

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

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Table 1. Overview of the Data

Data Subsets	Observations
Total stops	1,416,174
-2014	53,009
-Passengers	47,224
-Checkpoint stops	2,677
Stops for analysis	1,314,787
Searches	70,231

Search Rate = 5.34

Figure 1. Number of Traffic Stops per Year

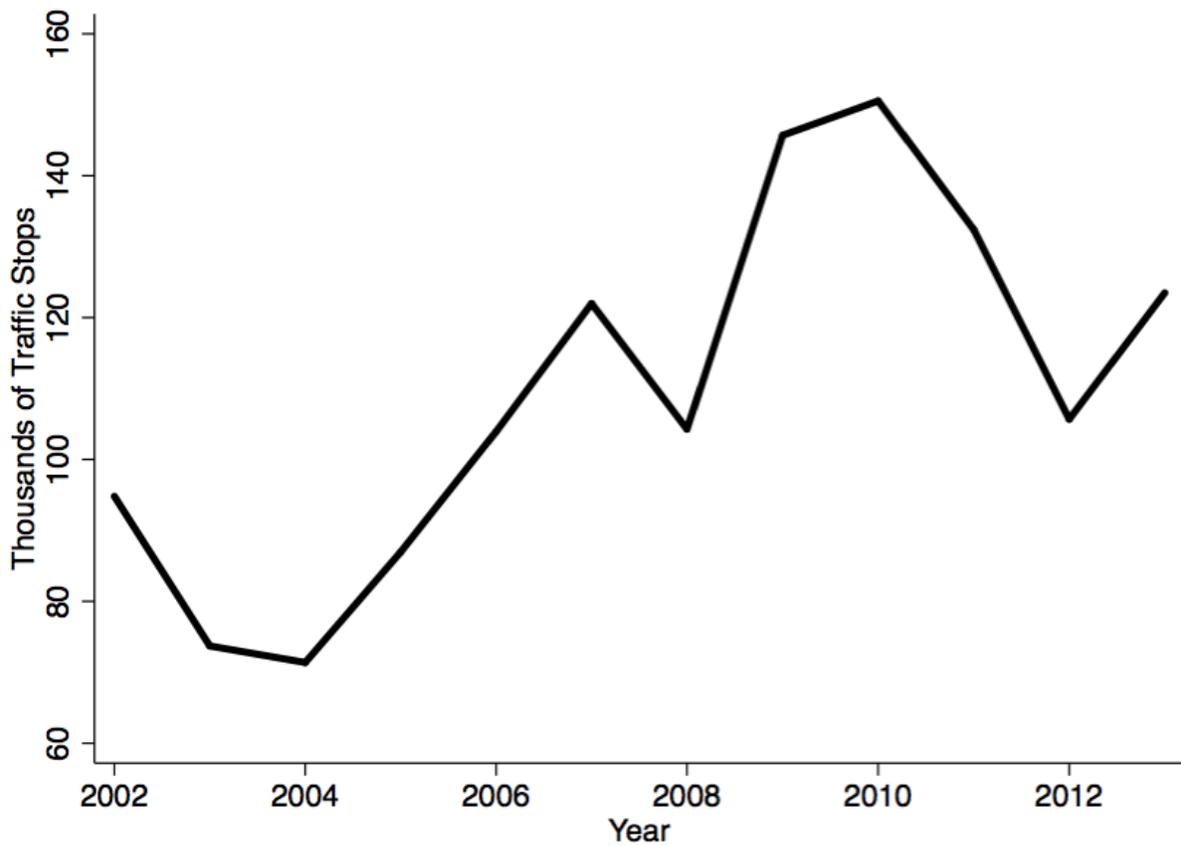


Figure 2. Racial Composition of Traffic Stops by Year

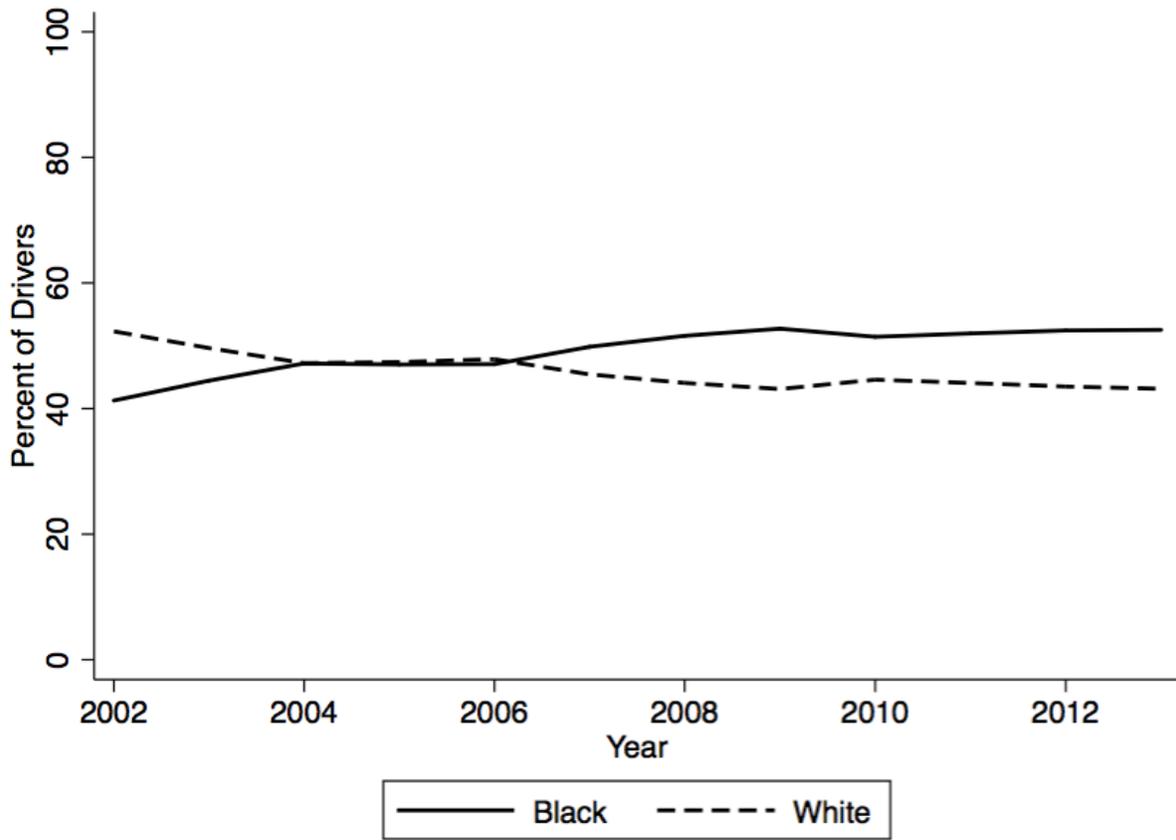


Table 2. Racial Composition of Traffic Stops by Purpose, Drivers

Purpose	Number	Percent	
		White	Black
Total Stops	1,314,787	45.62	49.69
Speed Limit	400,656	55.09	39.00
Stop Light/Sign	98,992	51.04	42.75
Driving Impaired	7,618	67.29	22.87
Safe Movement	73,861	49.15	45.12
Vehicle Equipment	124,243	36.19	59.47
Vehicle Regulatory	441,032	38.59	58.47
Seat Belt	51,966	39.05	56.36
Investigation	49,565	42.24	53.69
Other Vehicle	66,854	45.86	47.85

