

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

8 December 2014

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[report prepared by Katherine Elliott]

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Table 1. Overview of the Data

Data Subsets	Observations
Total stops	44,850
-2014	2,160
-Passengers	147
-Checkpoint stops	908
Total number of cases deleted	3,159
Stops remaining for analysis	41,691
Searches	218
Percent of stops leading to search (search rate)	0.52

Figure 1. Number of Traffic Stops per Year

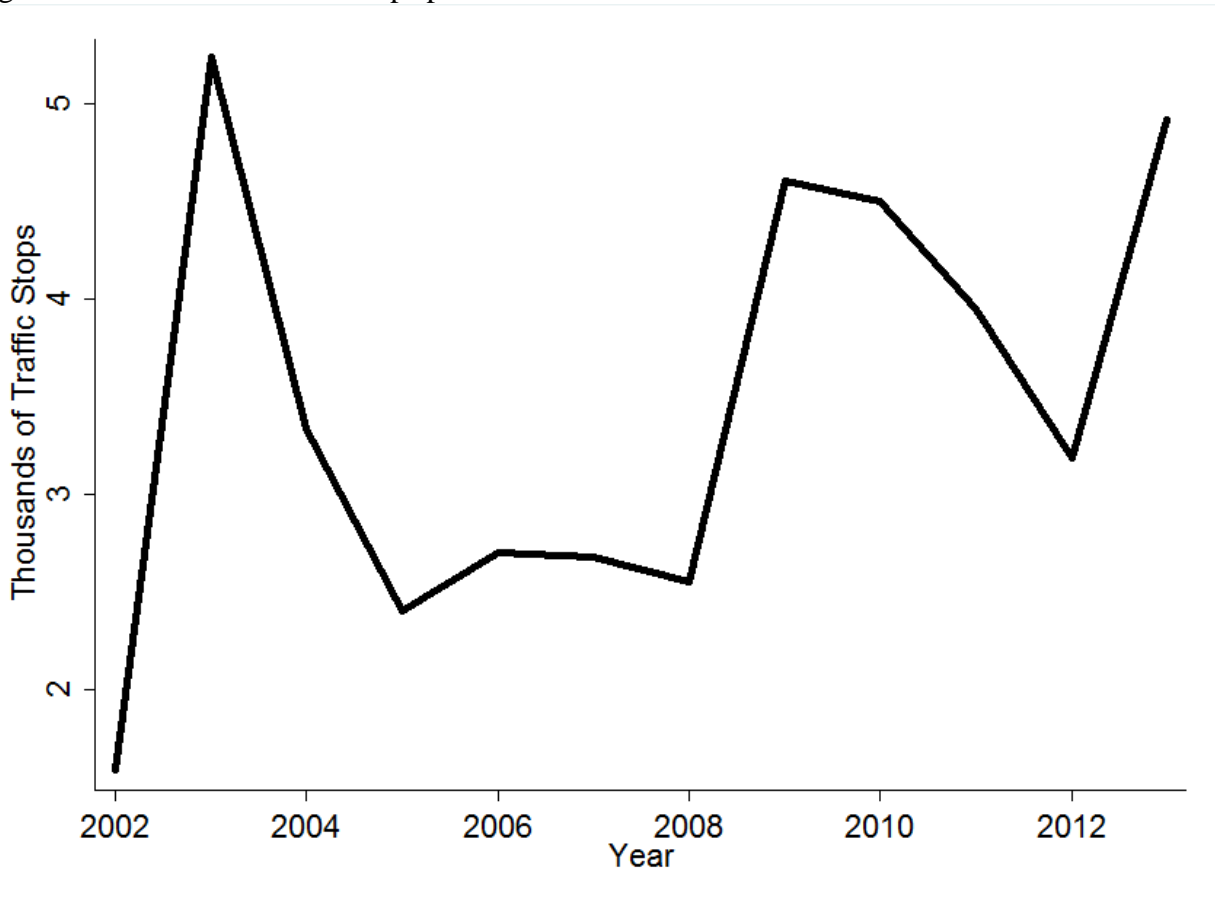


Figure 2. Racial Composition of Traffic Stops by Year

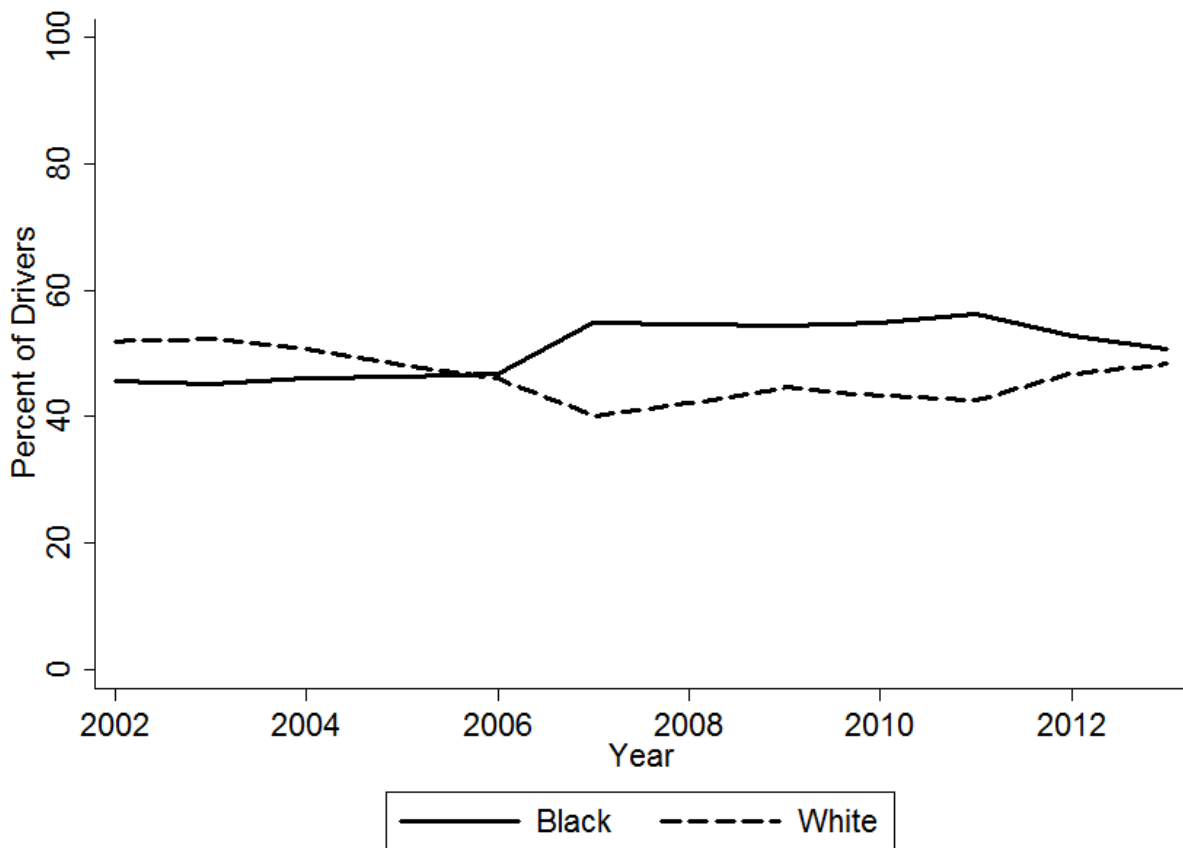


Table 2. Racial Composition of Traffic Stops by Purpose, Drivers

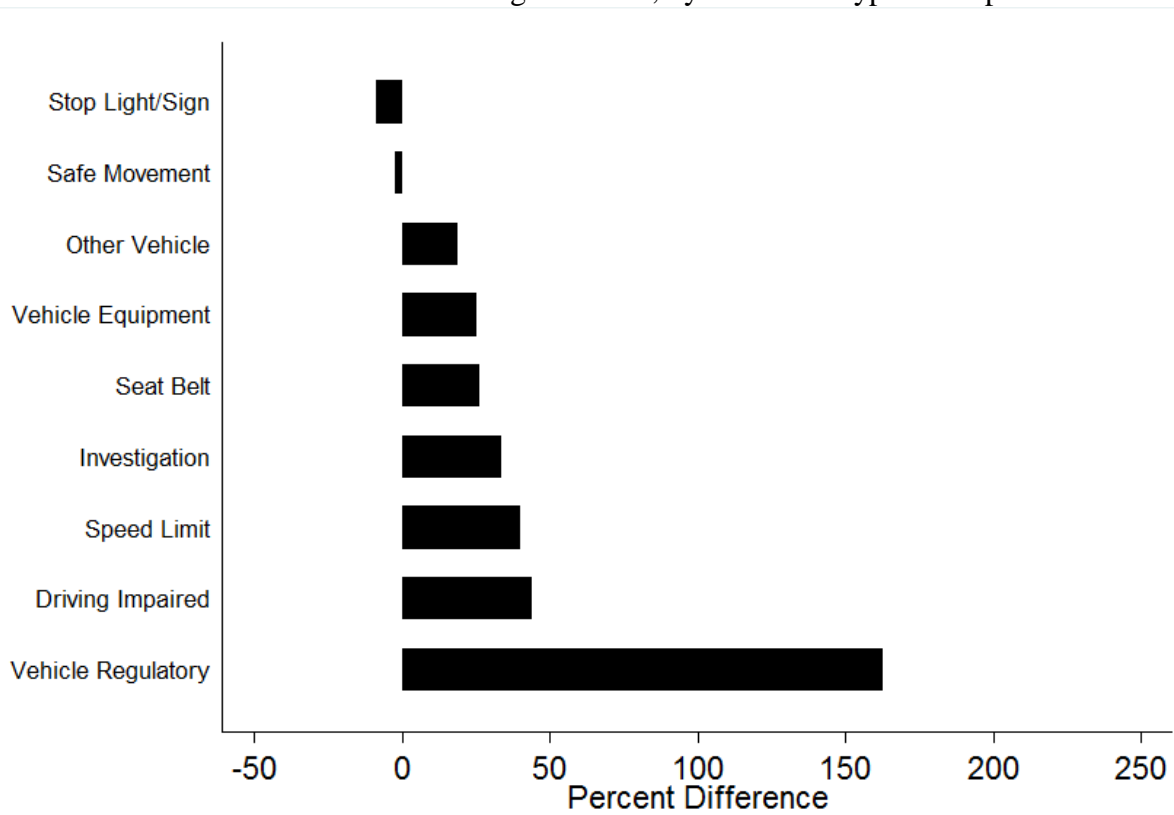
Purpose	Number	Percent	
		White	Black
Total Stops	41,691	46.48	50.99
Speed Limit	8,519	50.18	47.74
Stop Light/Sign	4,873	46.34	50.79
