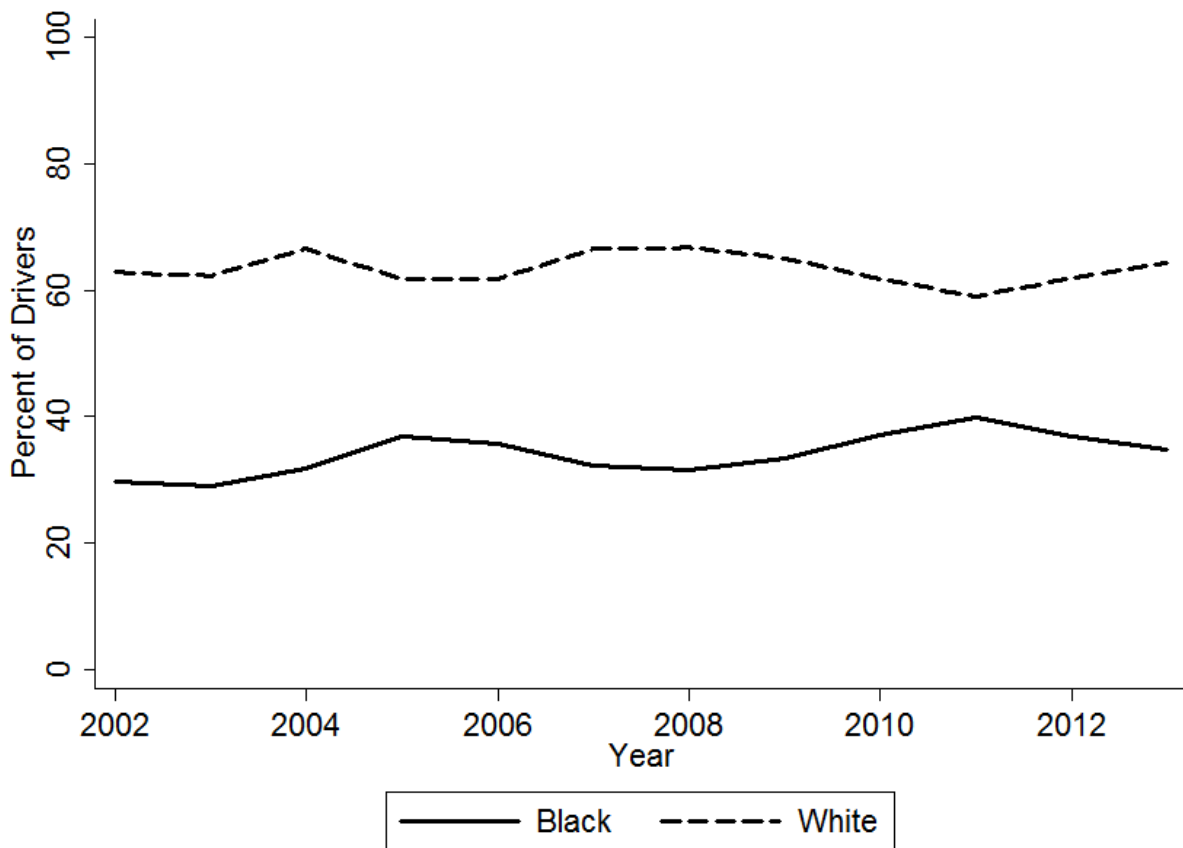


Table 2. Racial Composition of Traffic Stops by Purpose, Drivers

Purpose	Number	Percent	
		White	Black
Total Stops	77,318	63.13	34.02
Speed Limit	27,462	69.40	27.29
Stop Light/Sign	4,594	57.86	39.12
Driving Impaired	1,405	67.12	27.26
Safe Movement	4,204	65.51	31.14
Vehicle Equipment	9,267	56.91	41.29
Vehicle Regulatory	17,458	61.26	36.93
Seat Belt	3,022	53.54	44.87
Investigation	4,844	58.98	37.04
Other Vehicle	5,062	58.28	37.48

Note: Includes only drivers. Excludes 3,661 passengers.

Table 3. Percent Searched by Race and Purpose of Stop

Purpose	Number	% Total	% White	% Black	Ratio
					Black:White
Total Stops	77,318	-	63.13	34.02	-
Total Searches	5,616	7.26	6.12	9.45	1.54
Speed Limit	27,462	1.65	1.27	2.48	1.95
Stop Light/Sign	4,594	6.46	5.46	8.24	1.51
Driving Impaired	1,405	40.28	40.93	38.12	0.93
Safe Movement	4,204	12.37	10.86	15.81	1.46
Vehicle Equipment	9,267	10.02	9.31	11.16	1.20
Vehicle Regulatory	17,458	5.90	4.64	7.99	1.72
Seat Belt	3,022	10.99	7.54	15.27	2.03
Investigation	4,844	21.70	20.97	24.08	1.15
Other Vehicle	5,062	8.63	7.02	11.49	1.64

