

# **Analysis of Black-White Differences in Traffic Stops and Searches in Chapel Hill, NC, 2002-2013**

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Table 1. Overview of the Data

Data Subsets	Observations
Total stops	68,498
-2014	1,841
-Passengers	1,224
-Checkpoint stops	0
Total number of cases deleted	3,038
Stops remaining for analysis	65,460
Searches	2,427
Percent of stops leading to search (search rate)	3.71

Figure 1. Number of Traffic Stops per Year

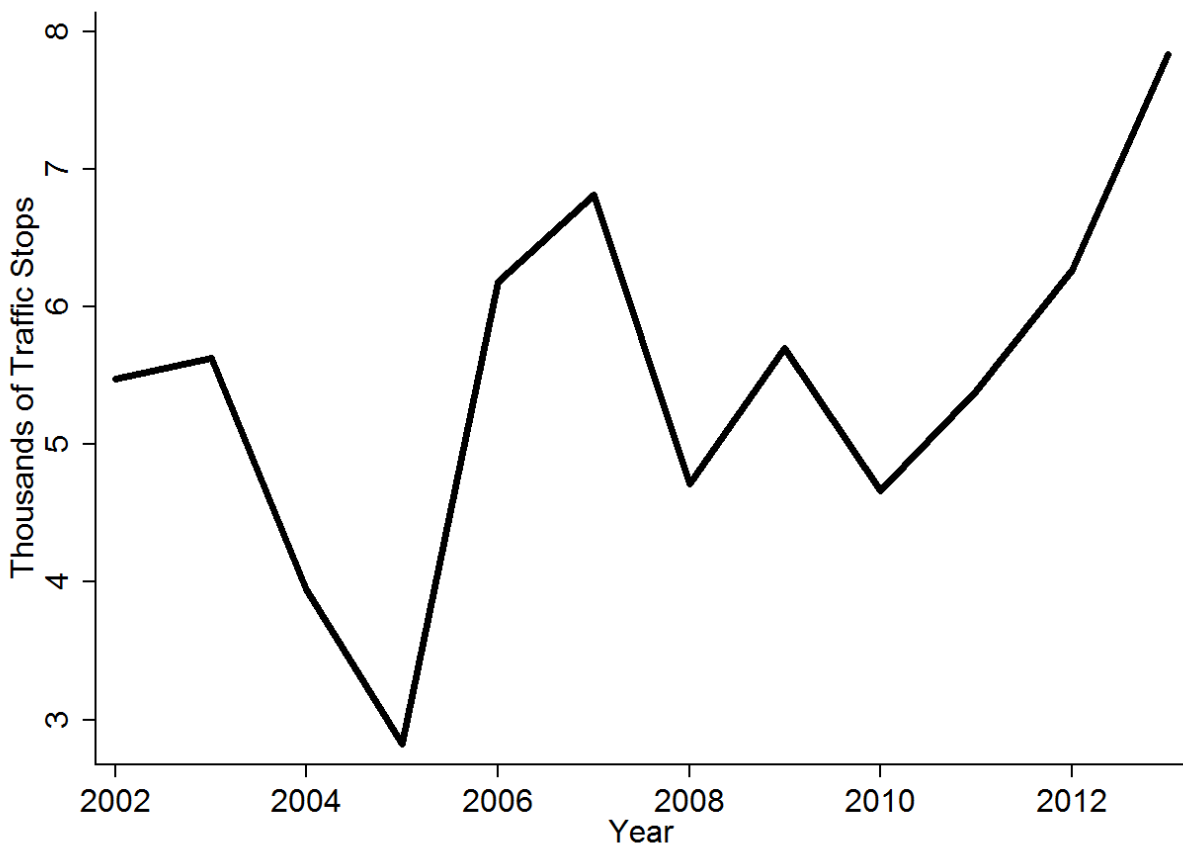


Figure 2. Racial Composition of Traffic Stops by Year

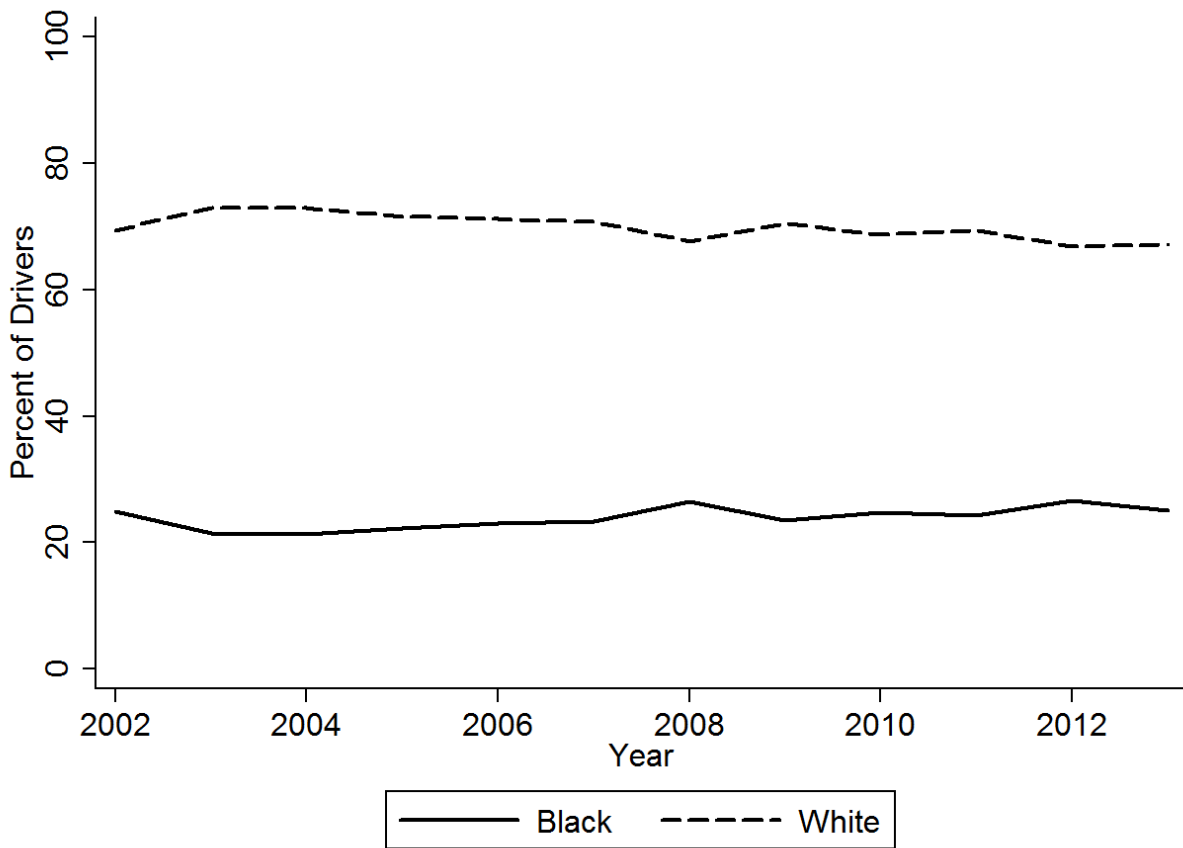


Table 2. Racial Composition of Traffic Stops by Purpose, Drivers

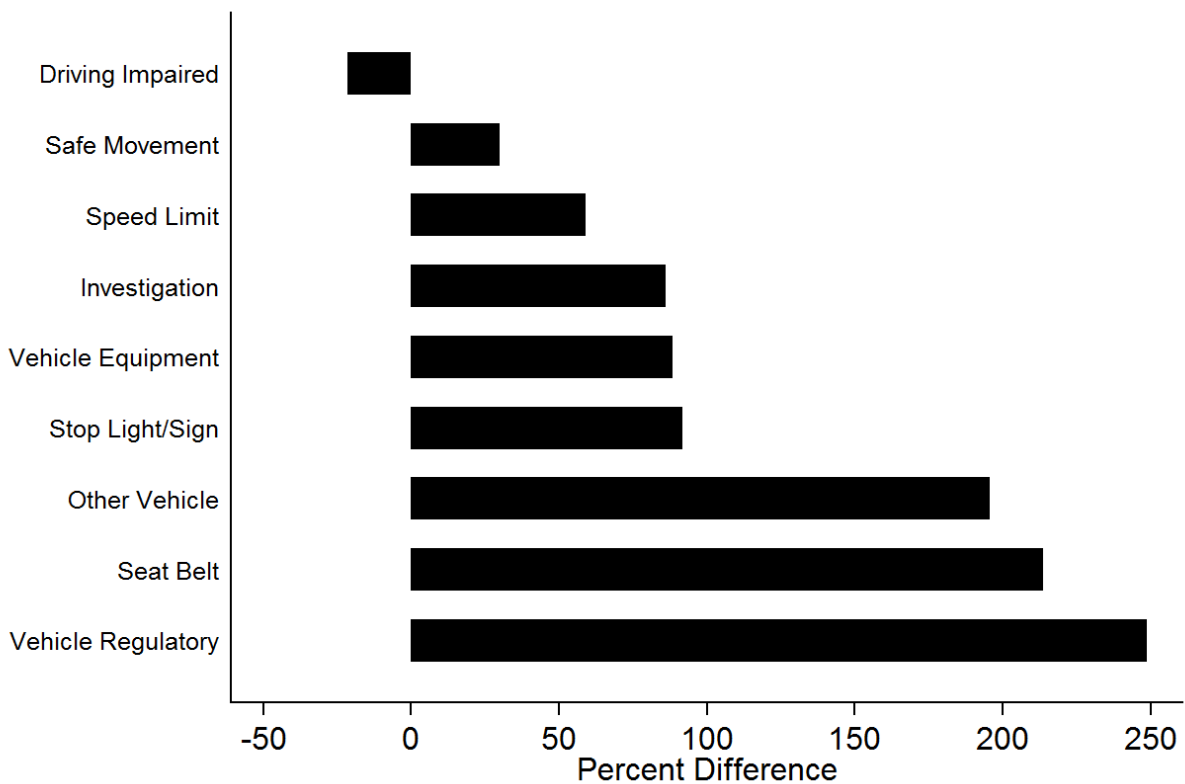
Purpose	Number	Percent	
		White	Black
Total Stops	65,460	69.74	24.05
Speed Limit	31,133	70.86	22.01
Stop Light/Sign	5,769	74.47	17.07