Driving Impaired	290	56.21	35.17
Safe Movement	3,015	48.13	49.39
Vehicle Equipment	8,106	41.67	56.18
Vehicle Regulatory	7,003	50.21	47.79
Seat Belt	5,661	49.21	48.65
Investigation	1,562	34.25	59.80
Other Vehicle	2,662	38.17	57.74

Note: Includes only drivers. Excludes 147 passengers.

Table 3. Percent Searched by Race and Purpose of Stop

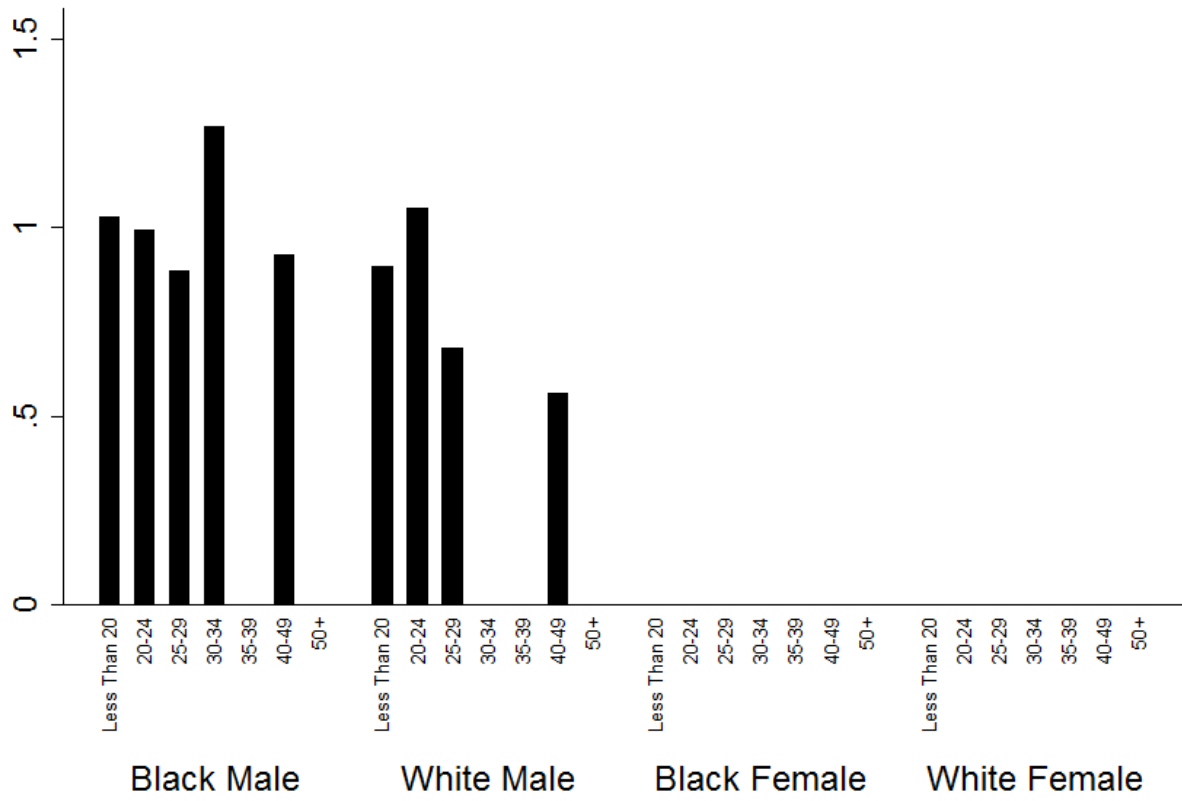
Purpose	Number	% Total	% White	% Black	Ratio
					Black:White
Total Stops	41,691	-	46.48	50.99	-
Total Searches	218	0.52	0.43	0.58	1.35
Speed Limit	8,519	0.25	0.21	0.30	1.43
Stop Light/Sign	4,873	0.45	0.44	0.40	0.91
Driving Impaired	290	7.93	6.13	8.82	1.44
Safe Movement	3,015	0.53	0.55	0.54	0.98
Vehicle Equipment	8,106	0.54	0.47	0.59	1.26
Vehicle Regulatory	7,003	0.31	0.17	0.45	2.65
Seat Belt	5,661	0.32	0.29	0.36	1.24
Investigation	1,562	1.34	1.12	1.50	1.34
Other Vehicle	2,662	1.16	0.98	1.17	1.19