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

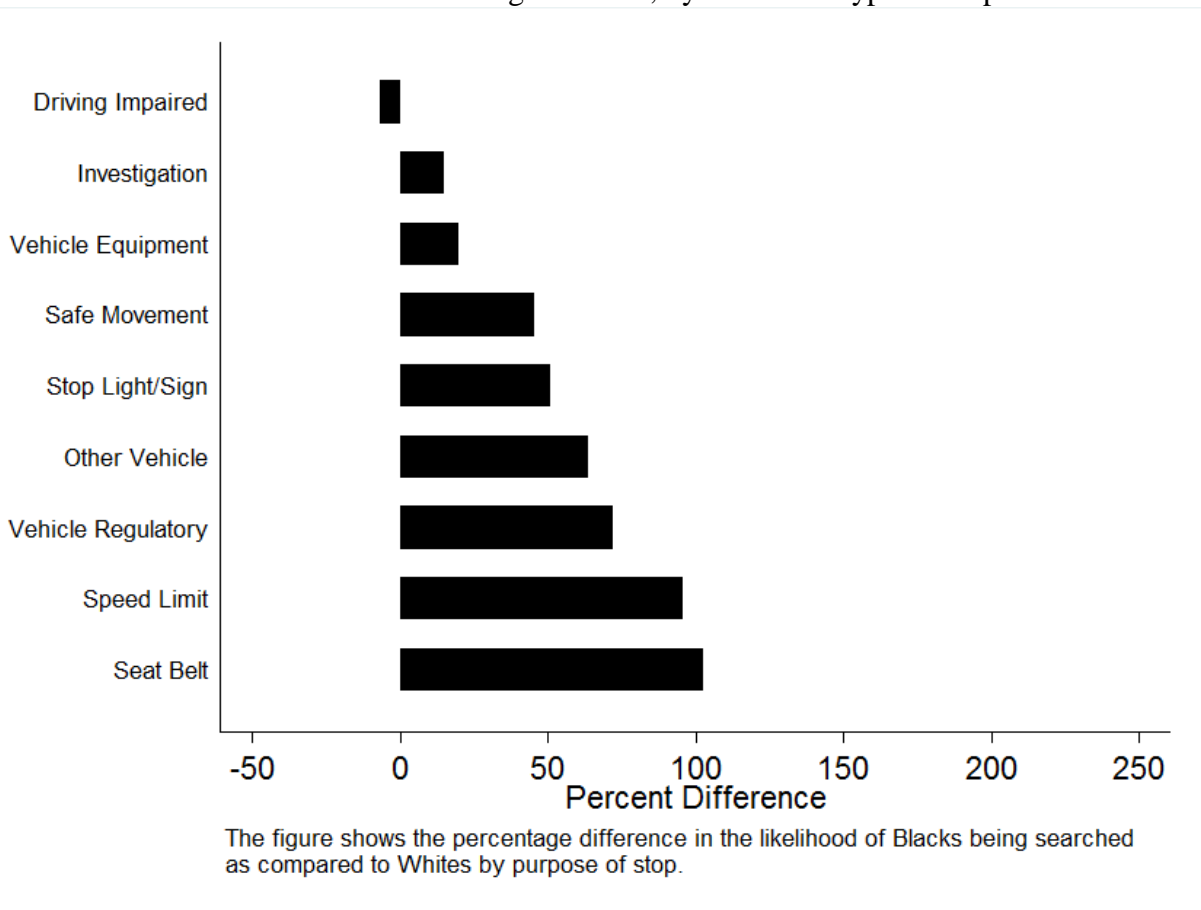
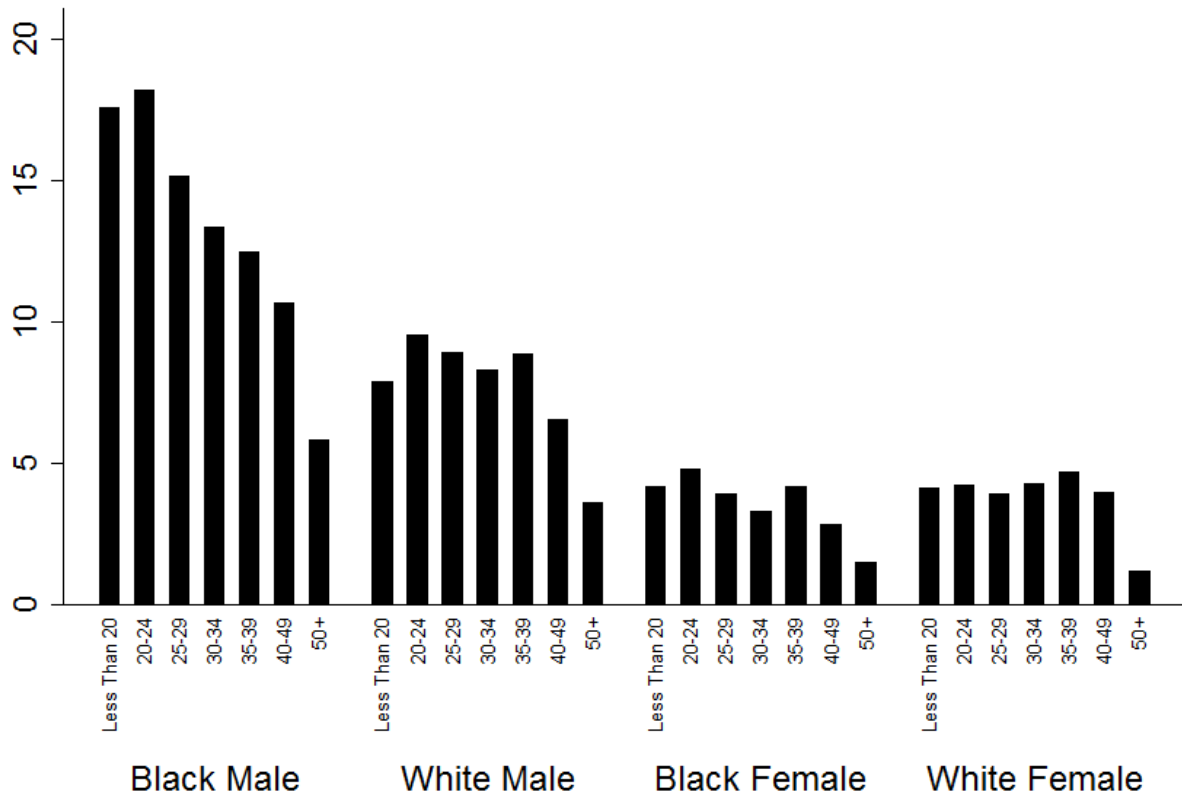
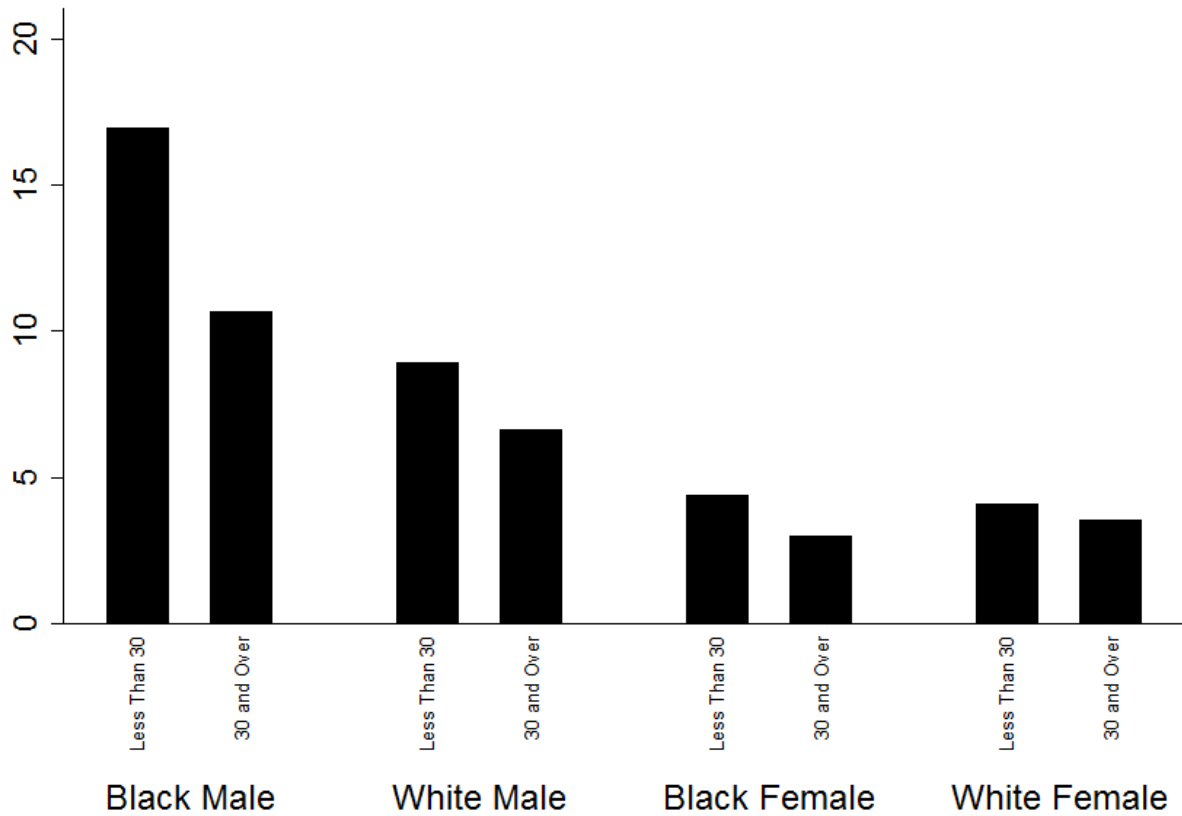