Driving Impaired	710	78.03	17.32
Safe Movement	3,638	70.29	22.37
Vehicle Equipment	5,265	62.36	31.78
Vehicle Regulatory	12,238	70.24	26.14
Seat Belt	1,241	72.04	24.01
Investigation	2,852	60.13	35.76
Other Vehicle	2,614	64.80	29.92

Note: Includes only drivers. Excludes 1,224 passengers.

Table 3. Percent Searched by Race and Purpose of Stop

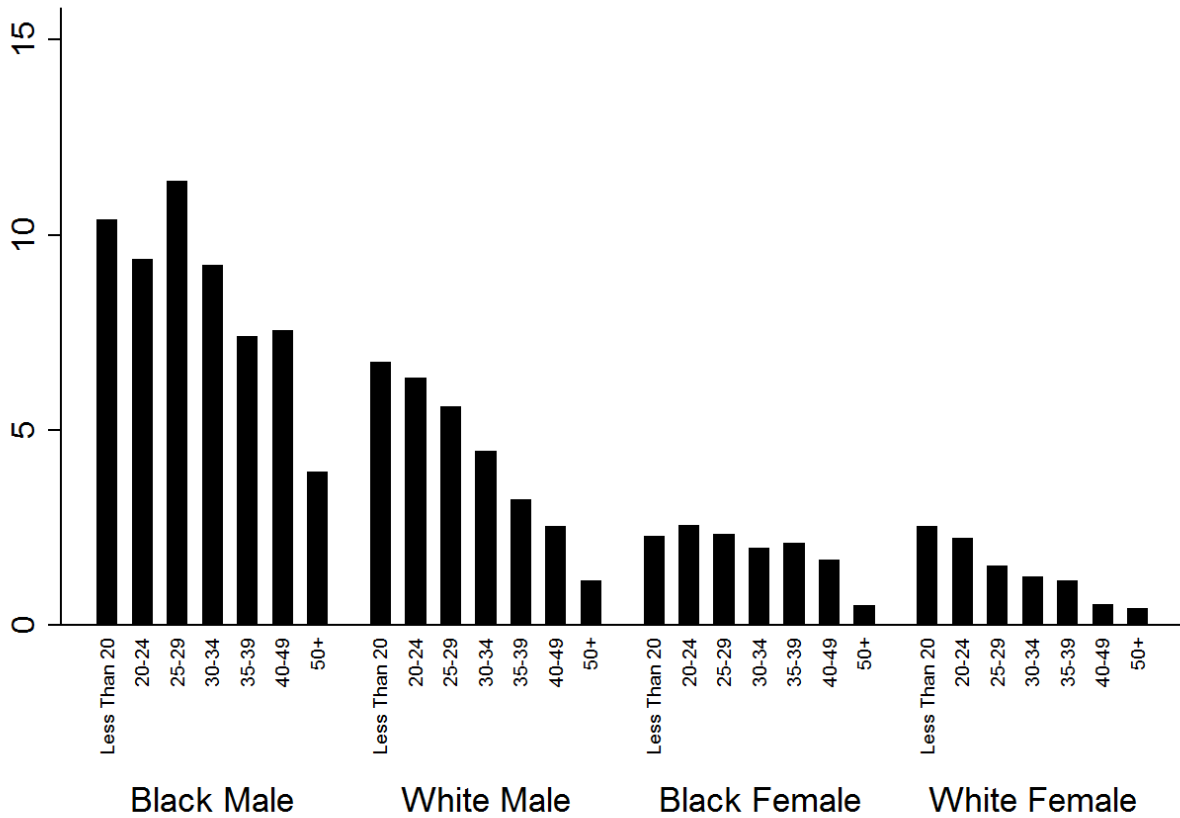
Purpose	Number	% Total	% White	% Black	Ratio
					Black:White
Total Stops	65,460	-	69.74	24.05	-
Total Searches	2,427	3.71	3.12	6.08	1.95
Speed Limit	467	1.50	1.39	2.20	1.58
Stop Light/Sign	132	2.29	2.12	4.06	1.92
Driving Impaired	388	54.65	57.94	45.53	0.79
Safe Movement	207	5.69	5.48	7.13	1.30
Vehicle Equipment	294	5.58	4.51	8.49	1.88
Vehicle Regulatory	418	3.42	2.11	7.35	3.48
Seat Belt	45	3.63	2.46	7.72	3.14
Investigation	322	11.29	8.75	16.27	1.86
Other Vehicle	154	5.89	3.72	11.00	2.96