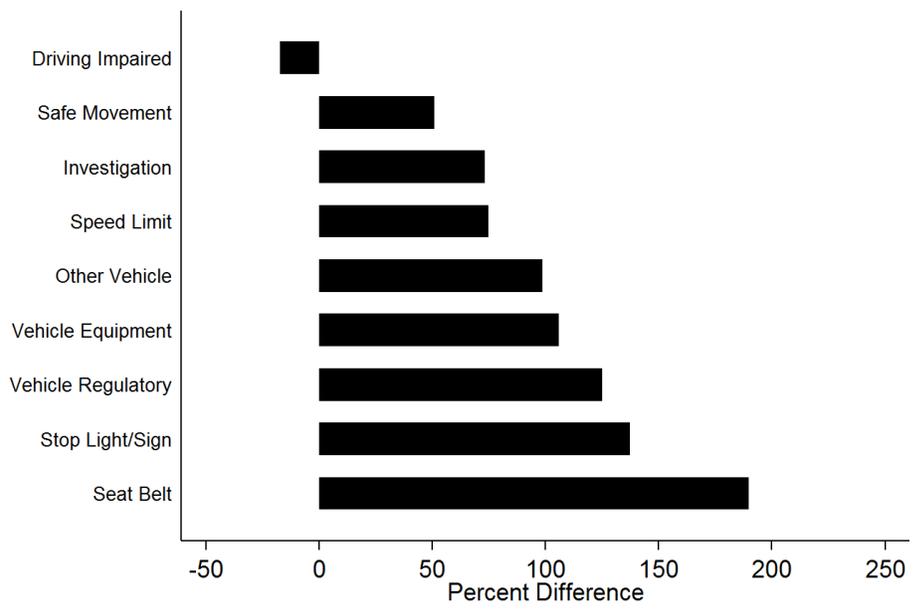
Note: Includes only drivers. Excludes 2,677 checkpoint stops. Excludes 47,224 passengers.

Table 3. Percent Searched by Race and Purpose of Stop

Purpose	Number	% Total	% White	% Black	Ratio
					Black:White
Total Stops	1,314,787	-	45.62	49.69	-
Total Searches	70,231	5.34	3.57	7.20	2.02
Speed Limit	400,656	2.15	1.67	2.92	1.75
Stop Light/Sign	98,992	3.68	2.35	5.57	2.37
Driving Impaired	7,618	41.65	45.38	37.60	0.83
Safe Movement	73,861	6.47	5.34	8.05	1.50
Vehicle Equipment	124,243	8.94	5.52	11.37	2.06
Vehicle Regulatory	441,032	4.70	2.72	6.12	2.25
Seat Belt	51,966	7.36	3.57	10.36	2.90
Investigation	49,565	17.24	12.45	21.59	1.73
Other Vehicle	66,854	8.73	5.99	11.89	1.98

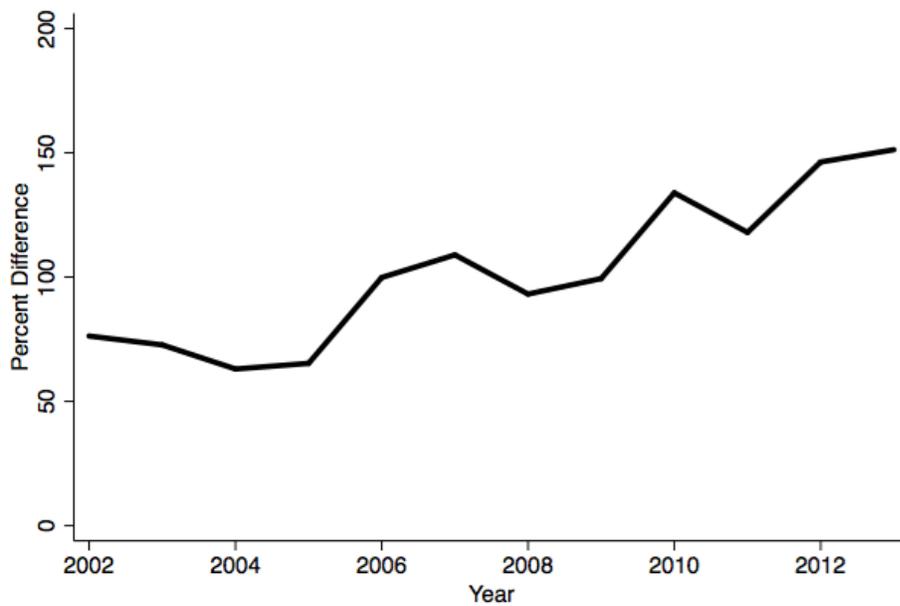
Note: See the appendix for this same table broken down for Men and Women.

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



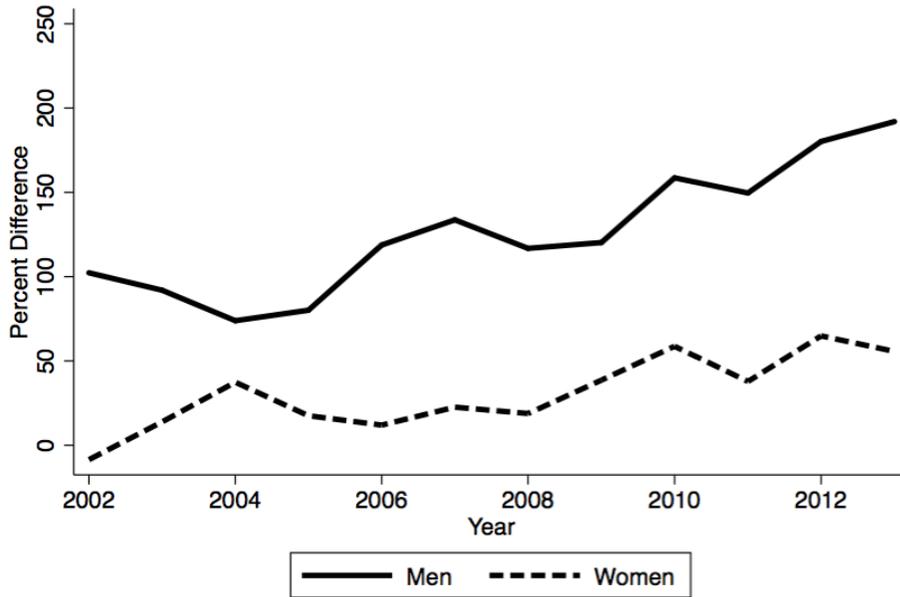
The figure shows the percentage difference in the likelihood of Blacks being searched as compared to Whites by purpose of stop.