Figure 4a. Percentage Searched by Race, Gender, and Age



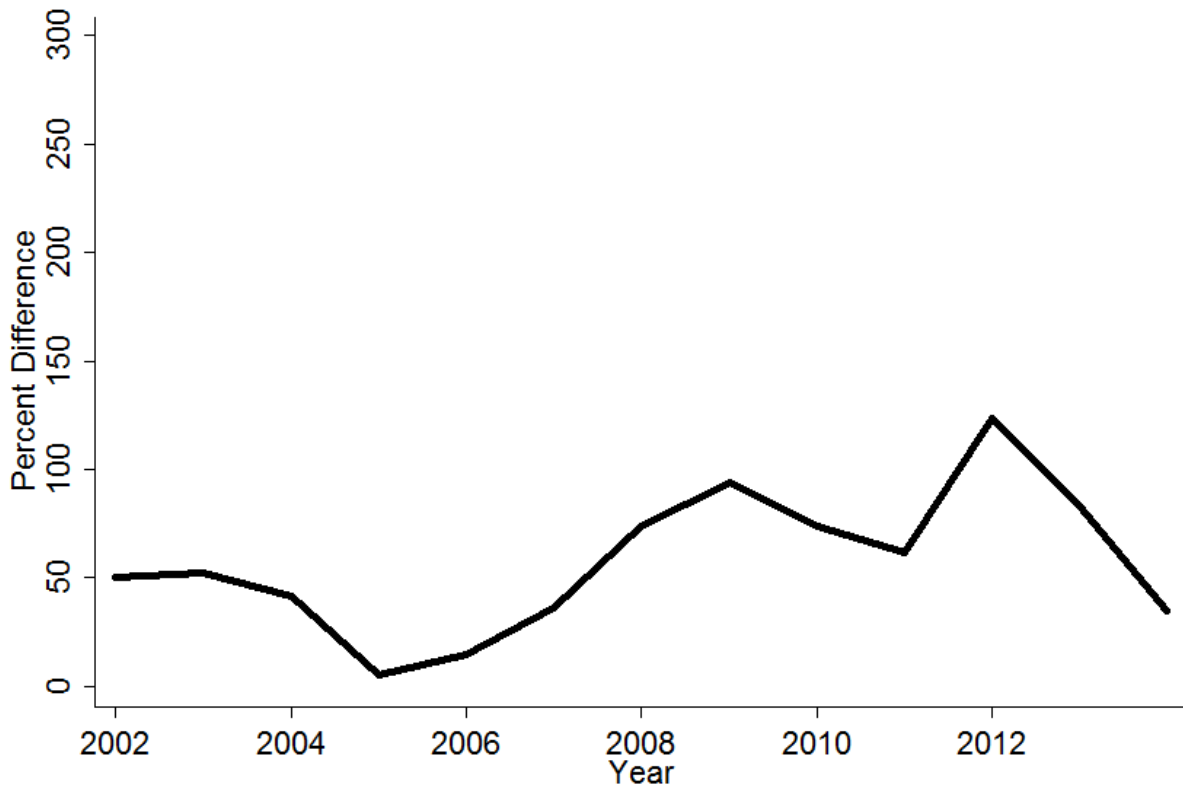
Based on 77,318 traffic stops from 2002 through 2013, and 5,616 searches. Overall rate of search: 7.26 percent. No data are presented for categories with fewer than 10 searches.

Figure 4b. Percentage Searched by Race, Gender, and Age



Based on 77,318 traffic stops from 2002 through 2013, and 5,616 searches. Overall rate of search: 7.26 percent.

Figure 5. 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 6. Number of Stops, by Race and Gender

