Overview of NC Traffic Stop Data

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SBI-122 Form

- Mandated for Highway Patrol since 2000
- Other agencies since 2002
- So far, about 18,000,000 records
- No Attorney General reports
- State web site: http://trafficstops.ncdoj.gov/
- Baumgartner web site: http://www.unc.edu/~fbaum/traffic

The Focus of My Analysis Today

- Given a traffic stop, what are the odds of search, arrest, citation?

- For drivers of different age, gender, and race categories, what are the odds of each outcome?

- What are trends over time?

- For individual police officers, what is their pattern of stops and searches, by race?

- Do the bivariate results remain when we control statistically for other factors?

- (Note: My focus here is on Black-White comparisons but the same can be done for Hispanics.)

Overview of NC Traffic Outcomes

	Number	Percent

Total Traffic Stops, 2002-13
  Excludes passengers
  Excludes checkpoints
	15,992,317	100.0

Citations	10,616,581	66.3
Searches	511,813	3.2
Arrests	349,136	2.1
Contraband "hits"	128,918	0.8

Percent Black Stopped, by Purpose

	Number	Percent Black
Total Stops	15,992,305	30.64
Driving Impaired	158,264	22.32
Seat Belt	1,492,624	26.56
Speed Limit	6,665,939	26.65
Safe Movement	886,090	29.82
Stop Light/Sign	758,136	31.18
Investigation	1,130,736	31.43
Other Vehicle	851,550	33.53
Vehicle Equipment	1,422,461	38.12
Vehicle Regulatory	2,626,505	38.41

Percent Searched, Cited, Arrested

	White	**Black**	**Ratio**
Searched	2.61	4.57	75
Cited	66.88	63.43	-5
Arrested	1.90	2.71	43

Ratio = (Black Percent – White Percent)*100 / White Percent
A Simple Measure of Racial Disparity in Outcomes
Percent Difference in the Likelihood of the Outcome

Percent of Men Searched

	Number	White	Black	Ratio
Total Searches	427,677	3.23	6.38	97
Incident to Arrest	148,326	1.23	1.90	55
Warrant	1,127	0.01	0.01	61
Protective Frisk	14,316	0.11	0.21	94
Consent	194,236	1.47	2.94	100
Probable Cause	69,672	0.42	1.33	216

Percent of Men Searched with Contraband

|	White	Black	Ratio
Total Searches	25.64	26.07	2
Incident to Arrest	18.68	20.39	9
Warrant	38.19	42.28	11
Protective Frisk	15.79	17.76	12
Consent	23.30	19.13	-18
Probable Cause	56.39	50.68	-10

Odds of Search, by Age, Gender, Race
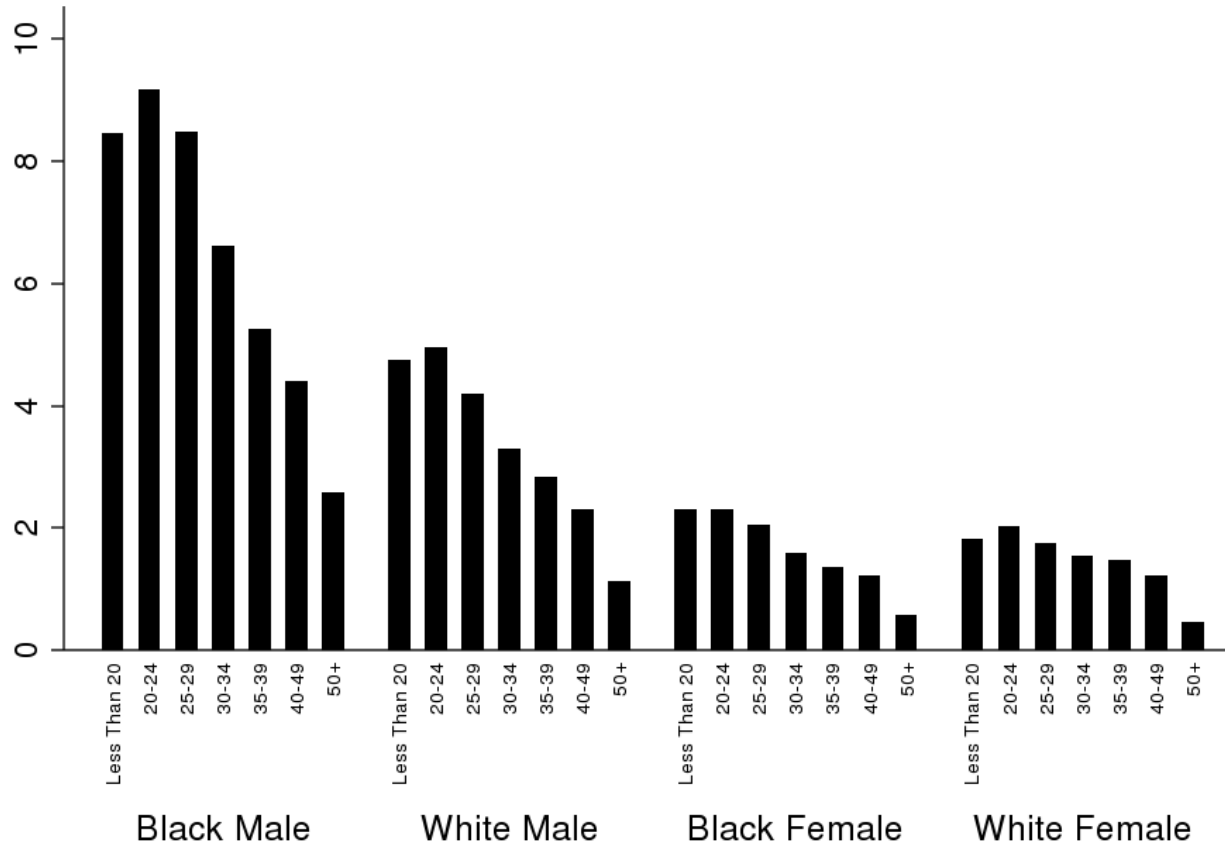
Based on 15,992,317 traffic stops from 2002 through 2013, and 511,813 searches. Overall rate of search: 3.20 percent.