Figure 4. Racial Differences in the Likelihood of Search



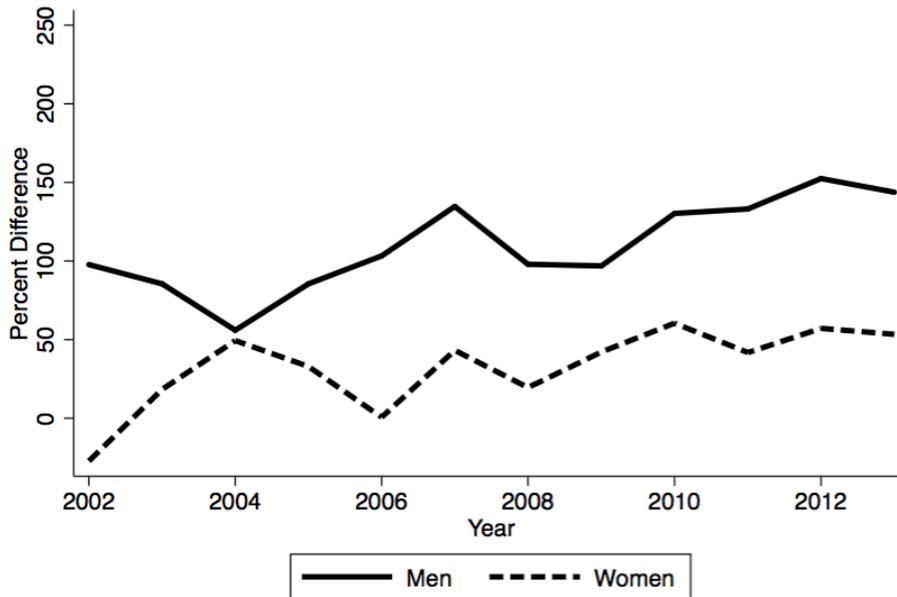
The figure shows the percentage difference in the likelihood of Blacks being searched as compared to Whites.