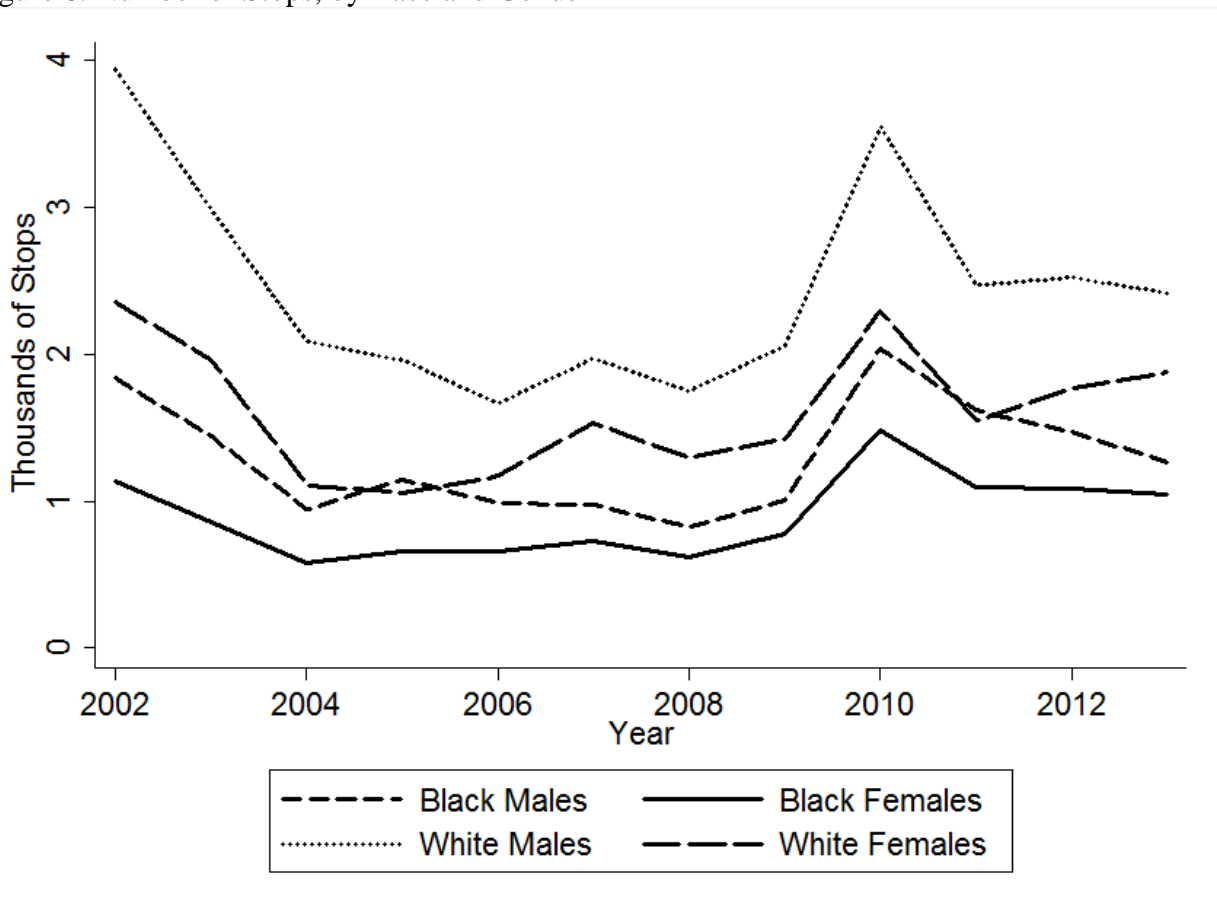
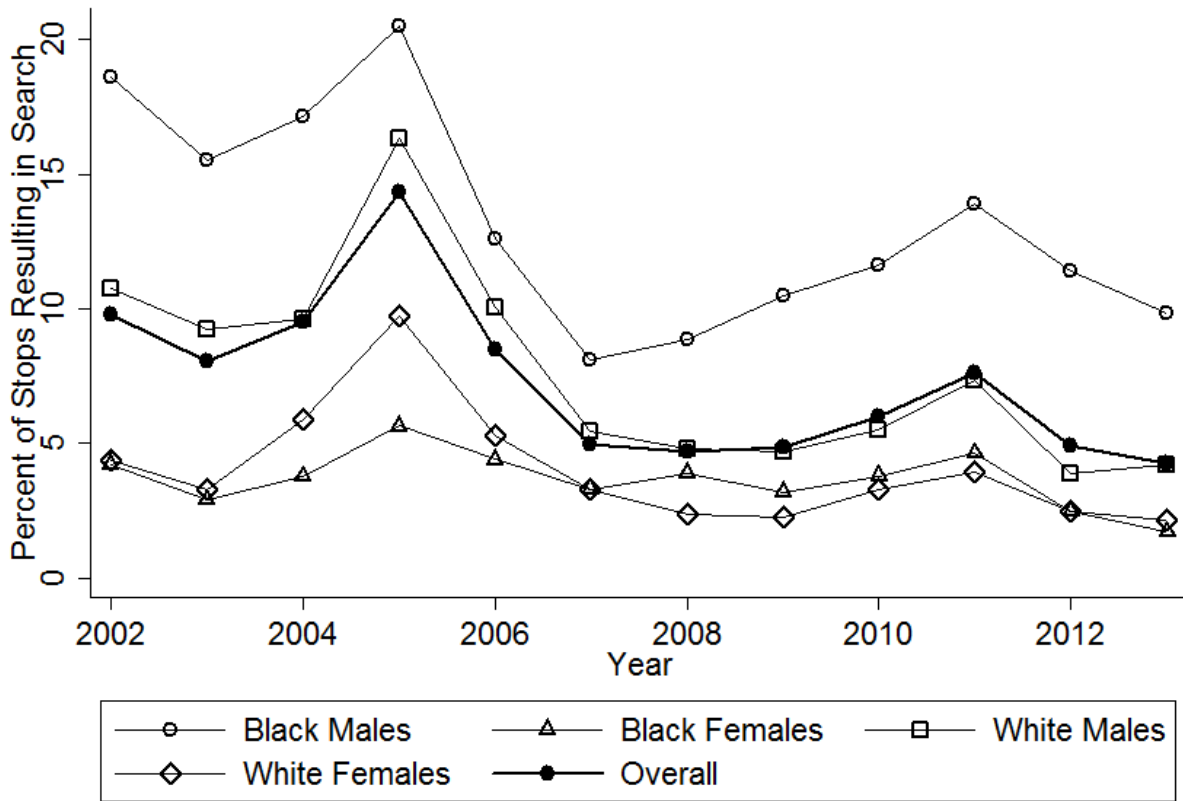


Figure 7. Percent Searched, by Race and Gender



Note: No rate is calculated if based on fewer than 10 searches.

Table 4. Type of Search by Race

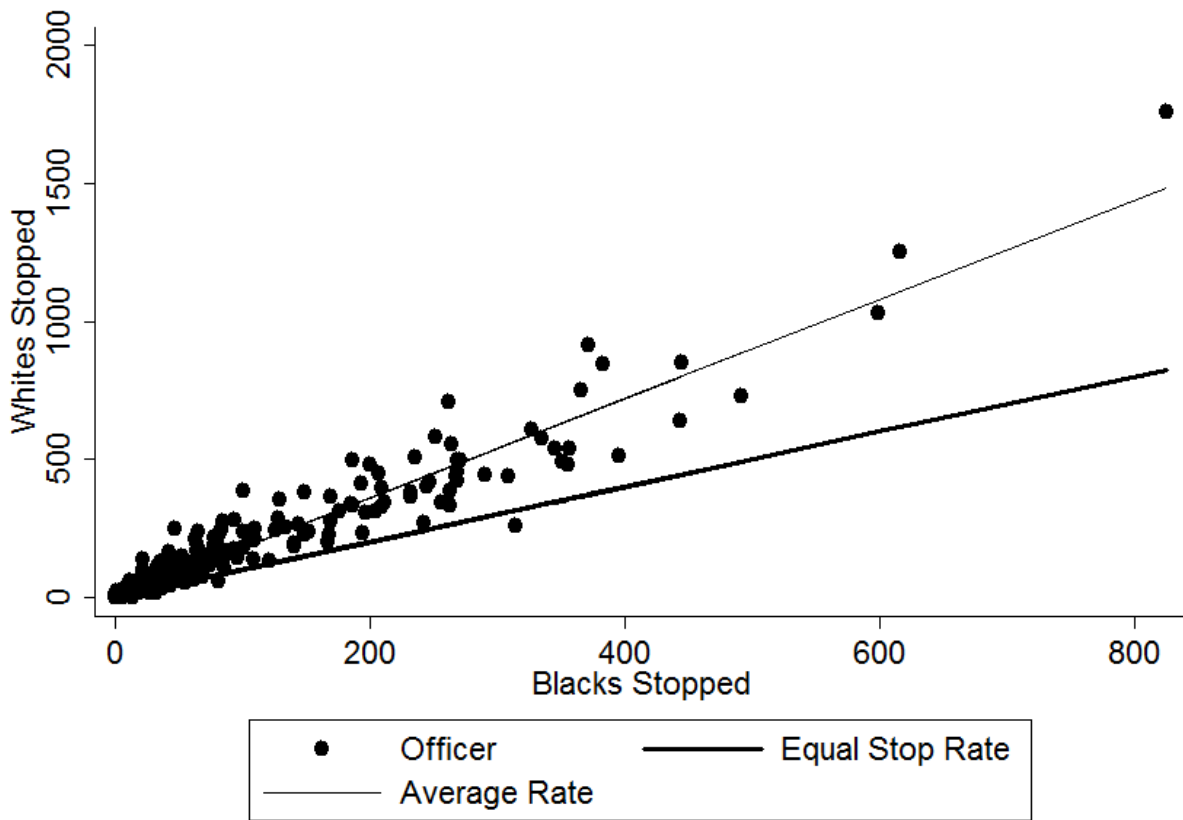
Search Type	Number	% Total	% White	% Black	Ratio
					Black:White
Total Stops	77,318	-	63.13	34.02	-
Total Searches	5,616	7.26	6.12	9.45	1.54
Consent	2,337	3.02	2.76	3.62	1.31
Search Warrant	8	0.01	0.01	0.00	-
Probable Cause	910	1.18	0.76	2.00	2.63
Incident to Arrest	2,166	2.80	2.40	3.44	1.43
Protective Frisk	195	0.25	0.18	0.38	2.11