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



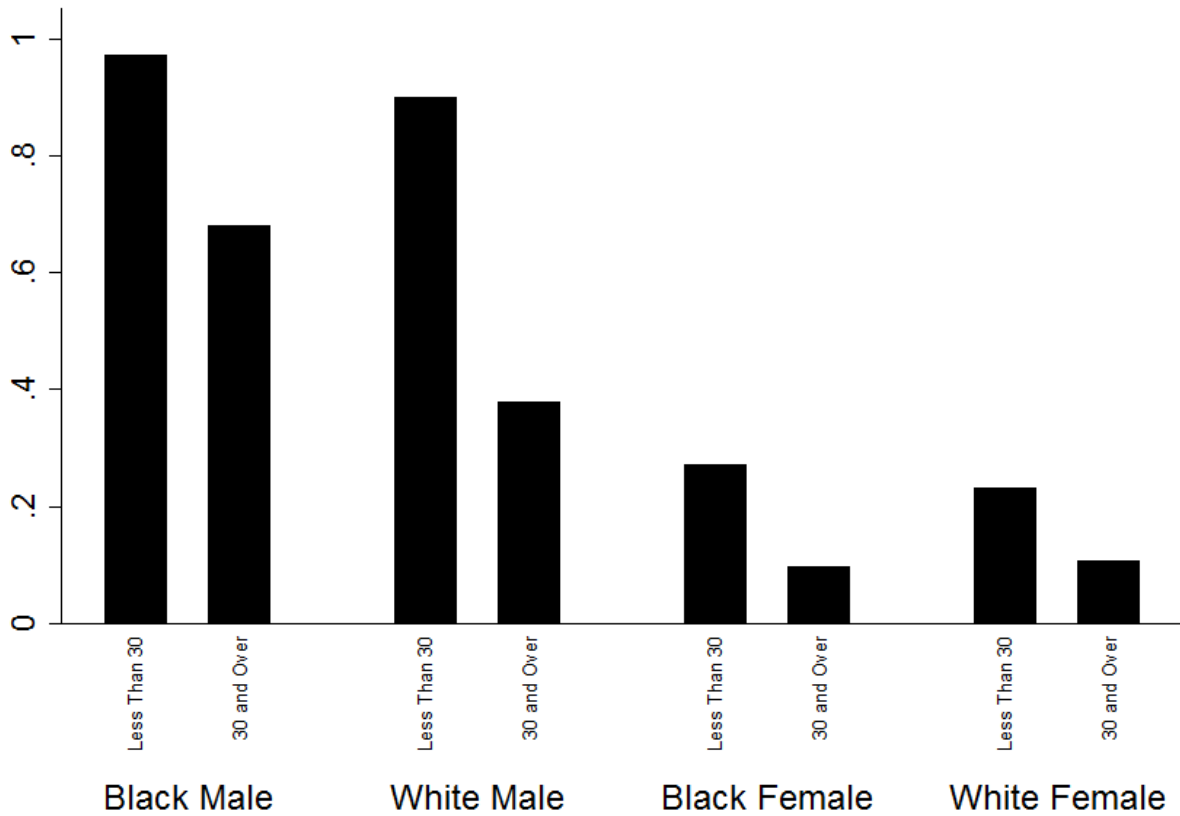
The figure shows the percentage difference in the likelihood of Blacks being searched as compared to Whites by purpose of stop.

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



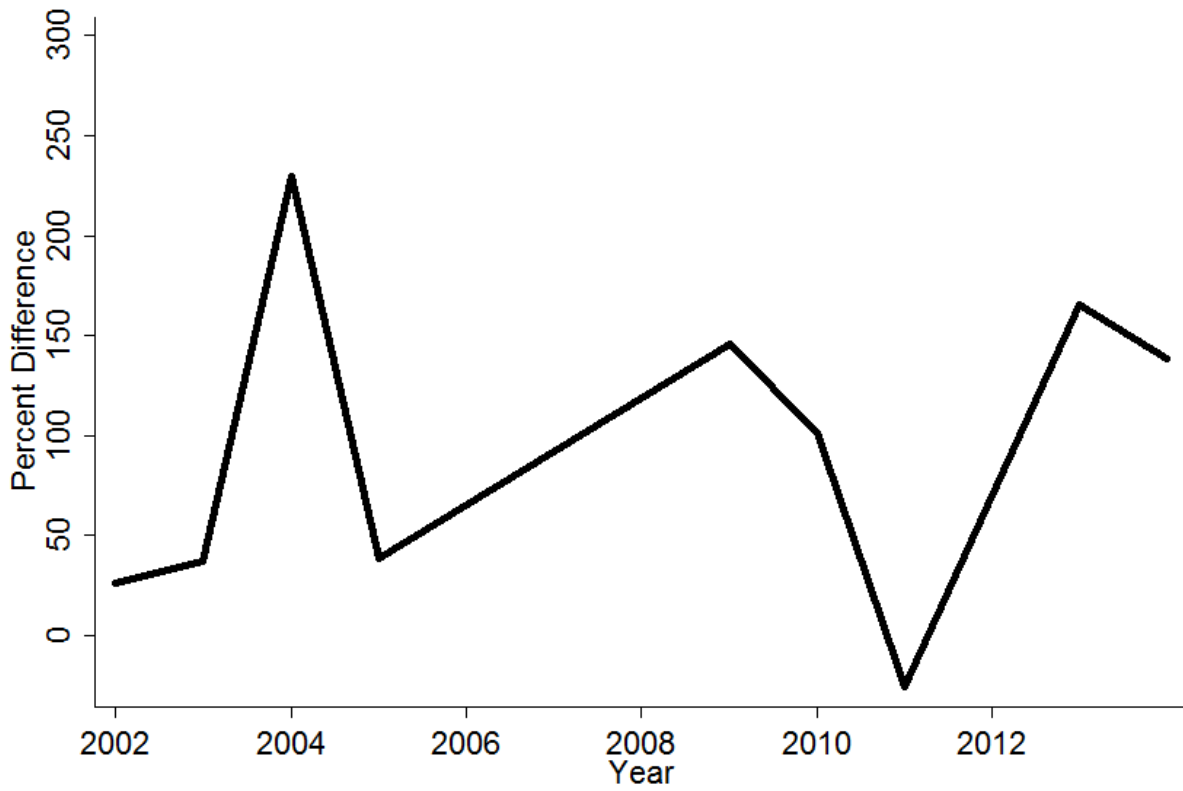
Based on 41,691 traffic stops from 2002 through 2013, and 218 searches. Overall rate of search: 0.52 percent. No data are presented for categories with fewer than 10 searches.