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

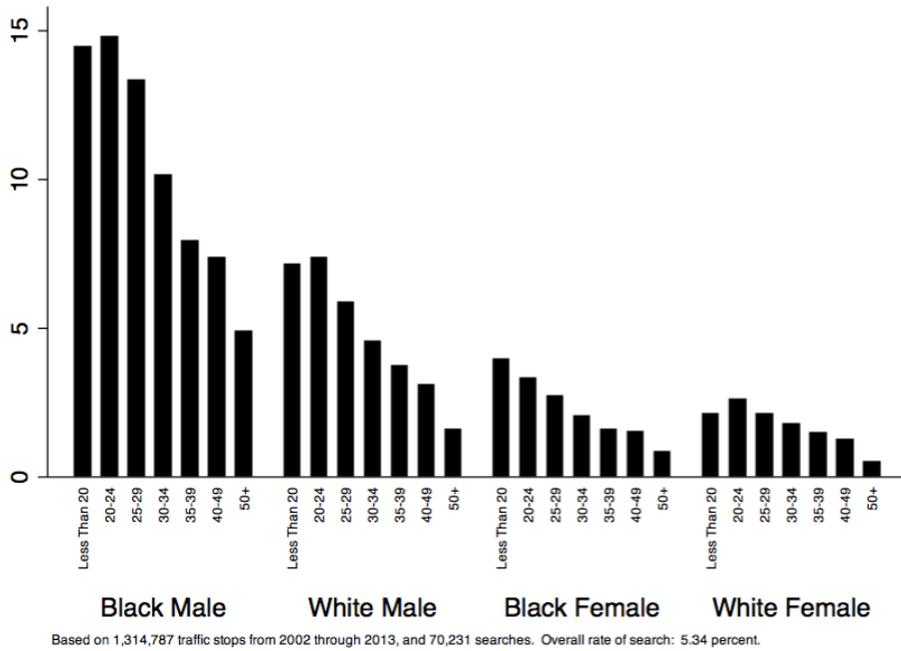


Figure 8. Number of Stops, by Race and Gender

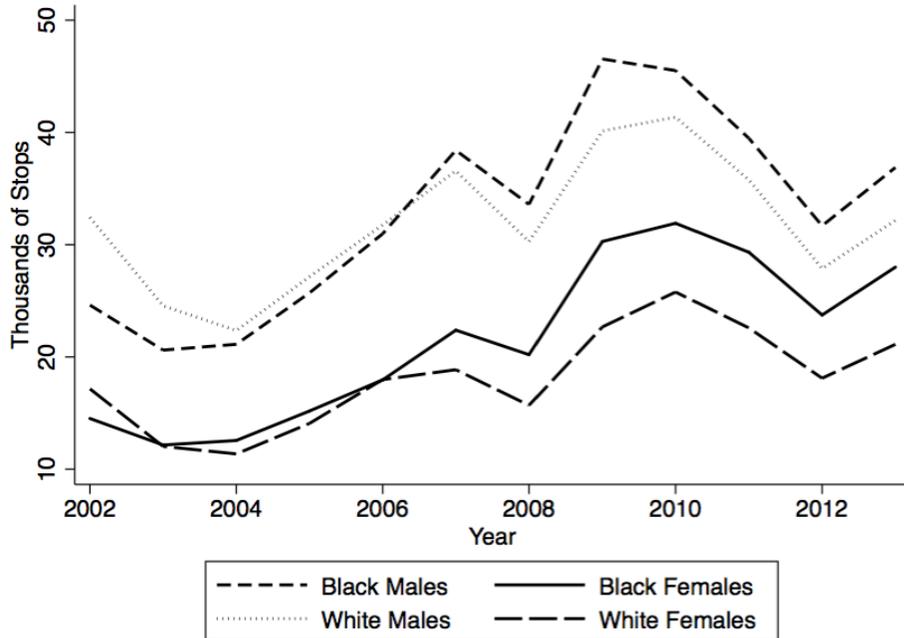


Figure 9. Percent of Stops Resulting in a Search, by Race and Gender

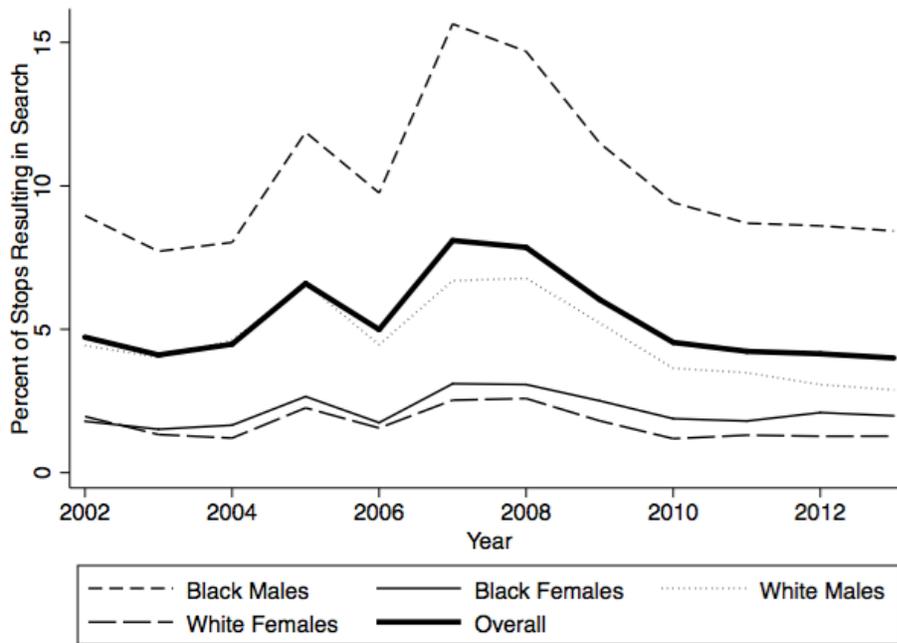


Table 4. Type of Search by Race

Search Type	Number	% Total	% White	% Black	Ratio
					Black:White
Total Stops	1,314,787	-	45.62	49.69	-
Total Searches	70,231	5.34	3.57	7.20	2.02
Consent	34,461	2.62	1.49	3.79	2.54
Search Warrant	119	-	-	-	-
Probable Cause	10,462	0.80	0.33	1.28	3.89
Incident to Arrest	23,969	1.82	1.69	1.98	1.17
Protective Frisk	1,220	0.09	0.05	0.14	2.80

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	55	2.49	2.49	0.00	0.00
2 – 10	145	6.56	9.04	0.05	0.05
11 - 100	445	20.12	29.16	1.58	1.63
101 – 1,000	1,217	55.06	84.22	39.96	41.59
1,001 +	349	15.78	100.00	58.40	100.00
Total	2,212	100	-	100	-