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

Table 5. Distribution of Officer IDs by Stop

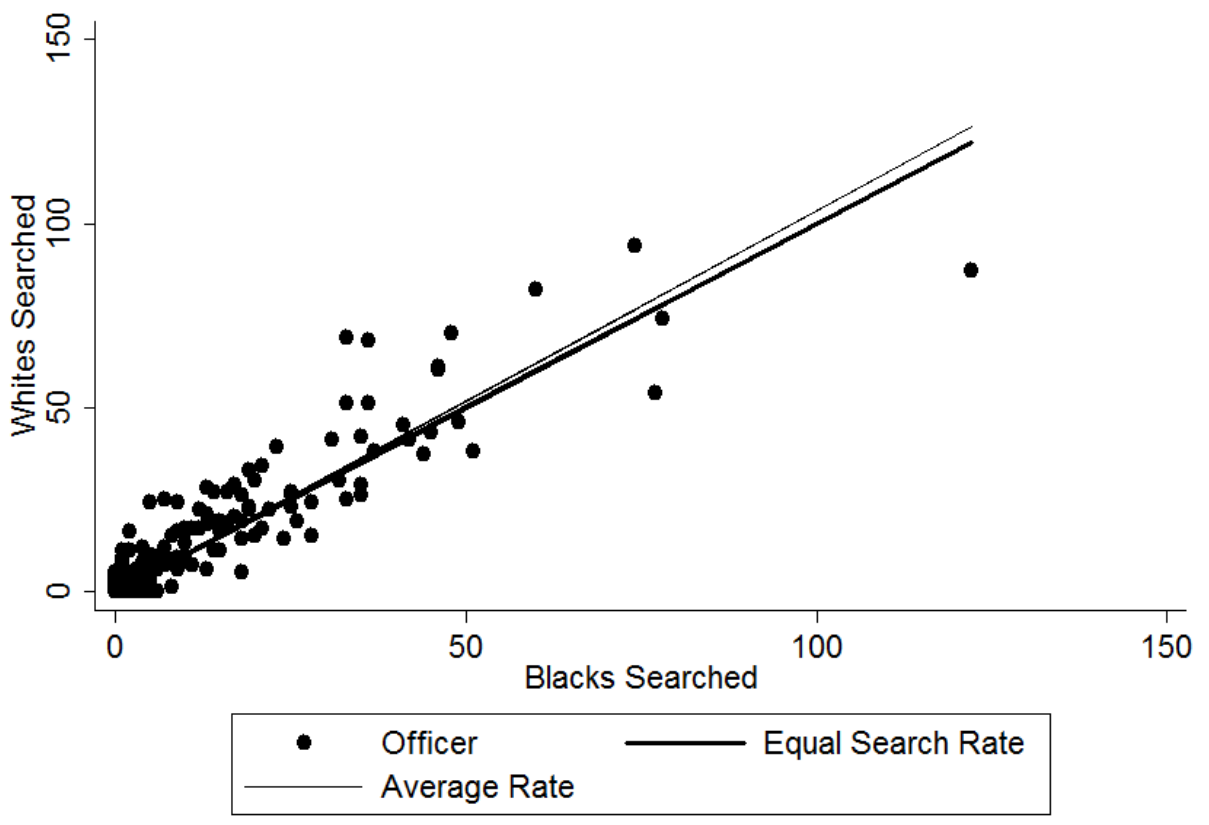
Number of Stops	Officers w/ this many Stops	Percent of Officers	Cumulative Percent	Percent of Stops	Cumulative Percent
1	487	37.58	37.58	0.63	0.63
2 – 10	443	34.18	71.76	2.35	2.98
11 - 100	209	16.13	87.89	9.13	12.11
101 – 1,000	148	11.42	99.31	70.25	82.36
1,001 +	9	0.69	100.00	17.64	100.00
Total	1,296	100.00	-	100.00	-

Figure 8. Number of Black and White Motorists Stopped, by Officer



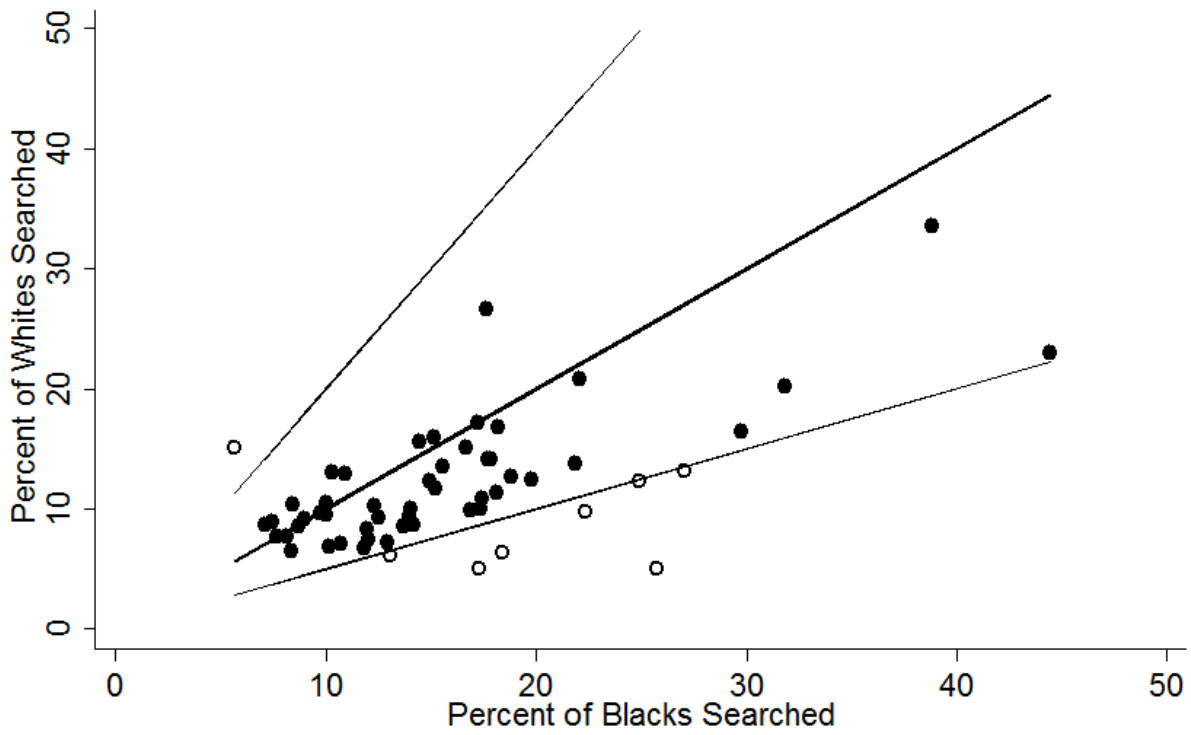
On average, officers stop 1.799 Whites for each Black stopped.