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



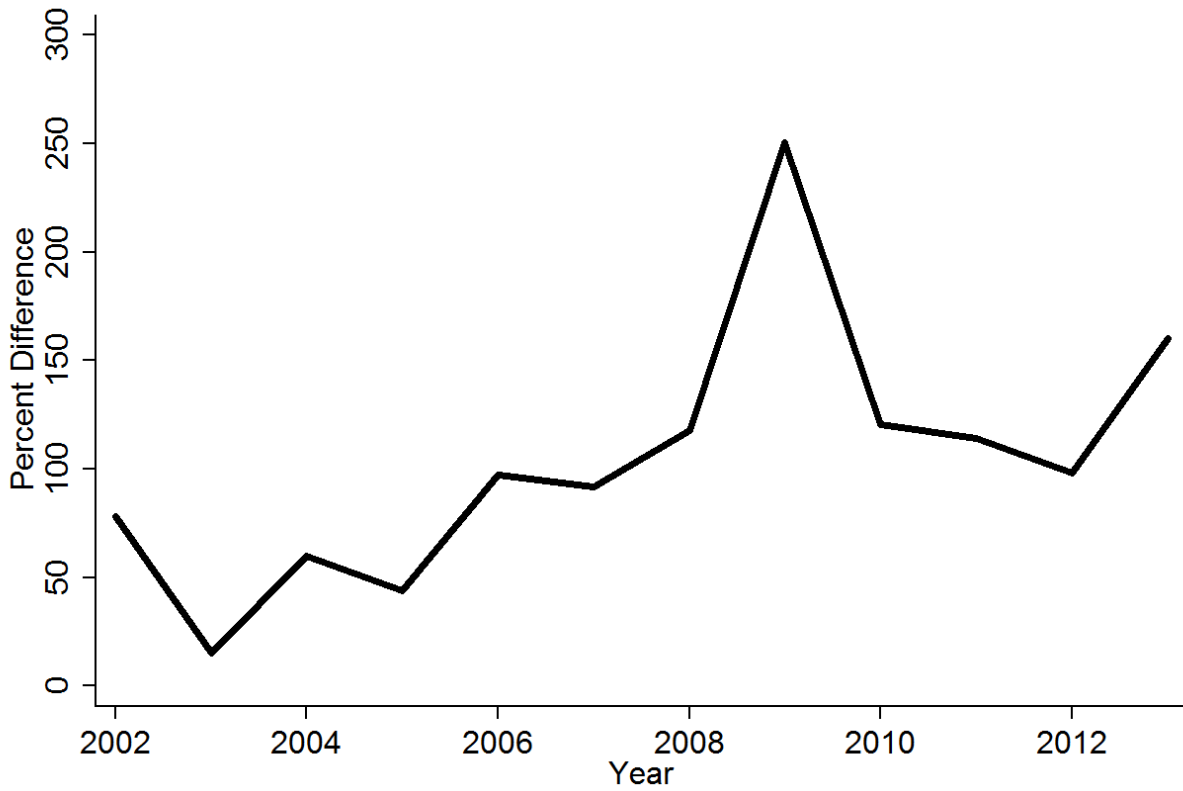
The figure shows the percentage difference in the likelihood of Blacks being searched as compared to Whites by purpose of stop.

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



Based on 68,498 traffic stops from 2002 through 2013, and 2,427 searches. Overall rate of search: 3.71 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