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



Based on 41,691 traffic stops from 2002 through 2013, and 218 searches. Overall rate of search: 0.52 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

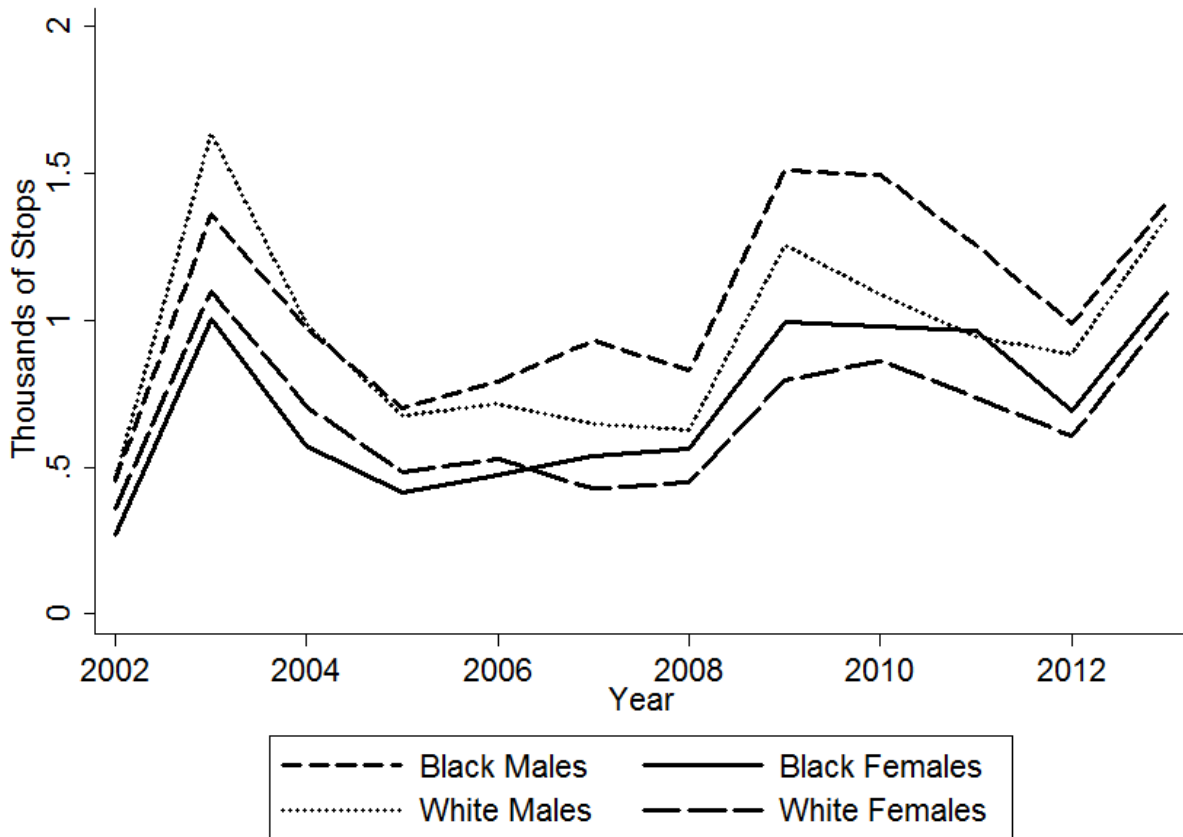
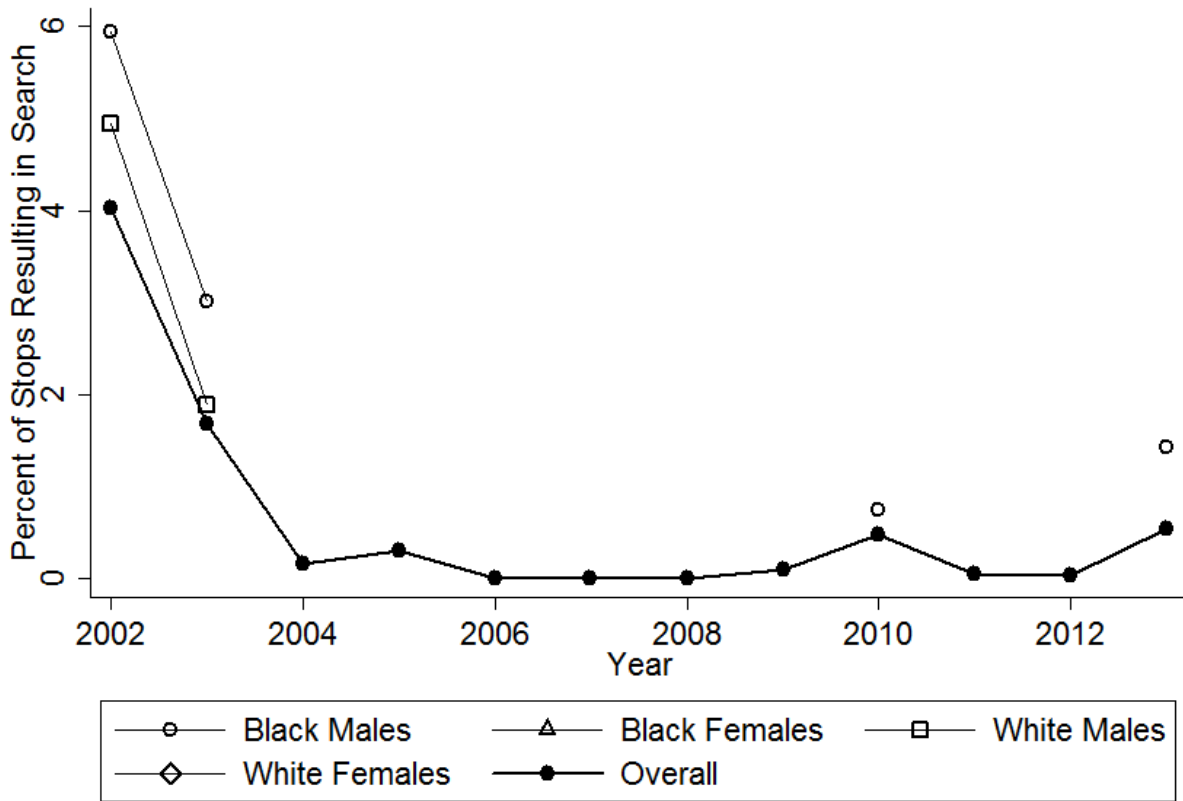