Figure 9. Number of Black and White Motorists Searched, by Officer



On average, officers search 1.035 Whites for each Black searched.

Figure 10. Percent of White and Black Drivers Searched, by Officer



Includes 56 officers with a minimum of 50 White stops, 50 Black stops, and a search rate above the department average of 7.26. The hollow circles indicate high disparity officers. 1 officer searches Whites at more than twice the rate that they search Blacks. 7 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	1.88*(0.06)	1.87*(0.06)	1.70*(0.06)	1.69*(0.06)	1.30(0.29)
Hispanic	1.02(0.07)	0.96(0.06)	0.76*(0.05)	0.77*(0.05)	0.86(0.40)
Age	-	0.98*(0.00)	0.98*(0.00)	0.98*(0.00)	0.98*(0.01)
Stop Purpose					
Speed Limit	-	-	-	-	-
Stop Light	-	-	3.61*(0.31)	3.61*(0.31)	0.42(0.30)
Impaired	-	-	30.77*(2.60)	30.69*(2.59)	9.02*(5.35)
Movement	-	-	6.17*(0.47)	6.16*(0.47)	1.81(0.95)
Equipment	-	-	5.03*(0.34)	5.05*(0.34)	2.76*(1.19)
Regulatory	-	-	3.26*(0.21)	3.27*(0.21)	1.76(0.77)
Seat Belt	-	-	5.79*(0.49)	5.76*(0.49)	1.90(1.18)
Investigation	-	-	11.85*(0.80)	11.84*(0.80)	4.29*(1.92)
Other	-	-	4.53*(0.36)	4.55*(0.36)	2.09(1.17)
Officer Type					
Black Disparity [†]	-	-	-	1.92*(0.15)	1.89(1.57)
White Disparity [†]	-	-	-	1.72*(0.43)	Omitted
Time					
Hour of Day	-	-	-	-	Included
Day of Week	-	-	-	-	Included
Constant	0.08*(0.00)	0.19*(0.01)	0.05*(0.00)	0.05*(0.00)	0.11*(0.08)
N	44,968	44,968	44,968	44,968	964
Pseudo R²	0.01	0.03	0.12	0.12	0.17

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
Demographics					
Race	0.92(0.06)	0.90(0.06)	0.82*(0.05)	0.82*(0.05)	0.31*(0.15)
Hispanic	0.36*(0.09)	0.34*(0.09)	0.28*(0.07)	0.28*(0.07)	2.01(2.18)
Age	-	0.98*(0.00)	0.98*(0.00)	0.98*(0.00)	0.99(0.02)
Stop Purpose					
Speed Limit	-	-	-	-	-
Stop Light	-	-	5.60*(1.05)	5.60*(1.05)	-
Impaired	-	-	92.09*(15.77)	91.49*(15.68)	0.22(0.17)
Movement	-	-	17.36*(2.73)	17.33*(2.72)	1.89(4.69)
Equipment	-	-	11.38*(1.61)	11.37*(1.61)	0.44(0.30)
Regulatory	-	-	5.77*(0.80)	5.79*(0.81)	0.28*(0.15)
Seat Belt	-	-	8.63*(1.64)	8.62*(1.63)	0.13*(0.07)
Investigation	-	-	35.19*(5.02)	35.04*(5.00)	-
Other	-	-	8.55*(1.45)	8.54*(1.45)	-
Officer Type					
Black Disparity [†]	-	-	-	1.28(0.20)	Omitted
White Disparity [†]	-	-	-	1.28(0.54)	Omitted
Time					
Hour of Day	-	-	-	-	Included
Day of Week	-	-	-	-	Included
Constant	0.04*(0.00)	0.08*(0.01)	0.01*(0.00)	0.01*(0.00)	1.99(1.710)
N	30,144	30,144	30,144	30,144	282
Pseudo R²	0.00	0.01	0.14	0.15	0.19

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.

Appendix

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

Purpose	Number	Percent	
		White	Black
Total Stops	3,661	49.11	48.65
Speed Limit	214	50.00	42.99
Stop Light/Sign	201	44.28	51.74
Driving Impaired	260	59.62	35.38
Safe Movement	367	53.41	44.96
Vehicle Equipment	702	44.59	53.42
Vehicle Regulatory	627	47.85	51.20
Seat Belt	218	36.70	61.01
Investigation	799	53.44	45.56
Other Vehicle	273	47.99	49.45