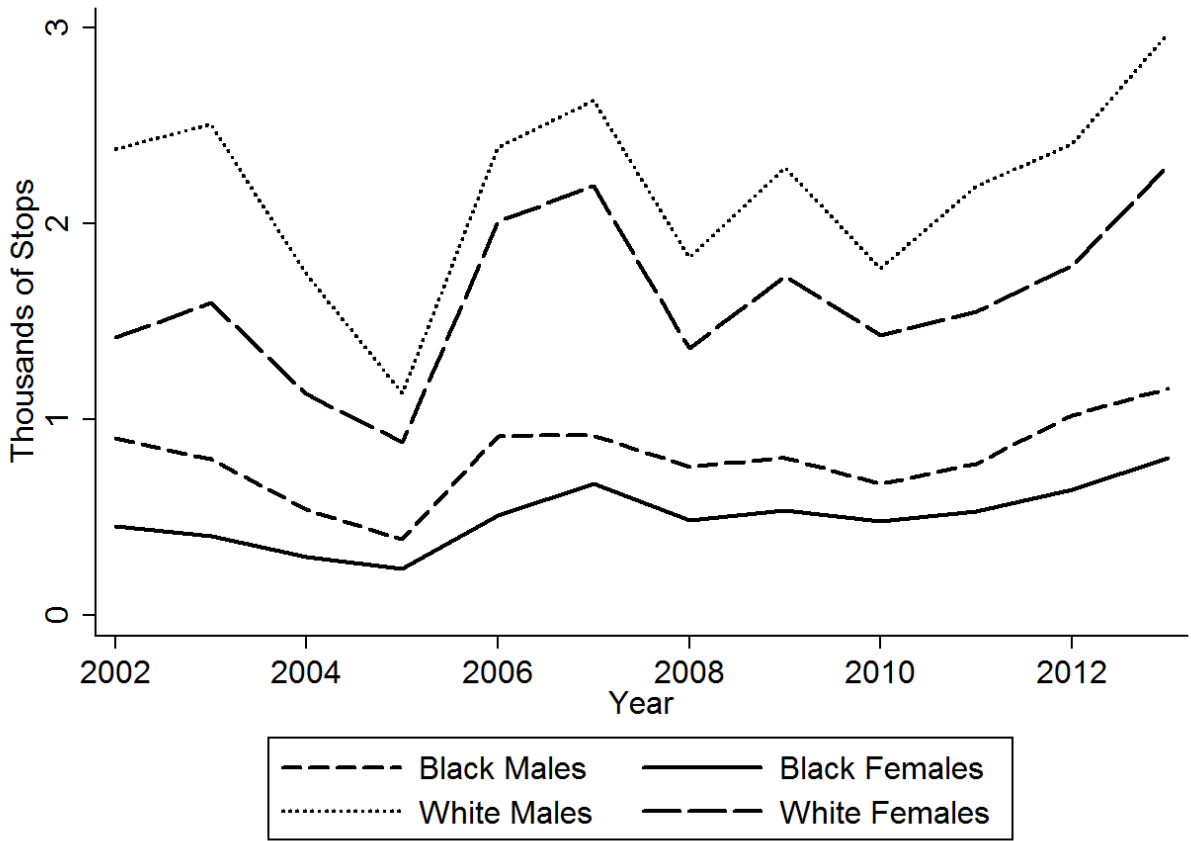


Figure 7. Percent Searched, by Race and Gender

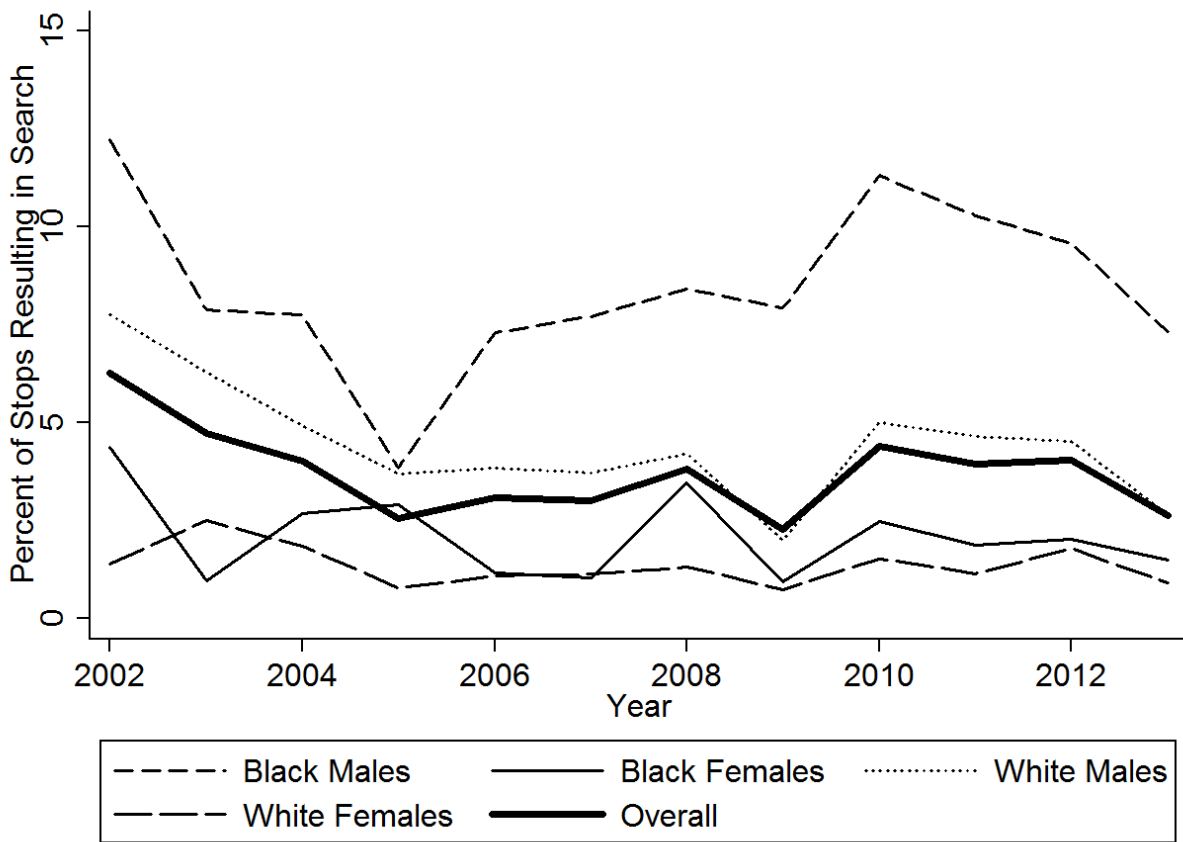


Table 4. Type of Search by Race

Search Type	Number	% Total	% White	% Black	Ratio
					Black:White
Total Stops	65,460	-	69.74	24.05	-
Total Searches	2,427	3.71	3.12	6.08	1.95
Consent	600	0.92	0.66	1.82	2.76
Search Warrant	5	-	-	-	-
Probable Cause	534	0.82	0.60	1.58	2.63
Incident to Arrest	1,211	1.85	1.75	2.47	1.41
Protective Frisk	77	0.12	0.09	0.20	2.22

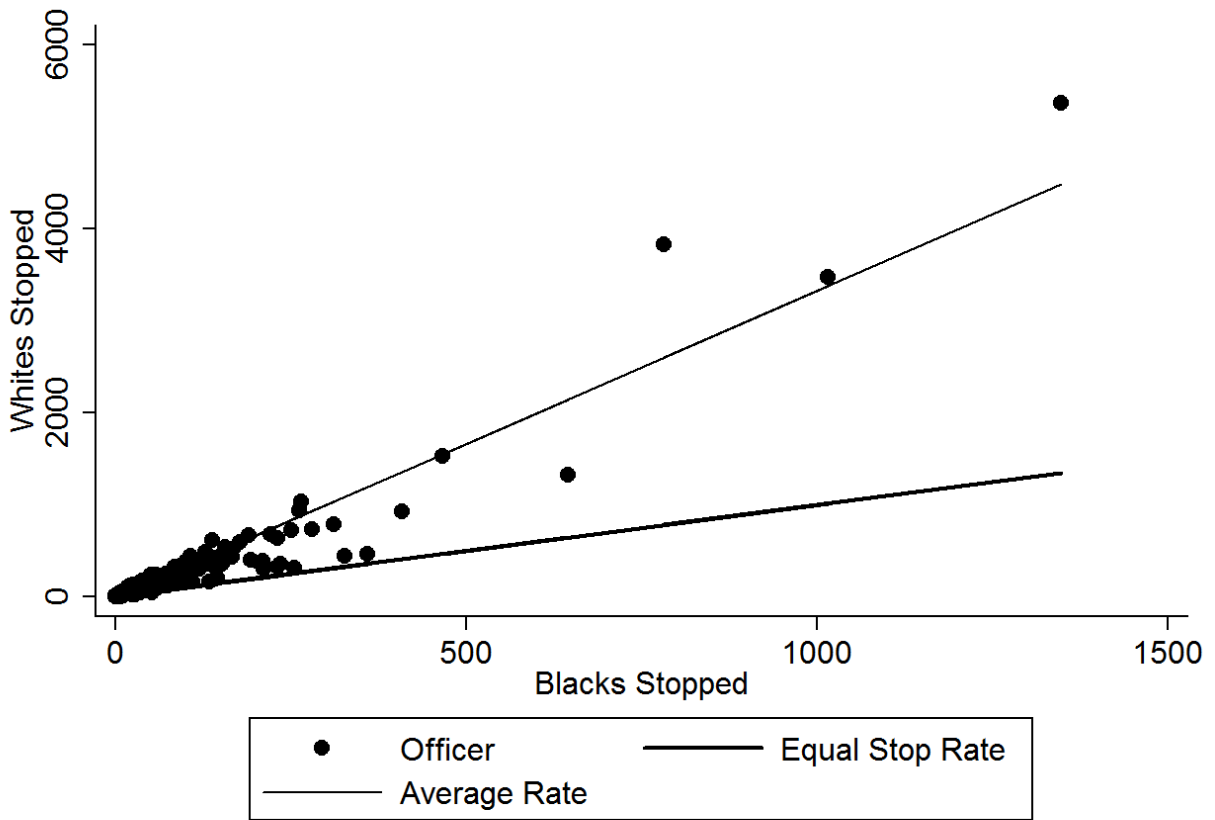
Note: See the appendix for this same table separately for Men and Women.