Figure 7. Percent Searched, by Race and Gender



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

Table 4. Type of Search by Race

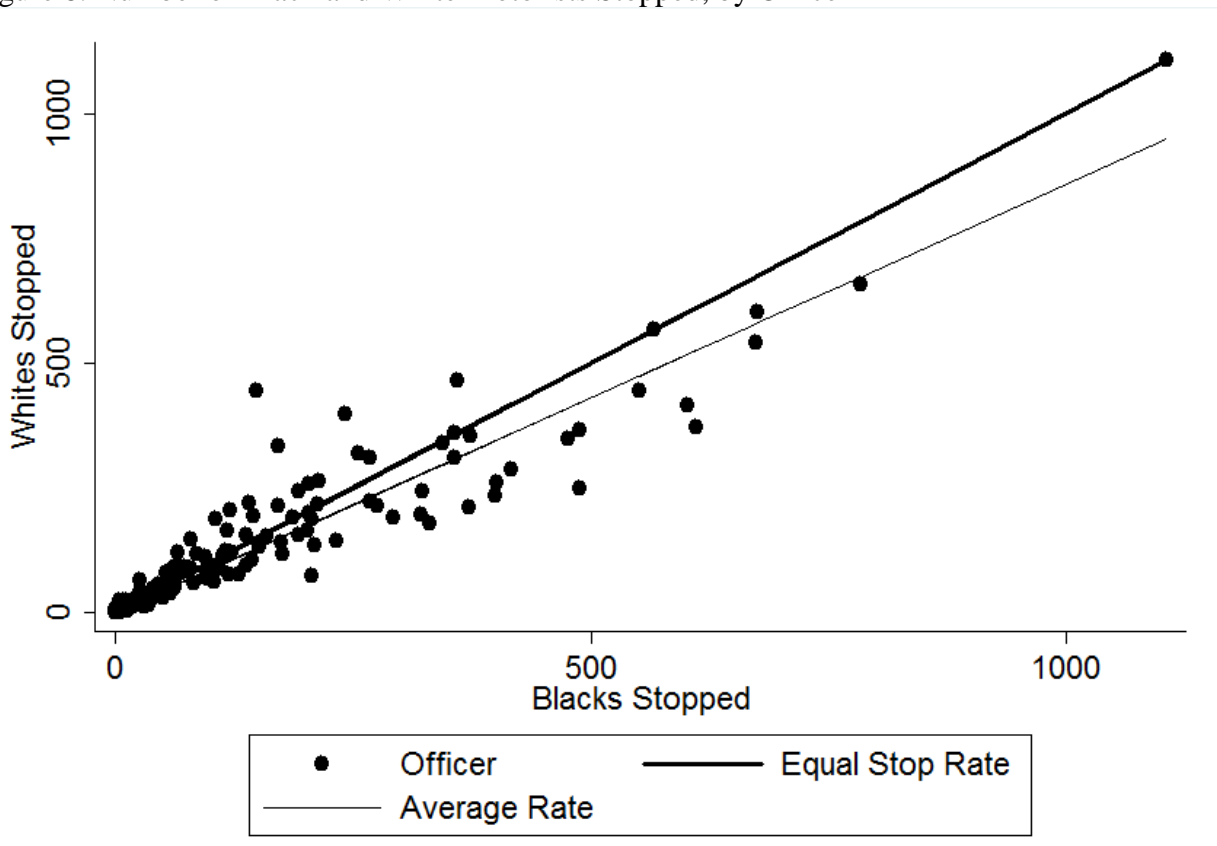
Search Type	Number	% Total	% White	% Black	Ratio
					Black:White
Total Stops	41,691	-	46.48	50.99	-
Total Searches	218	0.52	0.43	0.58	1.35
Consent	87	0.21	0.23	0.18	0.78
Search Warrant	0	-	-	-	-
Probable Cause	51	0.12	0.07	0.16	2.29
Incident to Arrest	75	0.18	0.12	0.22	1.83
Protective Frisk	5	0.01	0.01	0.02	2.00

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

Table 5. Distribution of Officer IDs by Stop

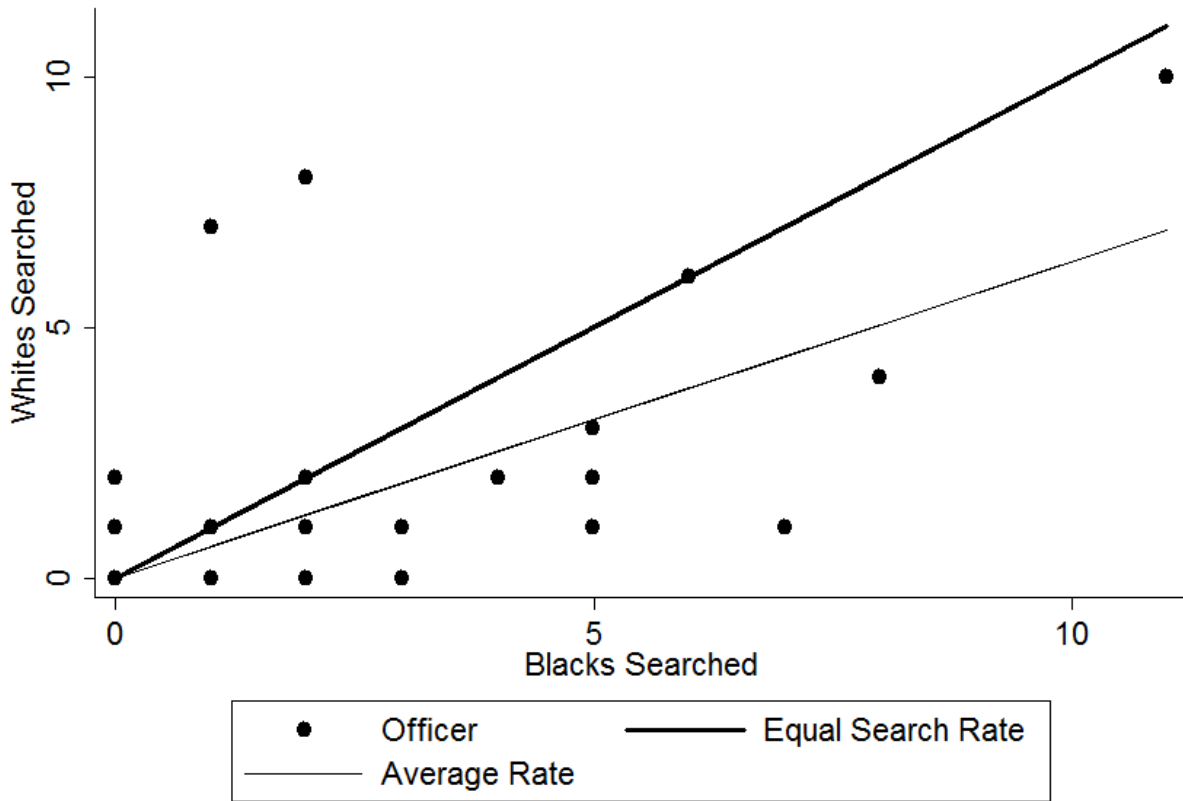
Number of Stops	Officers w/ this many Stops	Percent of Officers	Cumulative Percent	Percent of Stops	Cumulative Percent
1	148	45.68	45.68	0.36	0.36
2 – 10	53	16.36	62.04	0.45	0.81
11 - 100	36	11.11	73.15	3.98	4.79
101 – 1,000	80	24.69	97.84	72.35	77.14
1,001 +	7	2.16	100.00	22.86	100.00
Total	324	100.00	-	100.00	-

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



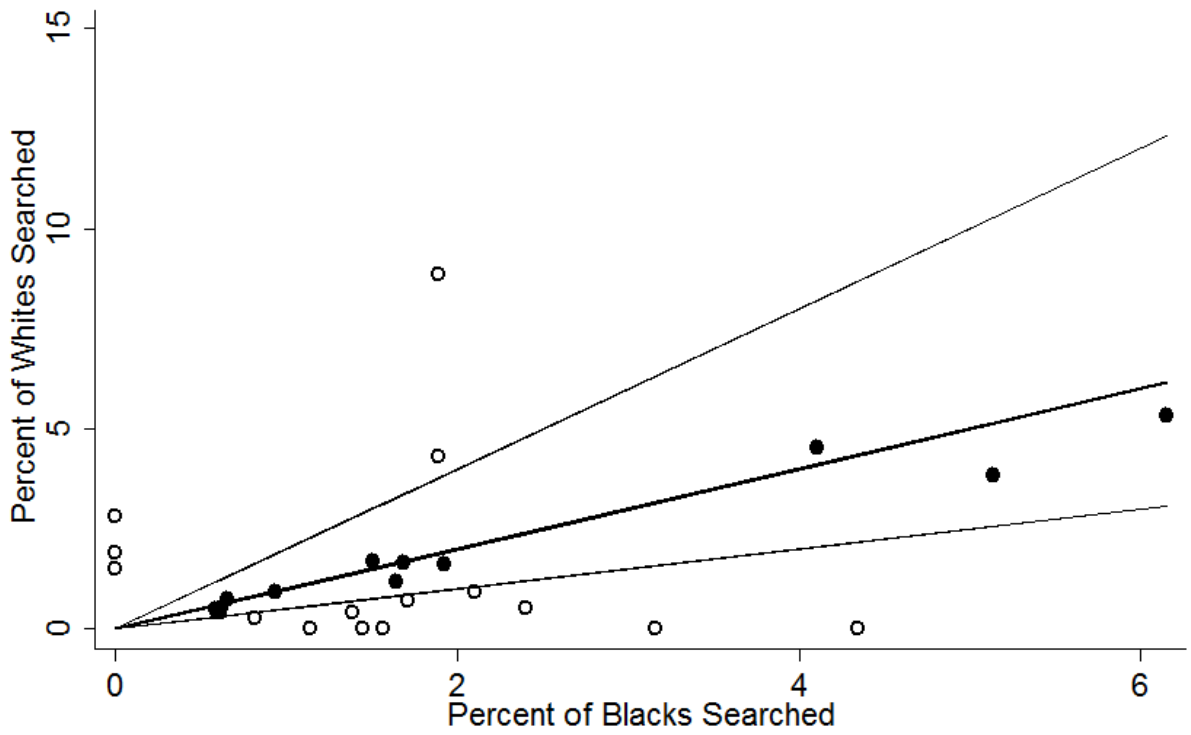
On average, officers stop 0.86 Whites for each Black stopped.