Figure A1. Stops by Day of the Week

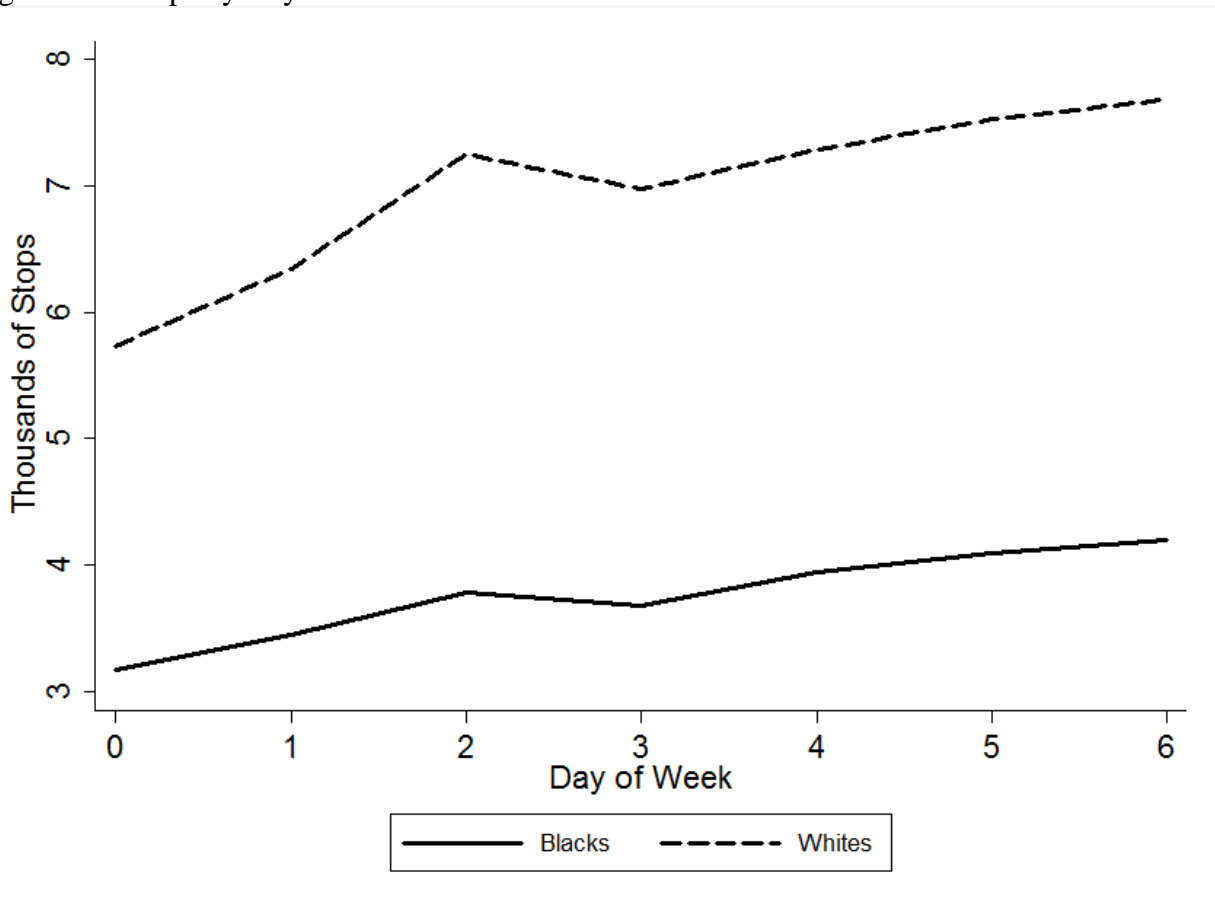


Figure A2. Searches by Day of the Week

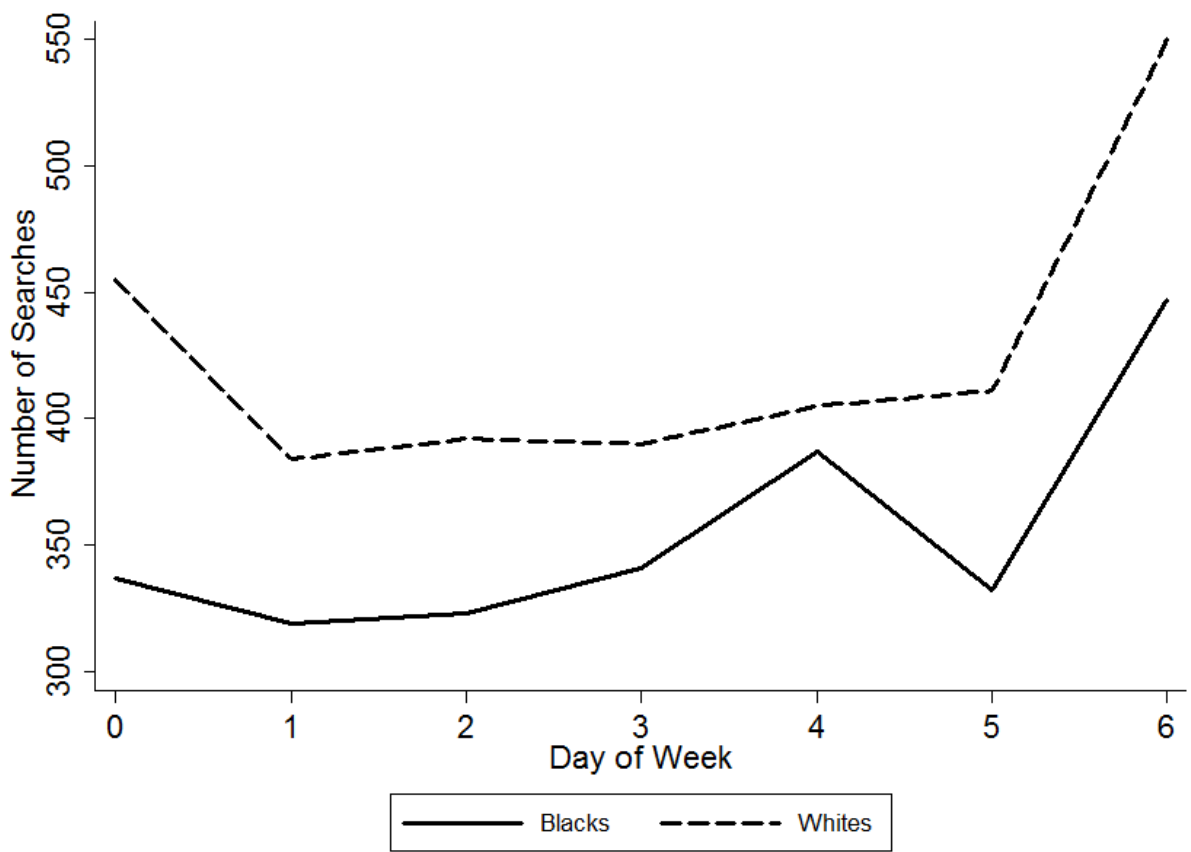
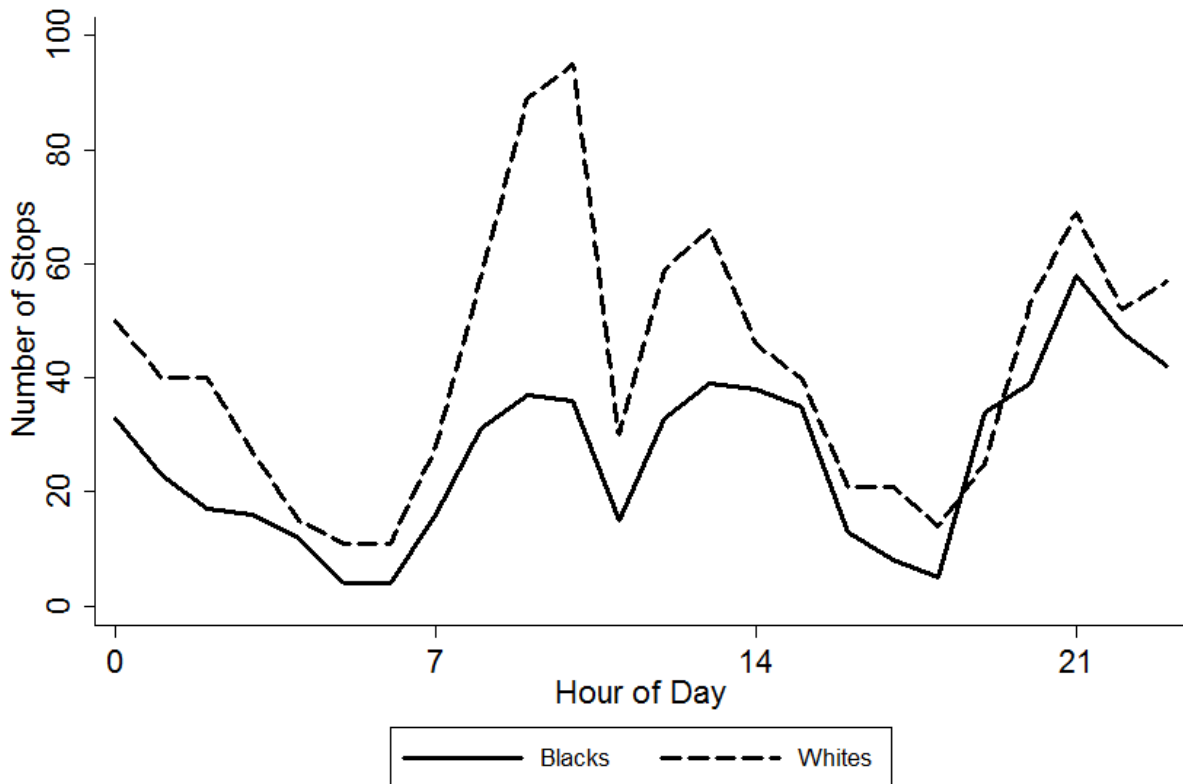
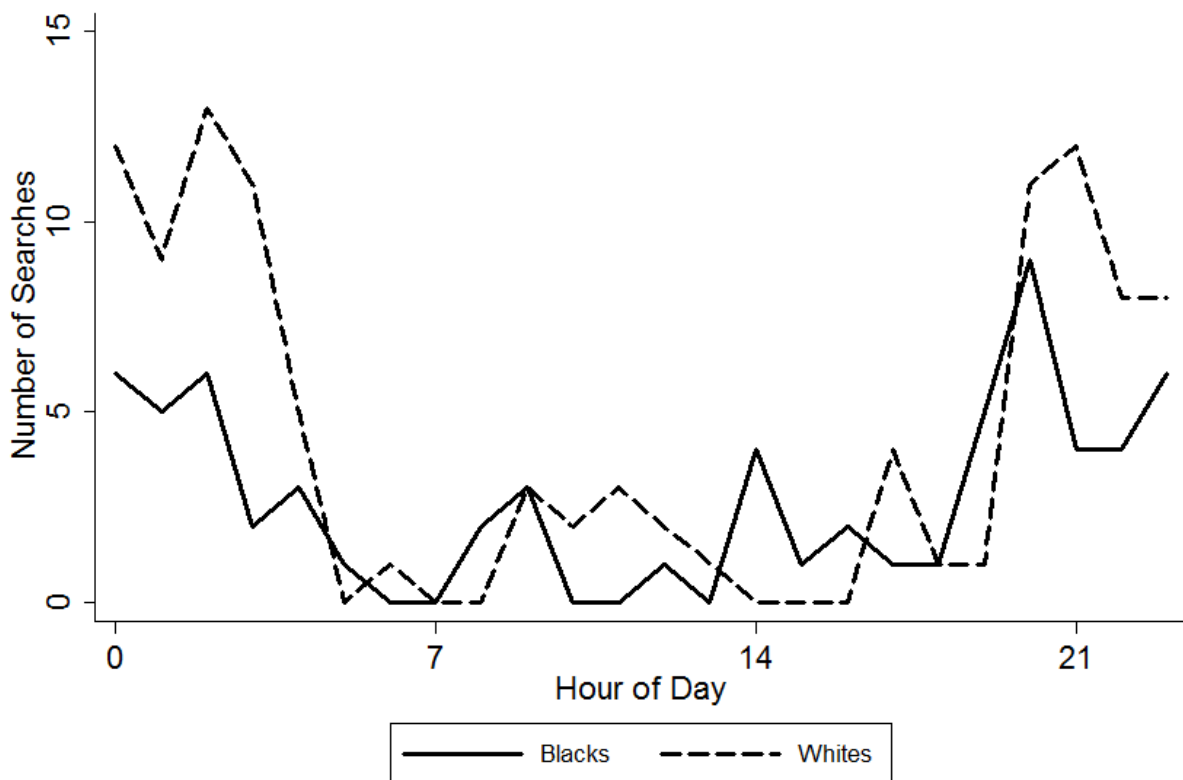