Table 5. Distribution of Officer IDs by Stop

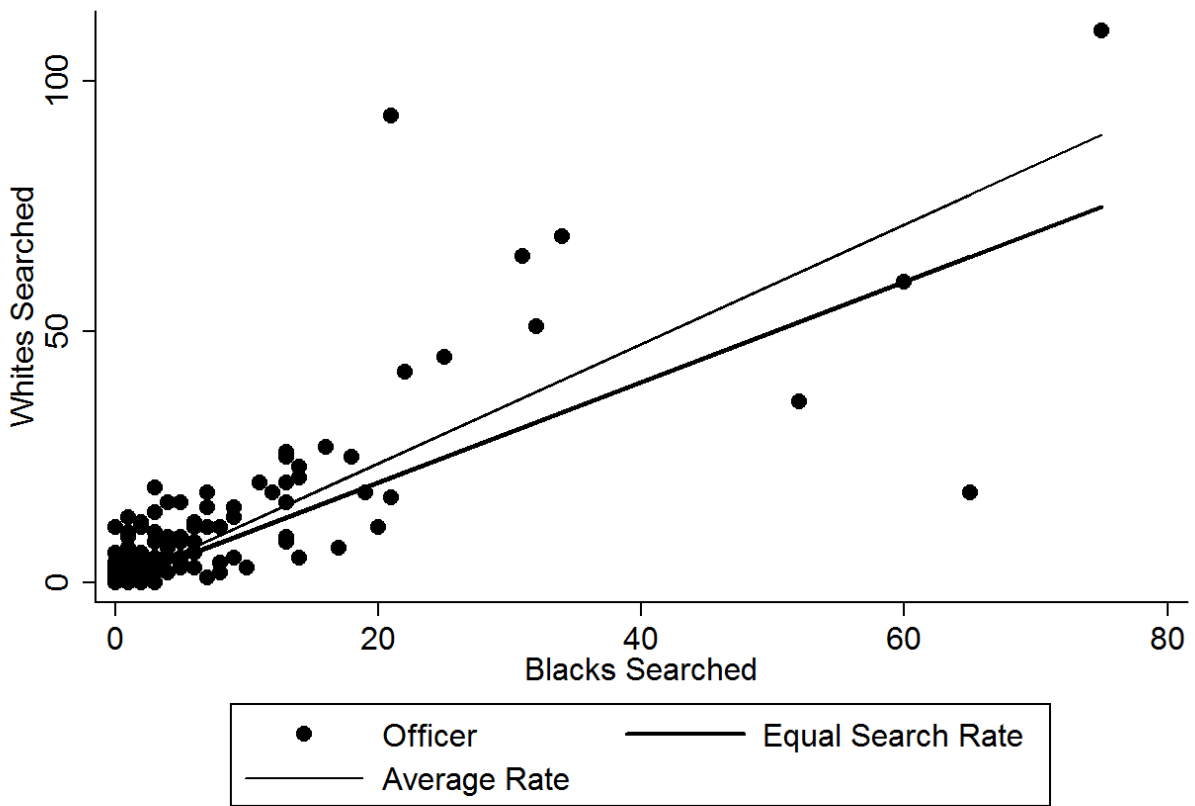
Number of Stops	Officers w/ this many Stops	Percent of Officers	Cumulative Percent	Percent of Stops	Cumulative Percent
1	130	34.85	34.85	0.19	0.19
2 – 10	81	21.72	56.57	0.44	0.63
11 - 100	55	14.75	71.31	3.39	4.02
101 – 1,000	96	25.74	97.05	52.22	56.24
1,001 +	11	2.95	100.00	43.73	100.00
Total	373	100.00	-	100.00	-

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



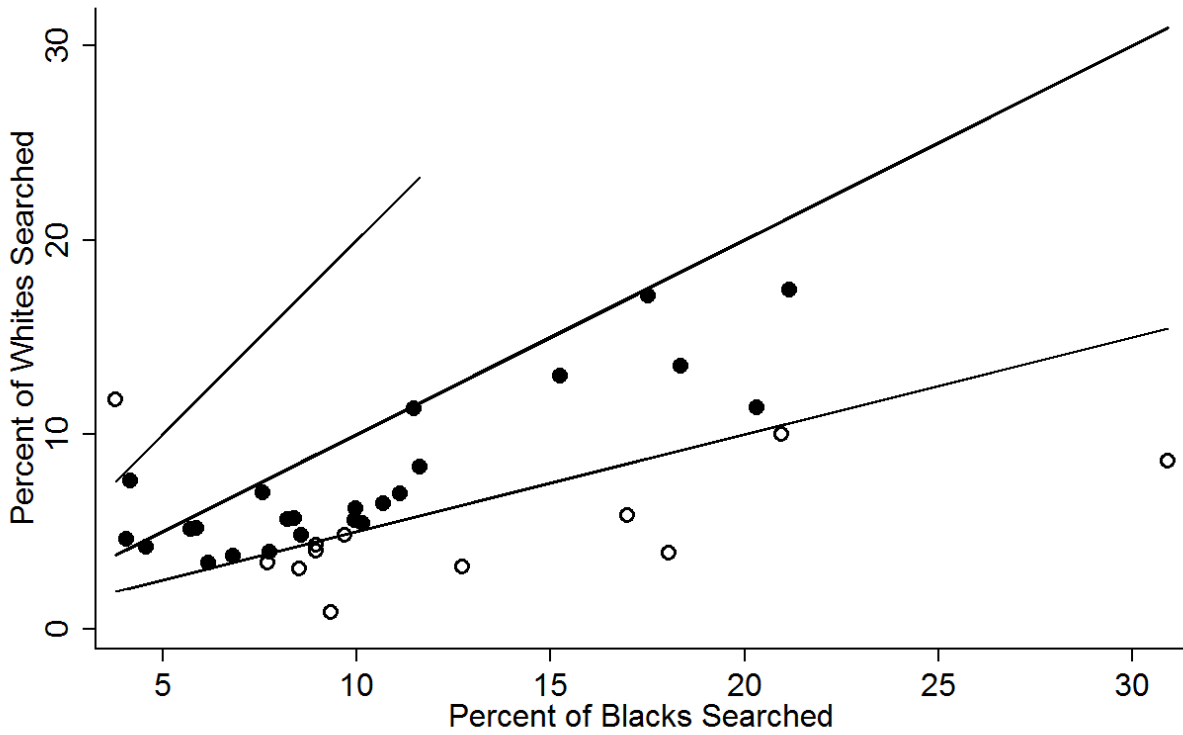
On average, officers stop 3.325 Whites for each Black stopped.