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



On average, officers search 0.63 Whites for each Black searched.

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



Includes 27 officers with a minimum of 50 White stops, 50 Black stops, and a search rate above the department average of 0.52. The hollow circles indicate high disparity officers. 5 officer searches 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	1.38*(0.21)	1.28(0.20)	1.25(0.20)	1.27(0.20)	1.11(0.18)
Hispanic	1.10(0.65)	1.05(0.62)	0.73(0.43)	0.83(0.49)	0.91(0.54)
Age	-	0.97*(0.01)	0.97*(0.01)	0.97*(0.01)	0.98*(0.01)
Stop Purpose					
Speed Limit	-	-	-	-	-
Stop Light	-	-	1.61(0.53)	1.73(0.57)	1.56(0.52)
Impaired	-	-	15.63*(5.78)	15.56*(5.81)	8.23*(3.22)
Movement	-	-	1.70(0.60)	1.68(0.60)	1.35(0.49)
Equipment	-	-	1.63(0.46)	1.78*(0.51)	1.49(0.44)
Regulatory	-	-	1.10(0.37)	1.06(0.36)	1.02(0.36)
Seat Belt	-	-	1.12(0.37)	1.05(0.35)	1.13(0.39)
Investigation	-	-	3.18*(1.09)	2.91*(1.00)	2.78*(0.96)
Other	-	-	3.08*(0.95)	2.91*(0.90)	2.57*(0.81)
Officer Type					
Black Disparity [†]	-	-	-	2.91*(0.57)	3.11*(0.63)
White Disparity [†]	-	-	-	5.73*(1.42)	5.67*(1.46)
Time					
Hour of Day	-	-	-	-	Included
Day of Week	-	-	-	-	Included
Constant	0.01*(0.00)	0.02*(0.00)	0.01*(0.00)	0.01*(0.00)	0.01*(0.01)
N	23,991	23,991	23,991	23,991	21,197
Pseudo R²	0.00	0.01	0.04	0.07	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.

* $p < 0.05$

† 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	1.15(0.43)	1.05(0.39)	1.08(0.41)	1.05(0.41)	0.91(0.37)
Hispanic	Omitted	Omitted	Omitted	Omitted	Omitted
Age	-	0.96*(0.02)	0.95*(0.02)	0.95*(0.02)	0.96*(0.02)
Stop Purpose					
Speed Limit	-	-	-	-	-
Stop Light	-	-	1.05(1.29)	1.05(1.29)	0.91(1.12)
Impaired	-	-	256.56*(214.12)	265.53*(221.85)	147.71*(136.39)
Movement	-	-	3.75(3.75)	3.71(3.71)	3.55(3.58)
Equipment	-	-	4.18(3.36)	4.21(3.39)	4.11(3.46)
Regulatory	-	-	2.63(2.28)	2.51(2.18)	2.72(2.38)
Seat Belt	-	-	Omitted	Omitted	Omitted
Investigation	-	-	17.58*(15.29)	17.25*(15.03)	15.21*(13.66)
Other	-	-	6.43*(5.89)	5.89(5.42)	6.23*(5.79)
Officer Type					
Black Disparity [†]	-	-	-	1.70(0.94)	1.70(0.98)
White Disparity [†]	-	-	-	4.40*(3.32)	3.11(2.46)
Time					
Hour of Day	-	-	-	-	Included
Day of Week	-	-	-	-	Included
Constant	0.00*(0.00)	0.01*(0.00)	0.00*(0.00)	0.00*(0.00)	0.00*(0.00)
N	16,506	16,506	14,619	14,619	10,069
Pseudo R²	0.00	0.02	0.15	0.16	0.22

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	147	26.53	71.43
Speed Limit	15	13.33	86.67
Stop Light/Sign	8	12.50	75.00
Driving Impaired	10	0.00	100.00
Safe Movement	13	38.46	61.54
Vehicle Equipment	19	36.84	63.16
Vehicle Regulatory	9	33.33	44.44
Seat Belt	12	41.67	58.33
Investigation	24	25.00	75.00
Other Vehicle	31	29.03	70.97