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

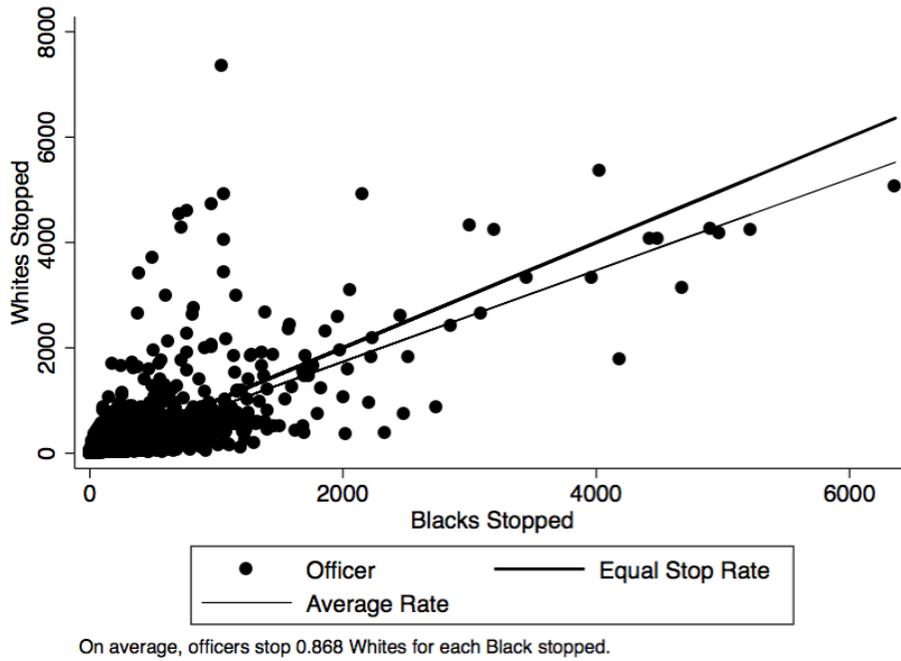


Figure 11. Number of Black and White Motorists Searched, by Officer

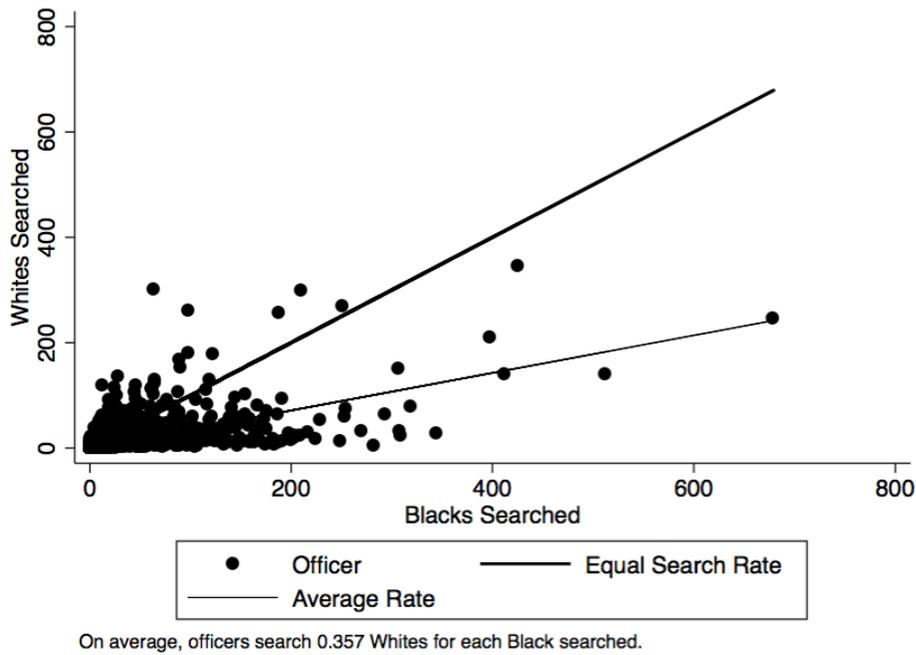
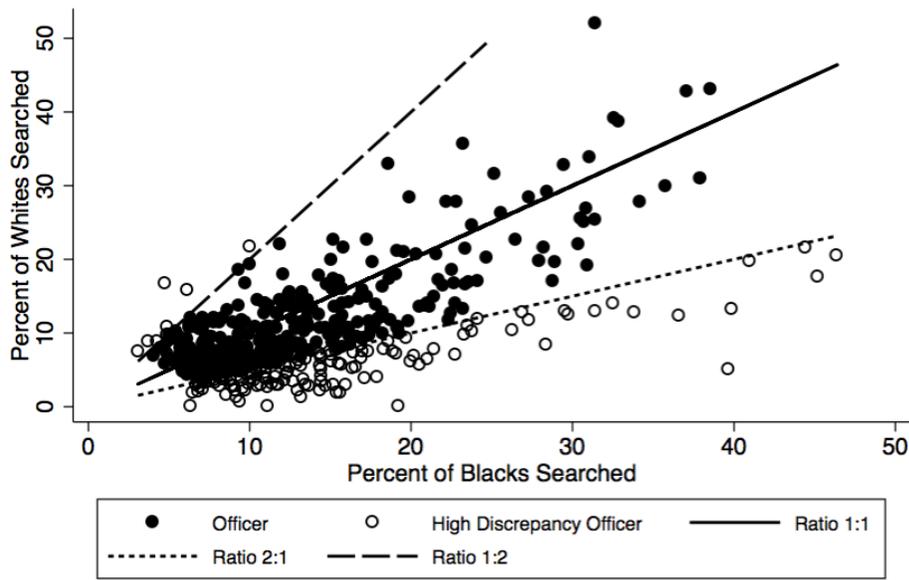


Figure 12. Percent of White and Black Drivers Searched, by Officer



Includes 496 officers with at least 50 stops of Blacks and 50 stops of Whites and a search rate of over 5.34. Of these officers, 130 have rates of searching Blacks more than twice their rate of searching Whites and 8 have rates of searching Whites at twice the rate of Blacks.

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	2.90*(0.03)	2.74*(0.03)	2.59*(0.03)	2.45*(0.03)	2.36*(0.03)
Hispanic	1.93*(0.03)	1.65*(0.03)	1.25*(0.02)	1.25*(0.02)	1.21*(0.02)
Age	-	0.96*(0.00)	0.96*(0.00)	0.97*(0.00)	0.97*(0.00)
<b>Stop Purpose</b>					
Speed Limit	-	-	-	-	-
Stop Light	-	-	1.68*(0.04)	1.63*(0.04)	1.54*(0.03)
Impaired	-	-	31.08*(0.97)	30.90*(0.97)	23.26*(0.74)
Movement	-	-	2.72*(0.06)	2.61*(0.05)	2.39*(0.05)
Equipment	-	-	3.29*(0.05)	3.05*(0.05)	2.64*(0.04)
Regulatory	-	-	1.93*(0.28)	1.87*(0.03)	1.80*(0.03)
Seat Belt	-	-	2.50*(0.05)	2.36*(0.05)	2.52*(0.06)
Investigation	-	-	6.53*(0.12)	6.22*(0.11)	5.62*(0.10)
Other	-	-	3.46*(0.07)	3.29*(0.07)	3.22*(0.06)
<b>Officer Type</b>					
Black Disparity <sup>†</sup>	-	-	-	2.23*(0.03)	2.18*(0.03)
White Disparity <sup>‡</sup>	-	-	-	1.65*(0.02)	1.40*(0.06)
<b>Time</b>					
Hour of Day	-	-	-	-	Included
Day of Week	-	-	-	-	Included
<b>Constant</b>	0.04*(0.00)	0.14*(0.00)	0.06*(0.00)	0.06*(0.00)	0.06*(0.00)
<b>N</b>	777,447	777,447	777,447	777,447	776,512
<b>Pseudo R<sup>2</sup></b>	0.026	0.046	0.093	0.102	0.112

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

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 130 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 8 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
<b>Demographics</b>					
Race	1.27*(0.03)	1.23*(0.03)	1.17*(0.03)	1.14*(0.03)	1.13*(0.03)
Hispanic	0.77*(0.04)	0.69*(0.04)	0.53*(0.03)	0.53*(0.03)	0.53*(0.03)
Age	-	0.96*(0.00)	0.96*(0.00)	0.96*(0.00)	0.97*(0.00)
<b>Stop Purpose</b>					
Speed Limit	-	-	-	-	-
Stop Light	-	-	1.69*(0.09)	1.65*(0.09)	1.49*(0.08)
Impaired	-	-	71.86*(4.34)	71.23*(4.33)	38.34*(2.41)
Movement	-	-	3.45*(0.17)	3.34*(0.17)	2.82*(0.14)
Equipment	-	-	3.93*(0.16)	3.71*(0.15)	2.75*(0.12)
Regulatory	-	-	2.25*(0.08)	2.20*(0.08)	2.05*(0.07)
Seat Belt	-	-	2.82*(0.19)	2.80*(0.19)	3.19*(0.21)
Investigation	-	-	11.94*(0.52)	11.41*(0.50)	8.84*(0.40)
Other	-	-	4.94*(0.23)	4.77*(0.23)	4.49*(0.21)
<b>Officer Type</b>					
Black Disparity <sup>†</sup>	-	-	-	2.26*(0.07)	2.23*(0.07)
White Disparity <sup>‡</sup>	-	-	-	2.50*(0.23)	2.82*(0.17)
<b>Time</b>					
Hour of Day	-	-	-	-	Included
Day of Week	-	-	-	-	Included
<b>Constant</b>	0.02*(0.00)	0.07*(0.00)	0.02*(0.00)	0.02*(0.00)	0.03*(0.00)
<b>N</b>	475,595	475,595	475,595	475,595	475,155
<b>Pseudo R<sup>2</sup></b>	0.002	0.020	0.086	0.093	0.113