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



On average, officers search 1.190 Whites for each Black searched.

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



Includes 36 officers with a minimum of 50 White stops, 50 Black stops, and a search rate above the department average of 3.71. The hollow circles indicate high disparity officers. 1 officers search Whites at more than twice the rate that they search Blacks. 11 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	2.36* (0.11)	2.30* (0.11)	2.33* (0.12)	2.28* (0.12)	2.11* (0.12)
Hispanic	2.14* (0.14)	1.92* (0.13)	1.64* (0.12)	1.63* (0.12)	1.67* (0.13)
Age	-	0.97* (0.00)	0.97* (0.00)	0.97* (0.00)	0.97* (0.00)
<b>Stop Purpose</b>					
Speed Limit	-	-	-	-	-
Stop Light	-	-	1.39* (0.15)	1.34* (0.15)	1.24* (0.14)
Impaired	-	-	54.95* (5.86)	52.96* (5.66)	35.80* (4.04)
Movement	-	-	3.31* (0.31)	3.23* (0.31)	2.87* (0.28)
Equipment	-	-	2.60* (0.22)	2.42* (0.21)	2.21* (0.20)
Regulatory	-	-	1.95* (0.14)	1.82* (0.14)	1.89* (0.15)
Seat Belt	-	-	1.98* (0.33)	1.95* (0.33)	2.29* (0.39)
Investigation	-	-	5.33* (0.45)	5.14* (0.44)	4.64* (0.40)
Other	-	-	2.99* (0.31)	2.90* (0.30)	2.87* (0.30)
<b>Officer Type</b>					
Black Disparity <sup>†</sup>	-	-	-	1.61* (0.13)	1.54* (0.12)
White Disparity <sup>†</sup>	-	-	-	1.83 (0.6)	2.00* (0.65)
<b>Time</b>					
Hour of Day	-	-	-	-	Included
Day of Week	-	-	-	-	Included
<b>Constant</b>	0.03* (0.00)	0.12* (0.00)	0.05* (0.00)	0.05* (0.00)	0.06* (0.01)
<b>N</b>	35,923	35,923	35,923	35,923	35,254
<b>Pseudo R<sup>2</sup></b>	0.021	0.040	0.140	0.143	0.155

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	1.53* (0.17)	1.43* (0.16)	1.63* (0.20)	1.61* (0.20)	1.48* (0.18)
Hispanic	1.27 (0.30)	1.18 (0.28)	1.20 (0.30)	1.19 (0.30)	1.30 (0.33)
Age	-	0.96* (0.00)	0.96* (0.00)	0.96* (0.00)	0.97* (0.01)
<b>Stop Purpose</b>					
Speed Limit	-	-	-	-	-
Stop Light	-	-	2.87* (0.66)	2.82* (0.65)	2.48* (0.59)
Impaired	-	-	188.16* (38.13)	187.92* (38.20)	90.22* (20.30)
Movement	-	-	4.84* (1.11)	4.80* (1.10)	3.75* (0.88)
Equipment	-	-	5.23* (1.01)	5.08* (0.99)	3.80* (0.78)
Regulatory	-	-	3.25* (0.57)	3.16* (0.56)	3.28* (0.59)
Seat Belt	-	-	1.60 (0.95)	1.61 (0.95)	1.89 (1.13)
Investigation	-	-	12.69* (2.51)	12.55* (2.48)	10.09* (2.06)
Other	-	-	3.06* (0.97)	3.01* (0.96)	2.80* (0.90)
<b>Officer Type</b>					
Black Disparity <sup>†</sup>	-	-	-	1.29 (0.26)	1.23 (0.25)
White Disparity <sup>†</sup>	-	-	-	0.42 (0.48)	0.38 (0.45)
<b>Time</b>					
Hour of Day	-	-	-	-	Included
Day of Week	-	-	-	-	Included
<b>Constant</b>	0.01* (0.00)	0.05* (0.00)	0.01* (0.00)	0.01* (0.00)	0.01* (0.00)
<b>N</b>	25,472	25,472	25,472	25,472	24,954
<b>Pseudo R<sup>2</sup></b>	0.004	0.029	0.192	0.193	0.224

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	1,224	43.71	54.49
Speed Limit	194	51.55	46.39
Stop Light/Sign	91	46.15	46.15
Driving Impaired	72	65.28	30.56
Safe Movement	100	66.00	31.00
Vehicle Equipment	200	30.00	70.00
Vehicle Regulatory	236	37.29	61.86
Seat Belt	23	43.48	56.52
Investigation	227	37.89	60.79
Other Vehicle	81	44.44	55.56