Figure A1. Stops by Day of the Week

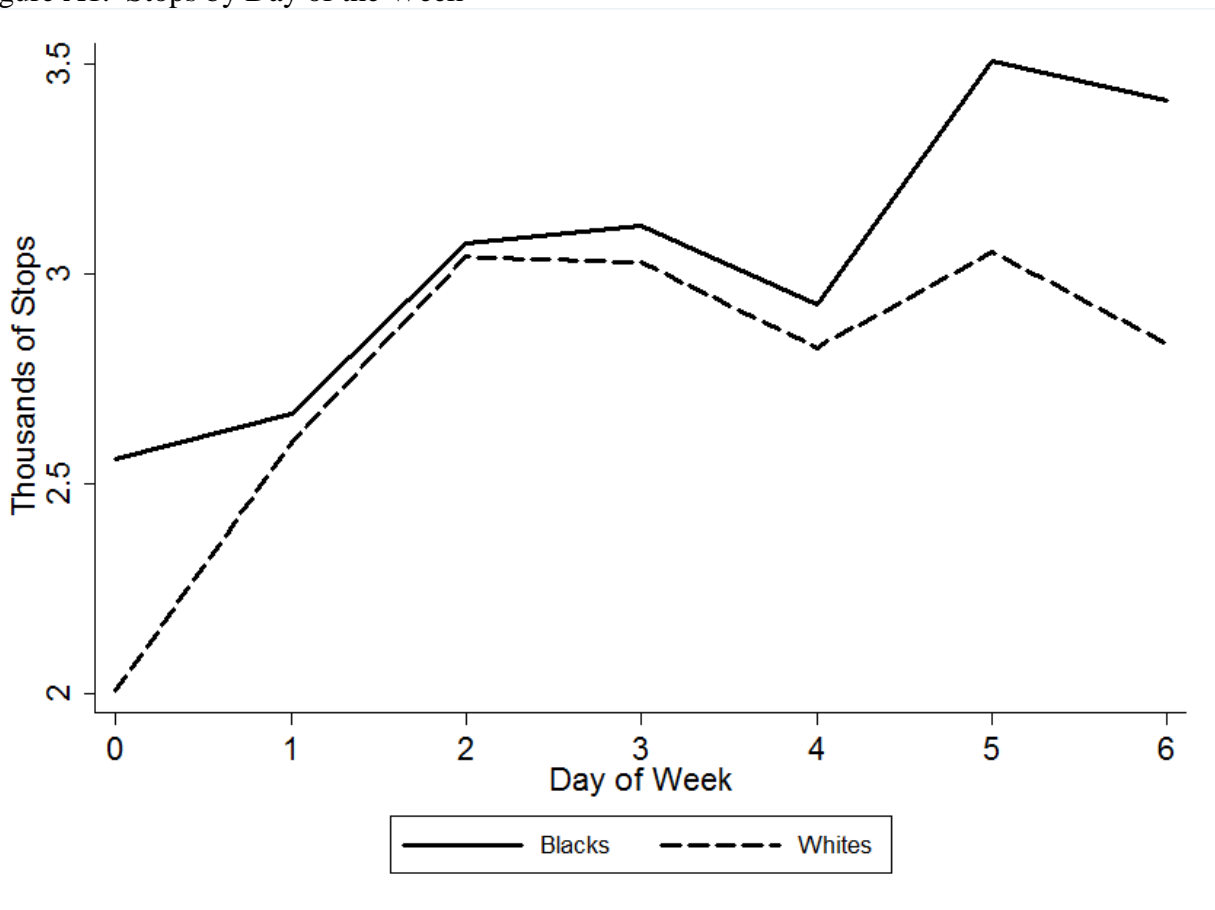


Figure A2. Searches by Day of the Week

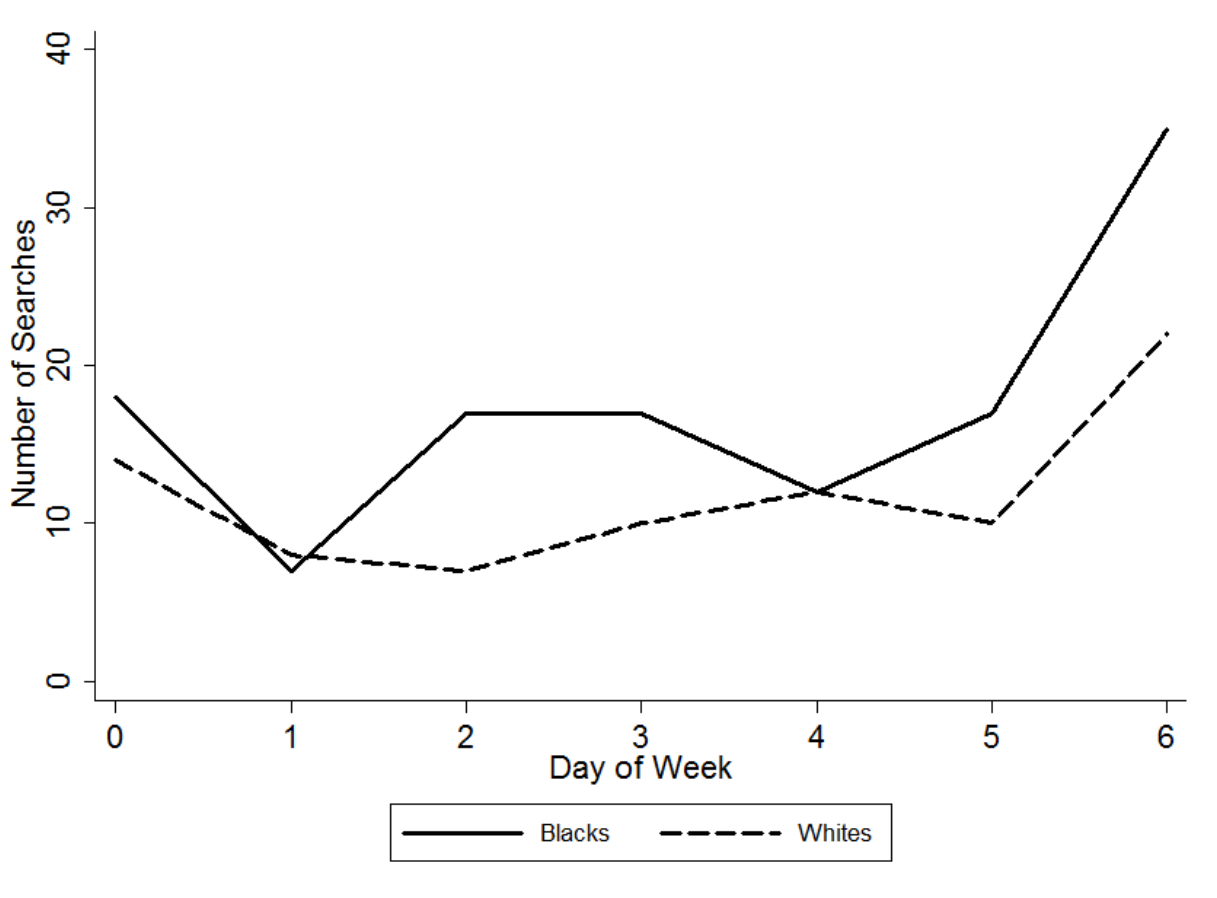
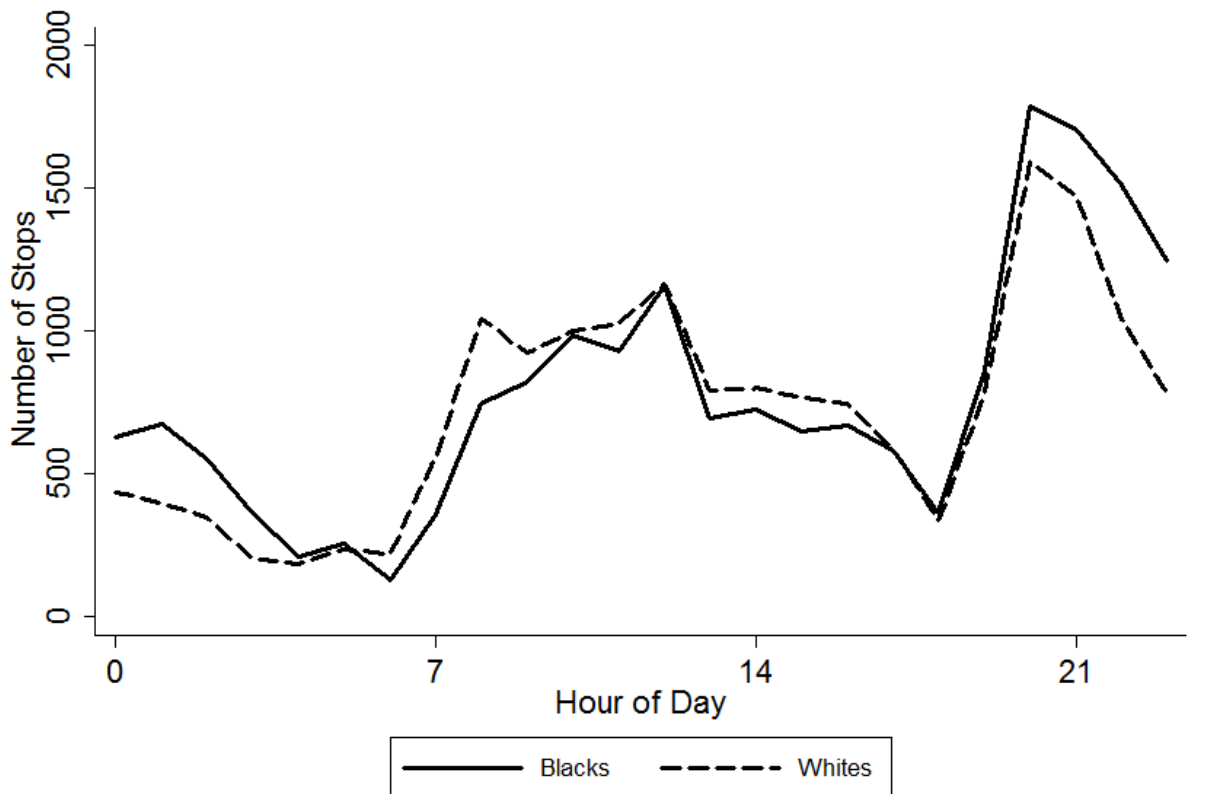
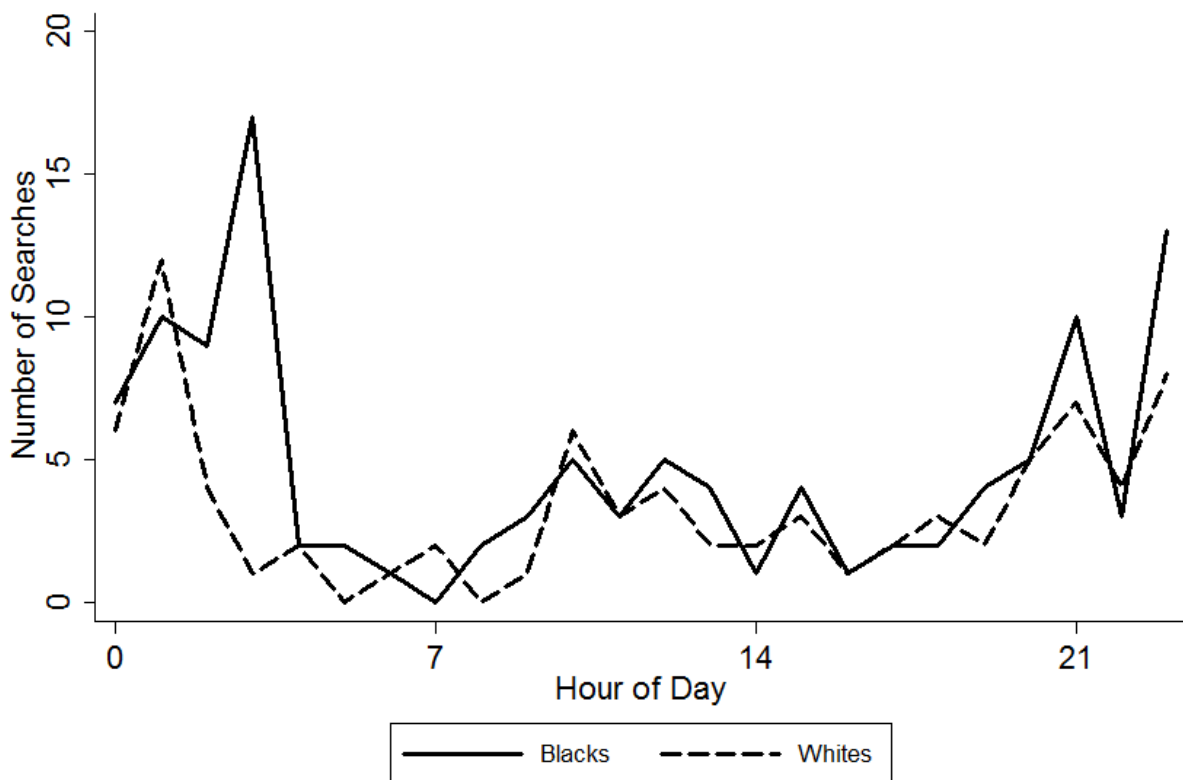