Figure A3. Stops by Hour of the Day



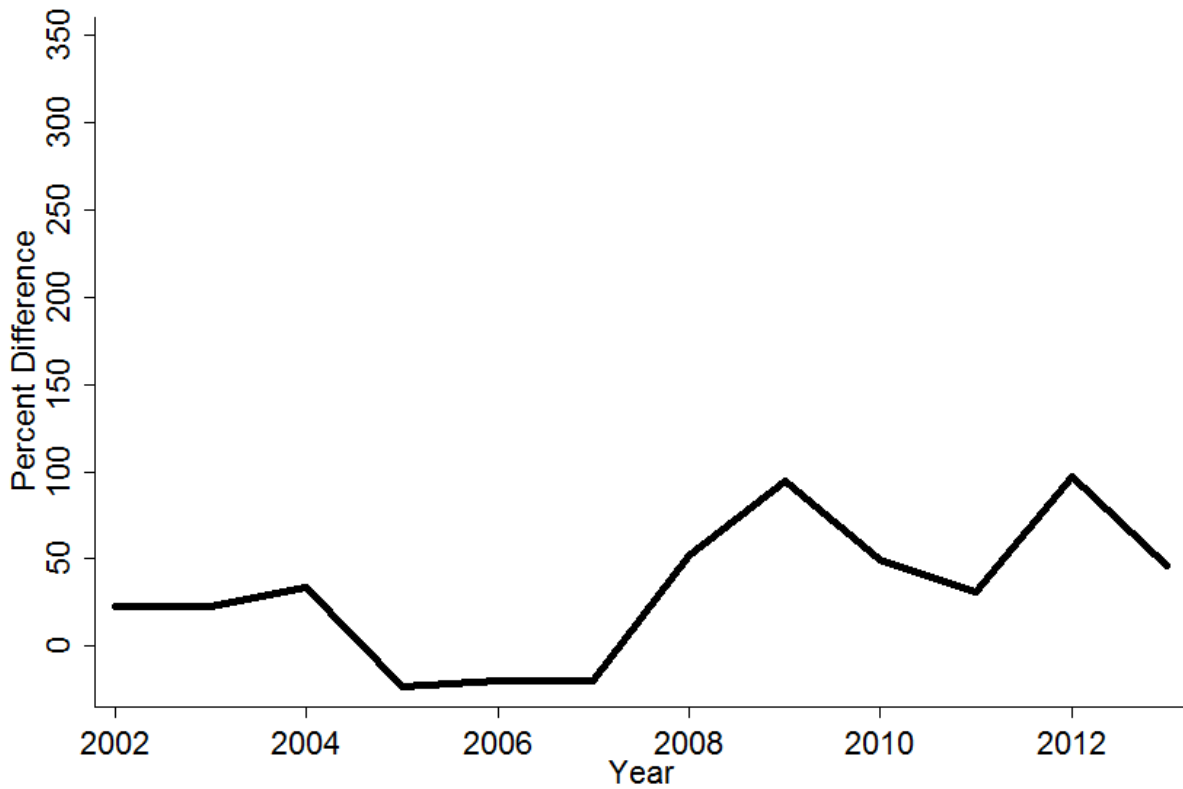
The figure excludes cases where the hour and minute was exactly 0:00. These cases were presumed to be missing data.

Figure A4. 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 A5. 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 A2. Likelihood of Finding Contraband Given a Search, by Race

Contraband	Number	% Total	% White	% Black
Yes	2,728	48.58	50.59	47.63
No	2,888	51.42	49.41	52.37
Total	5,616	100.00	100.00	100.00

Table A3. 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	45,821	3.34	19.28	1.77	74.31	1.29	100.00
Black	No	23,818	3.26	23.68	1.16	70.30	1.60	100.00
Total	No	71,702	3.32	20.59	1.57	73.11	1.41	100.00
White	Yes	2,987	1.94	11.48	0.07	51.69	34.82	100.00
Black	Yes	2,486	1.61	10.30	0.16	54.14	33.79	100.00
Total	Yes	5,616	1.75	10.79	0.11	51.88	34.47	100.00