Figure A1. Stops by Day of the Week

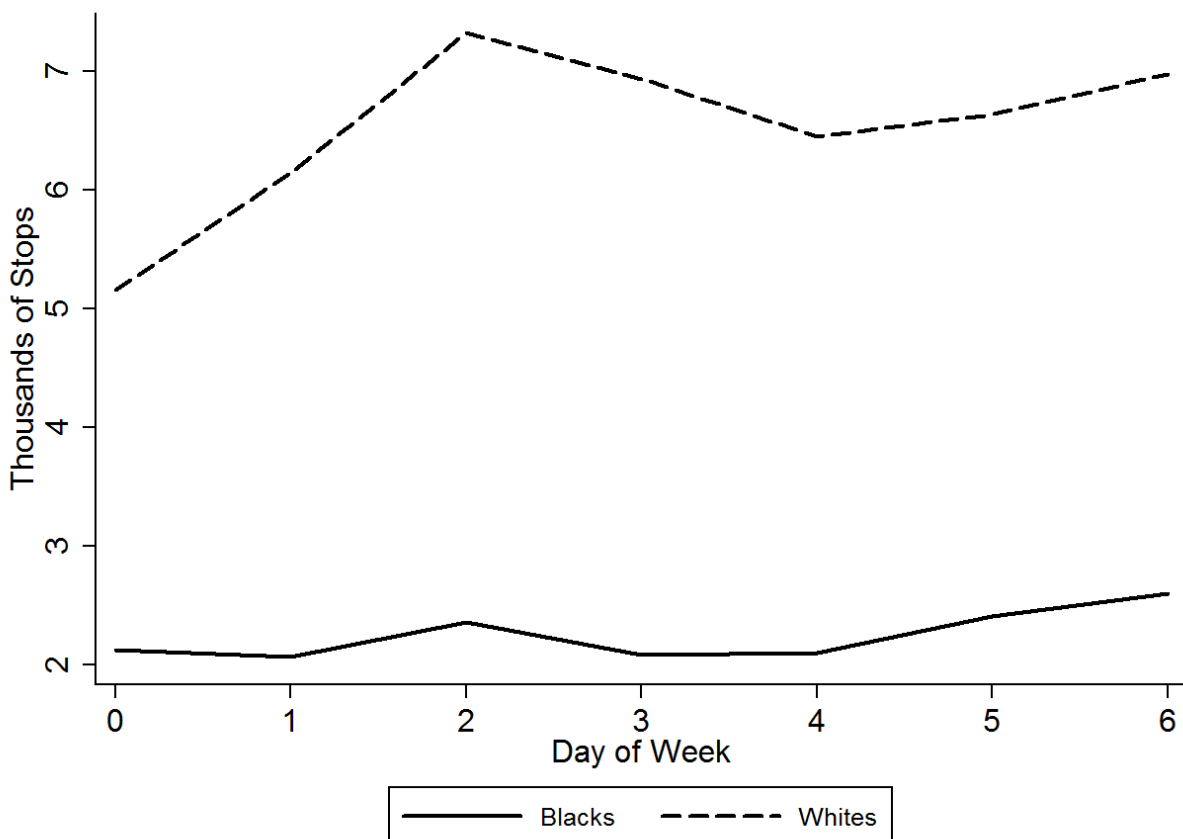


Figure A2. Searches by Day of the Week

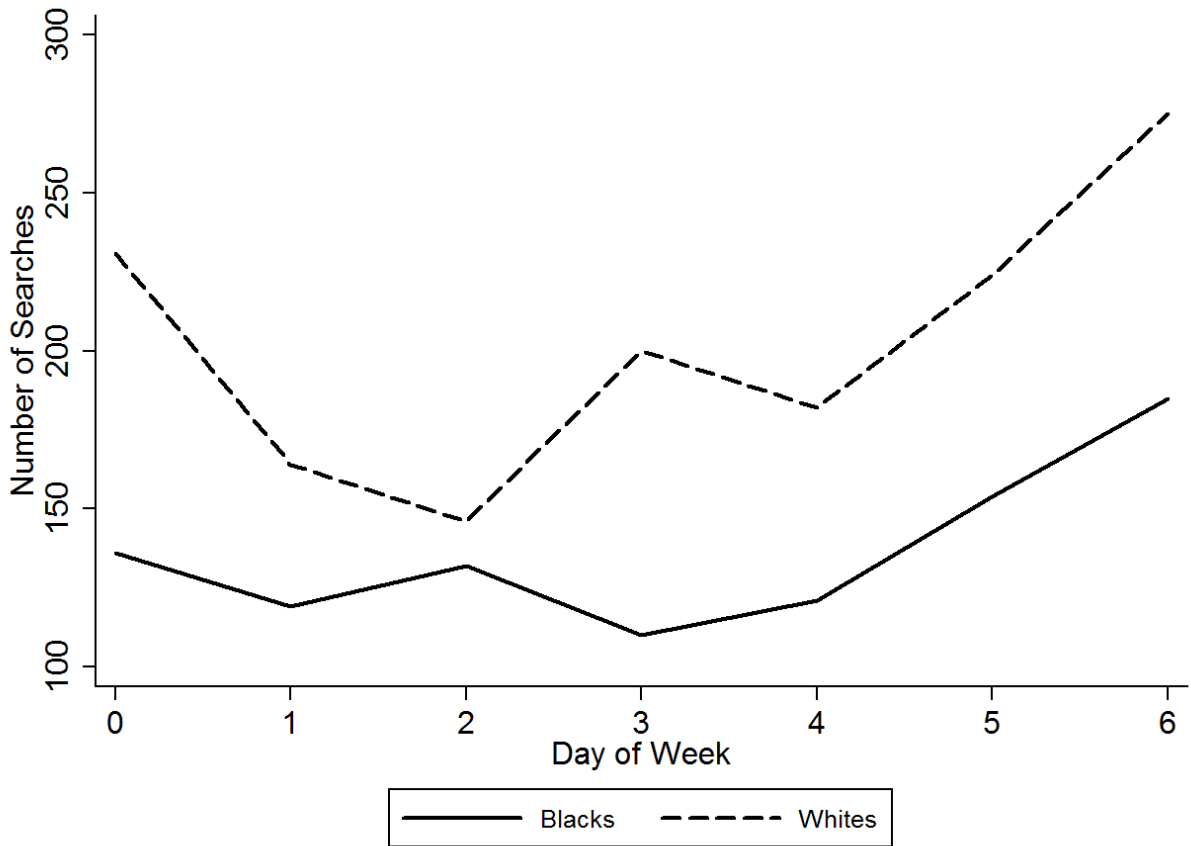
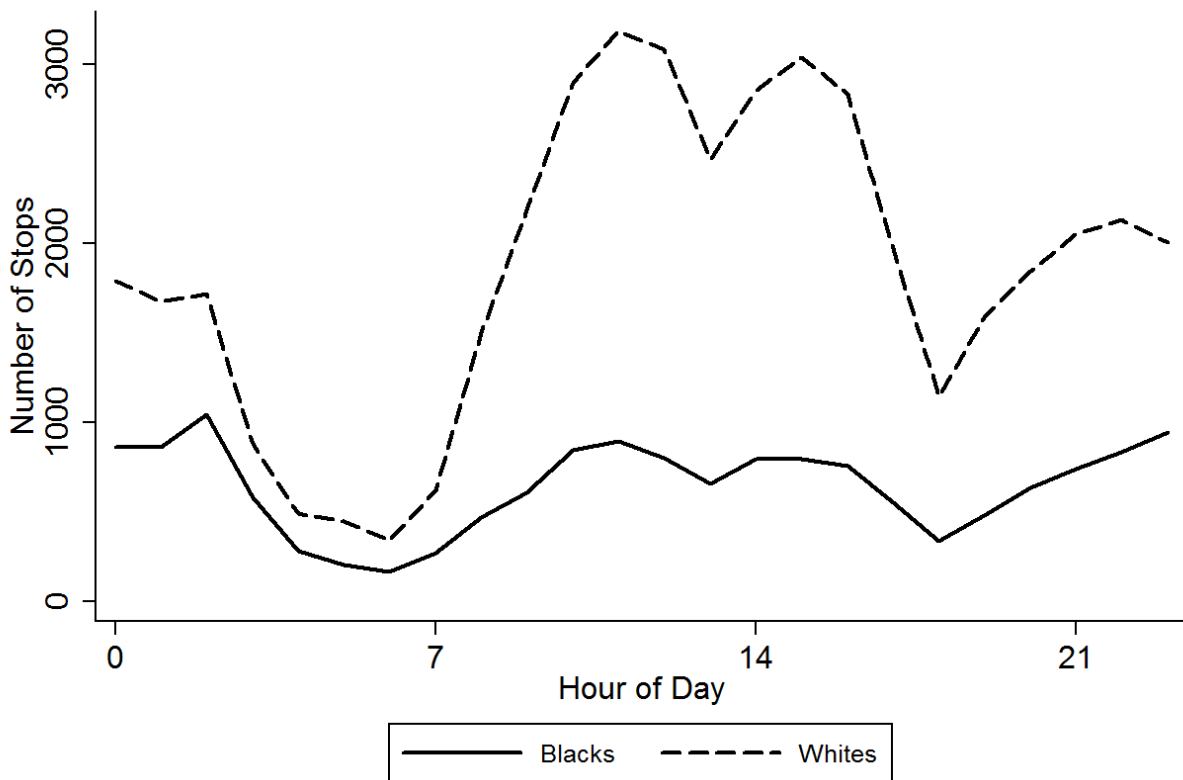