Figure A3. Stops by Hour of the Day



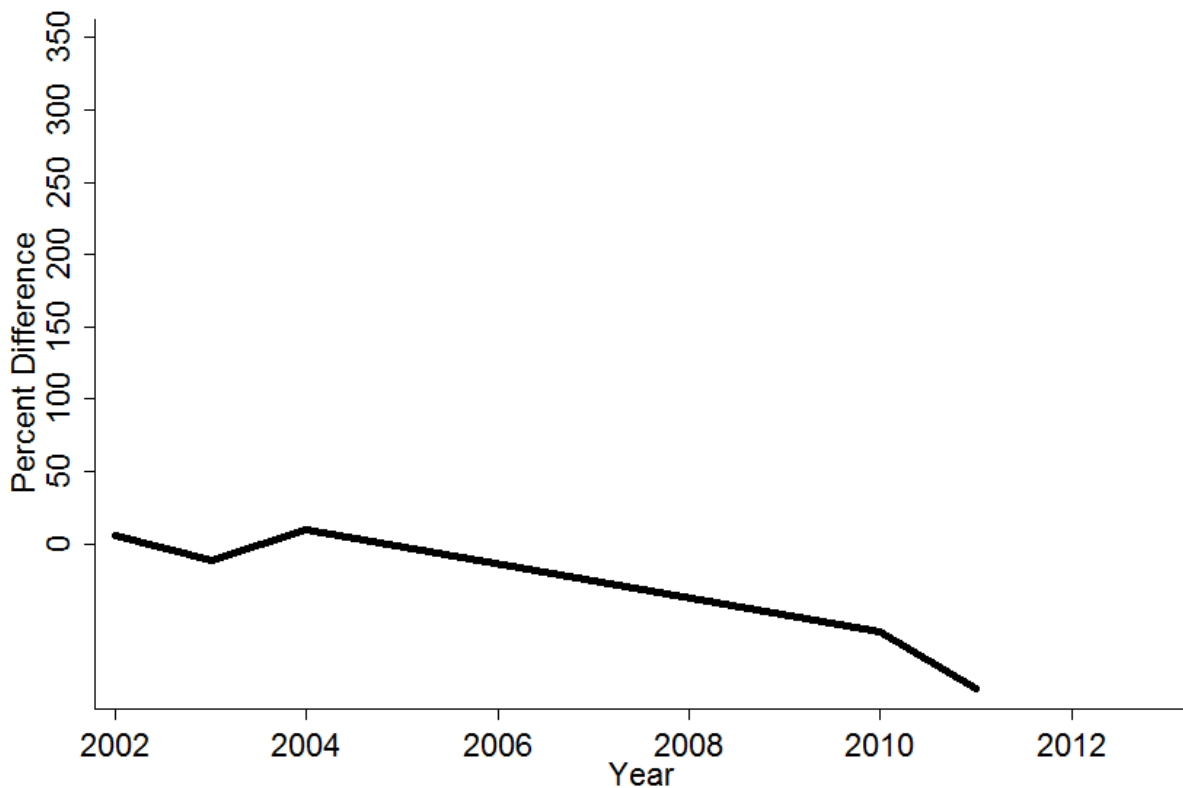
The figure excludes cases where the hour and minute was exactly 0:00. These cases were presumed to be missing data.

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	76	34.86	33.73	35.77
No	142	65.14	66.27	64.23
Total	218	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	19,294	0.36	1.18	54.54	42.85	1.08	100.00
Black	No	21,136	0.49	1.30	55.11	41.98	1.12	100.00
Total	No	41,476	0.42	1.23	54.23	42.95	1.16	100.00
White	Yes	83	1.20	0.00	19.28	59.04	20.48	100.00
Black	Yes	123	0.81	2.44	25.20	45.53	26.02	100.00
Total	Yes	218	0.92	1.38	22.02	51.38	24.31	100.00