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

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

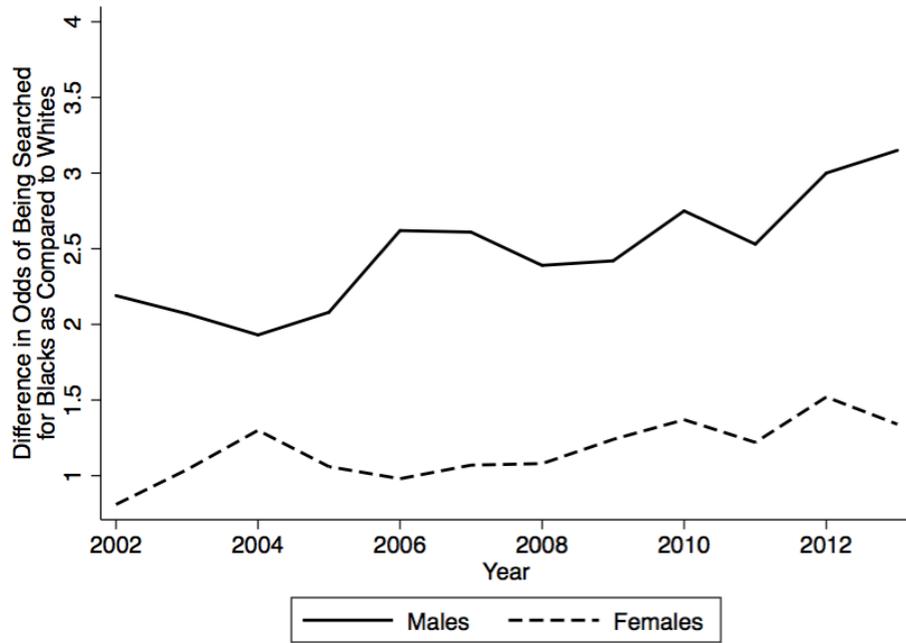
† = Coded 1 for 130 officers who searched Blacks at twice the rate of Whites; otherwise zero.

Officers with fewer than 50 searches of Black motorists are automatically coded zero.

‡ = Coded 1 for 8 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	47,224	24.43	73.46
Speed Limit	3,607	32.41	63.93
Stop Light/Sign	2,119	24.59	73.24
Driving Impaired	765	69.80	25.23
Safe Movement	2,960	30.41	67.50
Vehicle Equipment	8,186	21.17	76.91
Vehicle Regulatory	14,078	20.14	78.45
Seat Belt	3,014	17.32	80.29
Investigation	8,272	27.01	71.03
Other Vehicle	4,175	25.84	71.09

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

Purpose	Number	% Total	% White	% Black	Ratio
					Black:White
Total Stops	822,238	-	46.50	48.05	-
Total Searches	60,851	7.40	4.65	10.48	2.25
Speed Limit	235,971	3.12	2.31	4.59	1.99
Stop Light/Sign	61,571	5.17	3.17	8.18	2.58
Driving Impaired	5,902	43.63	47.48	41.19	0.87
Safe Movement	49,710	8.39	6.57	11.09	1.69
Vehicle Equipment	84,043	11.72	6.77	15.41	2.28
Vehicle Regulatory	263,007	6.71	3.56	9.17	2.58
Seat Belt	38,689	9.13	4.30	12.88	3.00
Investigation	37,256	20.06	14.03	25.70	1.83
Other Vehicle	46,089	11.01	7.02	15.81	2.25

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

Purpose	Number	% Total	% White	% Black	Ratio
					Black:White
Total Stops	492,549	-	44.14	52.42	-
Total Searches	9,380	1.90	1.67	2.18	1.31
Speed Limit	164,685	0.75	0.70	0.85	1.21
Stop Light/Sign	37,421	1.23	0.95	1.63	1.72
Driving Impaired	1,716	34.85	38.77	25.26	0.65
Safe Movement	24,151	2.52	2.60	2.56	0.98
Vehicle Equipment	40,200	3.13	2.79	3.42	1.23
Vehicle Regulatory	178,025	1.74	1.33	2.01	1.51
Seat Belt	13,277	2.22	1.64	2.77	1.69
Investigation	12,309	8.70	7.49	9.83	1.31
Other Vehicle	20,765	3.65	3.60	3.95	1.10

Table A4. Type of Search by Race: Men

Search Type	Number	% Total	% White	% Black	Ratio Black:White
Total Stops	822,238	-	46.50	48.05	-
Total Searches	60,851	7.40	4.65	10.48	2.25
Consent	30,554	3.72	1.98	5.64	2.85
Search Warrant	99	-	-	-	-
Probable Cause	8,972	1.09	0.41	1.84	4.49
Incident to Arrest	20,095	2.44	2.18	2.77	1.27
Protective Frisk	1,131	0.14	0.07	0.21	3.00

Table A5. Type of Search by Race: Women

Search Type	Number	% Total	% White	% Black	Ratio Black:White
Total Stops	492,549	-	44.14	52.42	-
Total Searches	9,380	1.90	1.67	2.18	1.31
Consent	3,907	0.79	0.63	0.96	1.52
Search Warrant	20	-	-	-	-
Probable Cause	1,490	0.30	0.17	0.43	2.53
Incident to Arrest	3,874	0.79	0.85	0.76	0.89
Protective Frisk	89	0.02	0.01	0.02	2.00