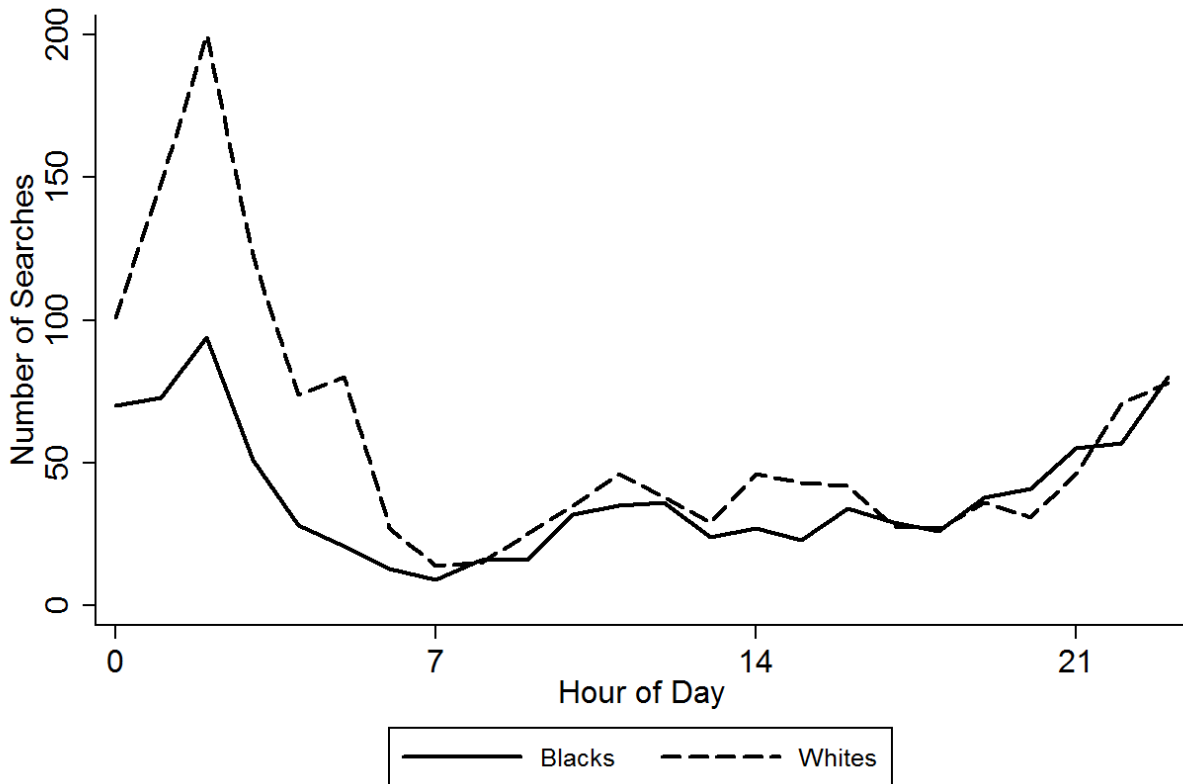


Figure A3. Stops by Hour of the Day



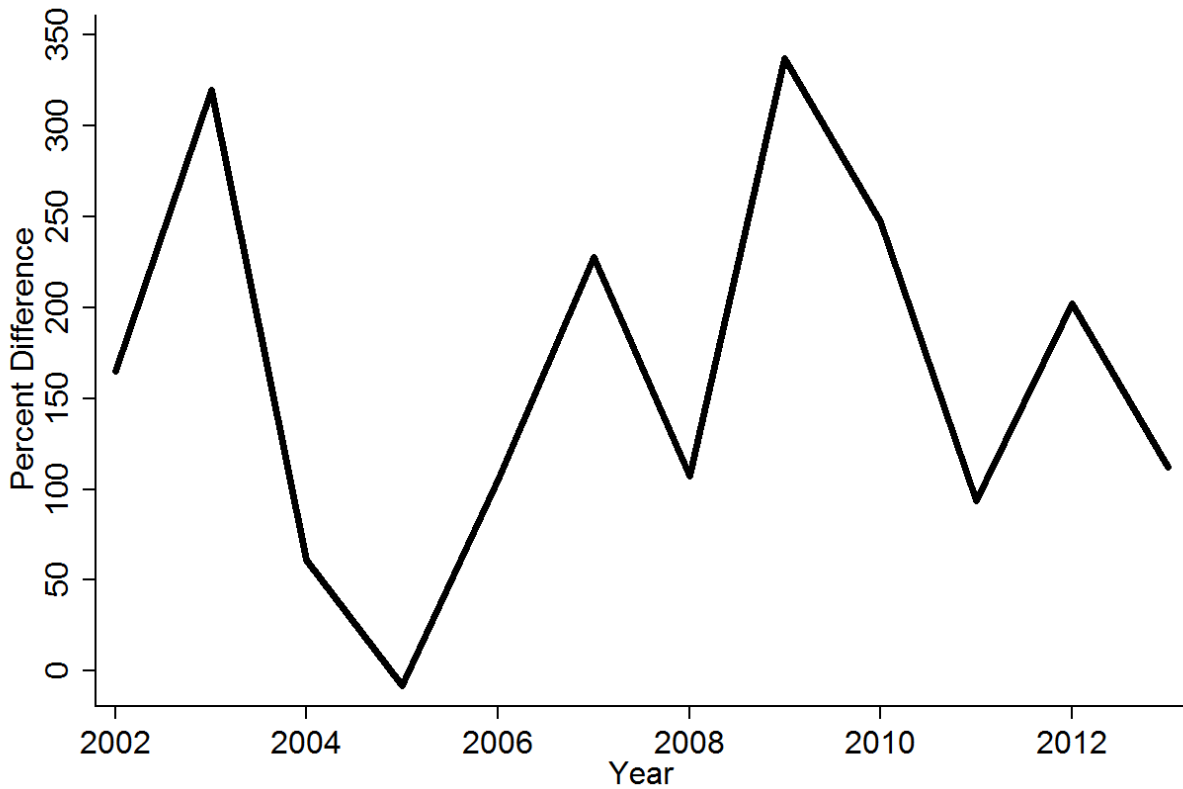
The figure excludes cases where the hour and minute was exactly 0:00. These cases were presumed to be missing data.

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	619	25.50	22.36	30.41
No	1,808	74.50	77.64	69.59
Total	2,427	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	44,228	3.17	31.78	2.00	62.29	0.76	100.00
Black	No	14,788	4.92	37.58	1.93	54.37	1.20	100.00
Total	No	63,033	3.57	33.16	1.96	60.47	0.84	100.00
White	Yes	1,422	1.55	8.51	2.81	18.00	69.13	100.00
Black	Yes	957	1.88	10.66	3.66	28.84	54.96	100.00
Total	Yes	2,427	1.73	9.39	3.17	22.29	63.41	100.00