Figure A6. Stops by Day of the Week

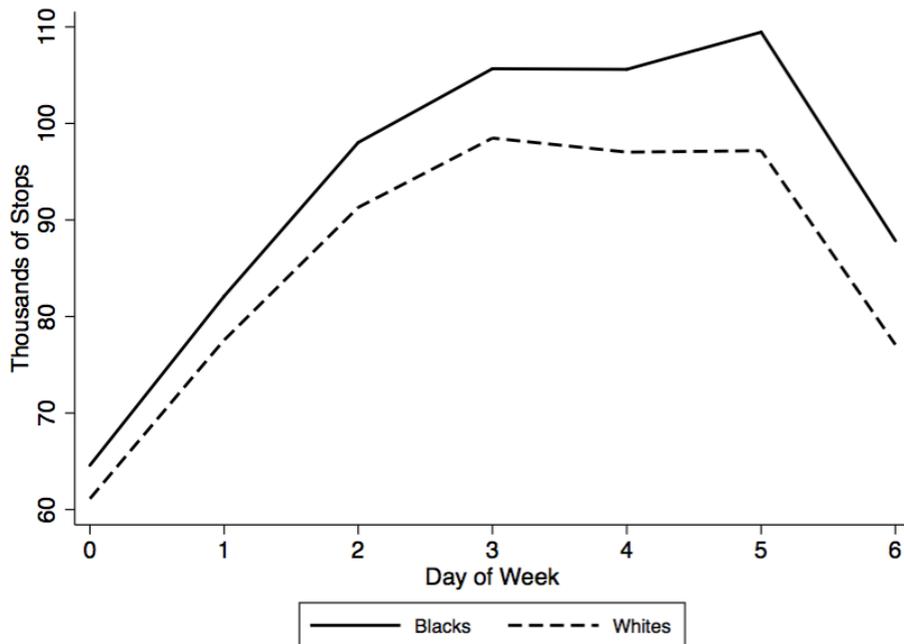


Figure A7. Searches by Day of the Week

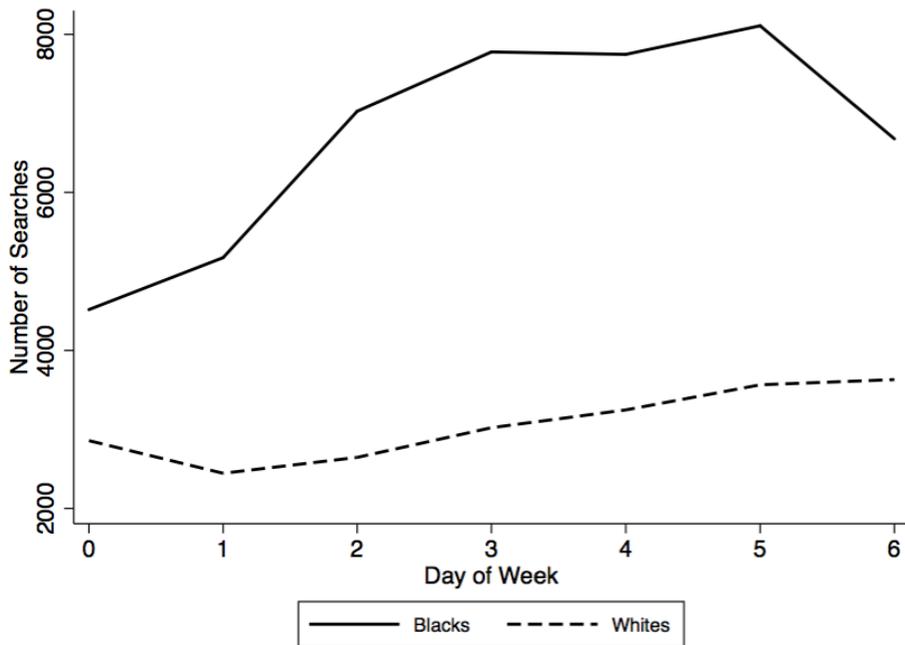
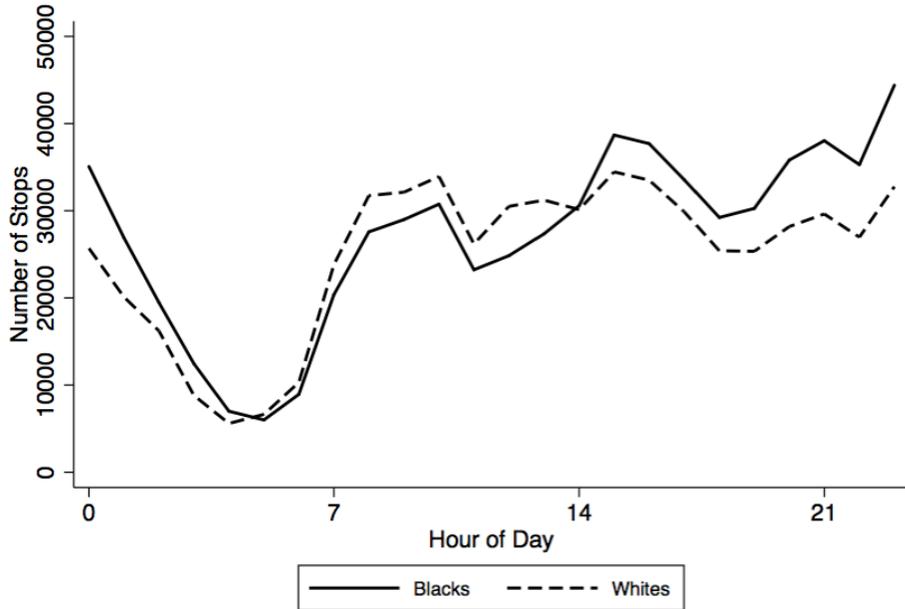


Figure A8. Stops by Hour of the Day



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

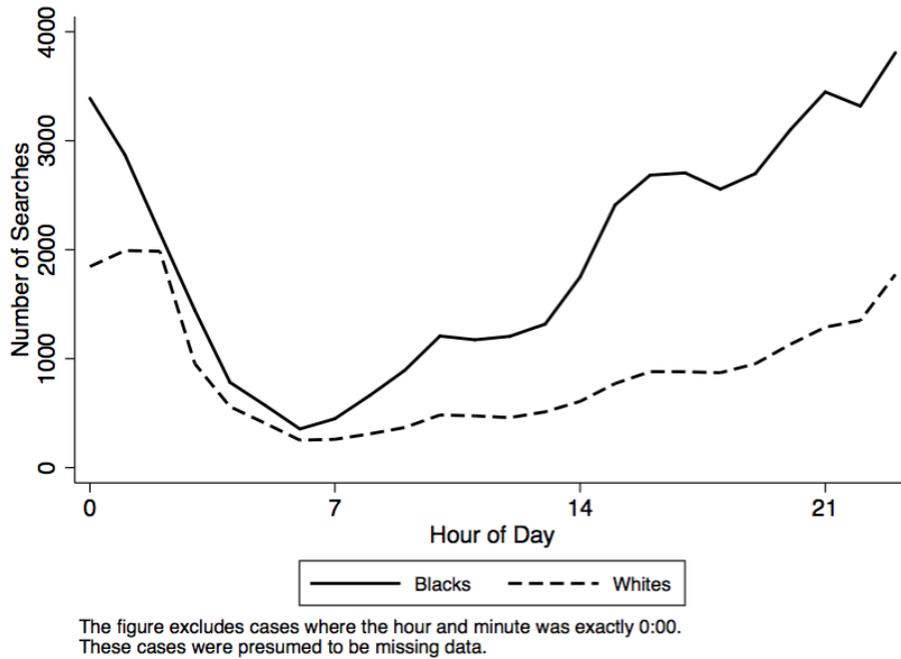


Figure A10. Correlation Between Percent Difference in Likelihood of Black Men being Searched as Compared to Whites and Odds-Ratios from Logistic Regression

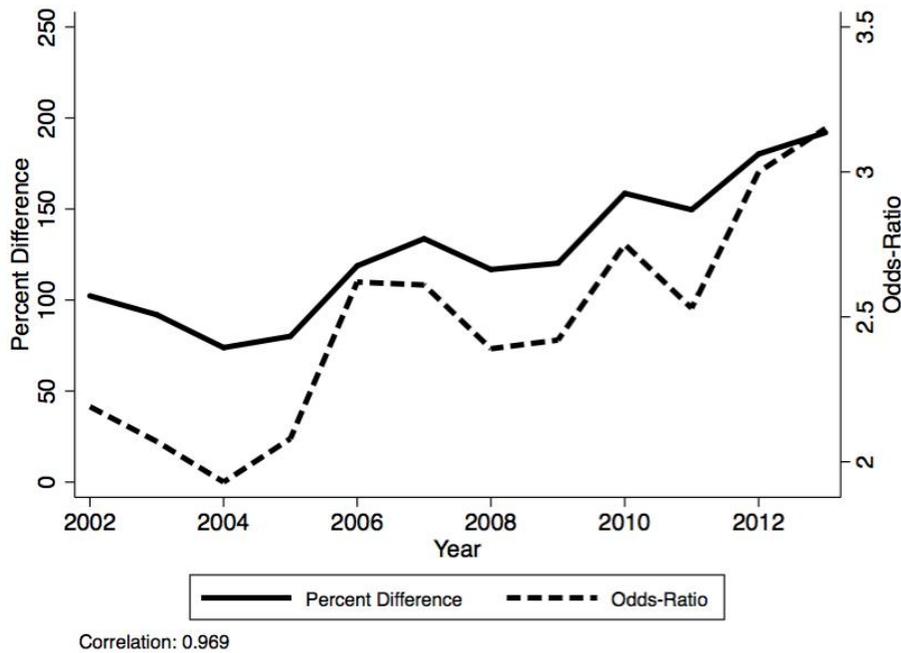


Figure A11. Correlation Between Percent Difference in Likelihood of Black Women being Searched as Compared to Whites and Odds-Ratios from Logistic Regression

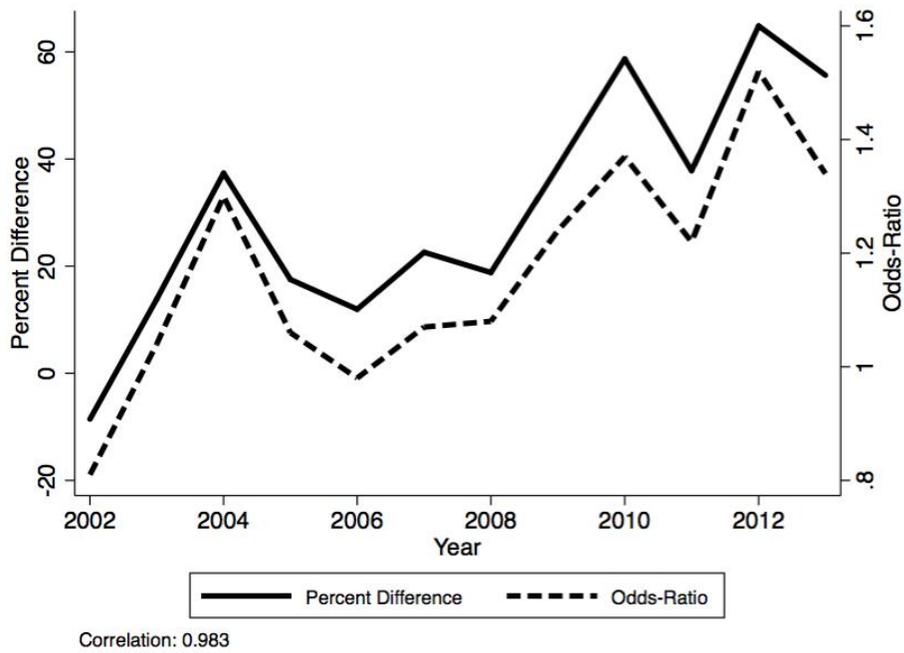


Figure A12. Racial Differences in the Likelihood of Search: Consent Searches Only

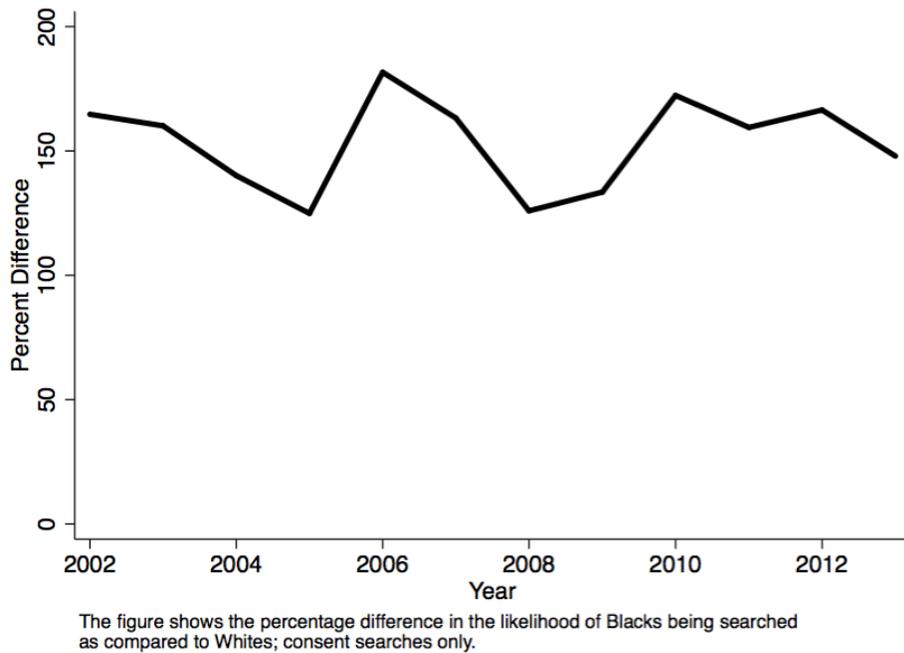


Table A6. Likelihood of Finding Contraband Given a Search, by Race

Contraband	Number	% Total	% White	% Black
Yes	16,327	23.25	21.33	24.33
No	53,904	76.75	78.67	75.67
Total	70,231	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	578,339	4.43	25.89	6.21	62.27	1.21	100.0
Black	No	606,259	5.37	31.73	5.52	55.79	1.58	100.0
Total	No	1,244,556	4.98	38.56	5.14	65.77	1.79	100.0
White	Yes	21,414	3.57	13.40	1.98	26.24	54.81	100.0
Black	Yes	47,030	4.60	22.29	2.24	32.21	38.66	100.0
Total	Yes	70,231	4.29	19.35	2.16	30.23	43.97	100.0