Young Black Men Beware

Charlotte

Greensboro
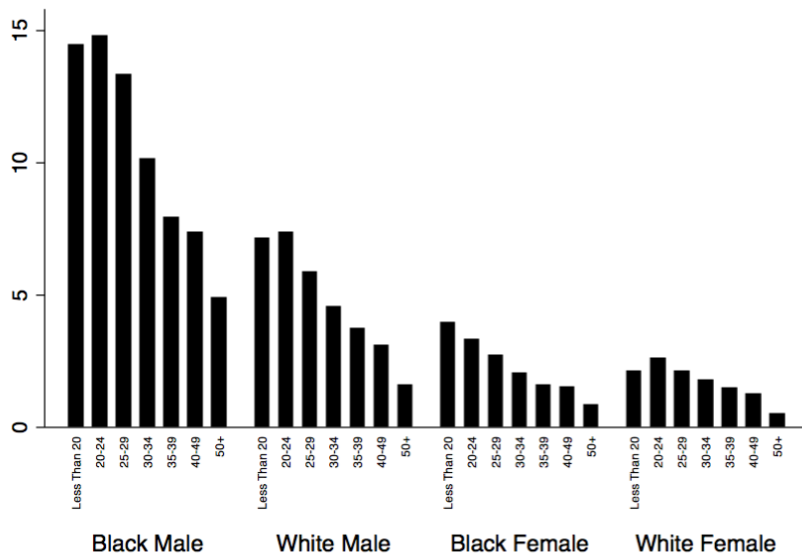
Charlotte chart — Based on 1,314,787 traffic stops from 2002 through 2013, and 70,231 searches. Overall rate of search: 5.34 percent.
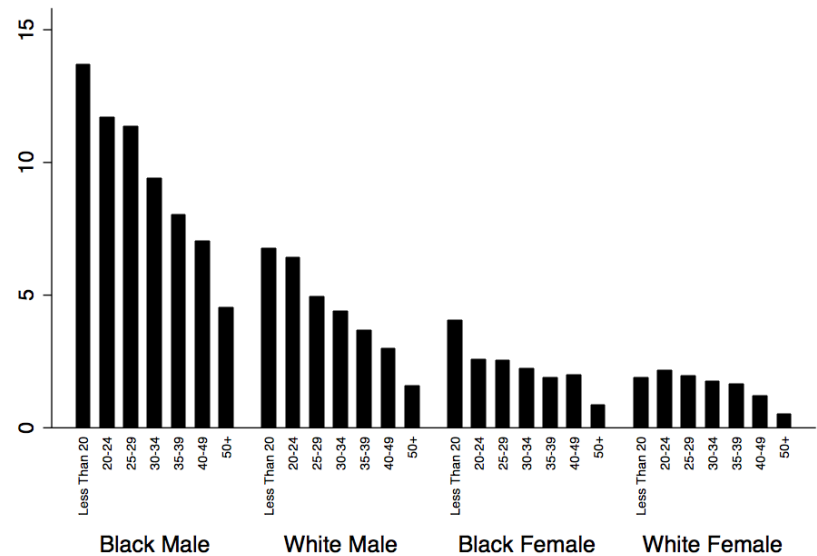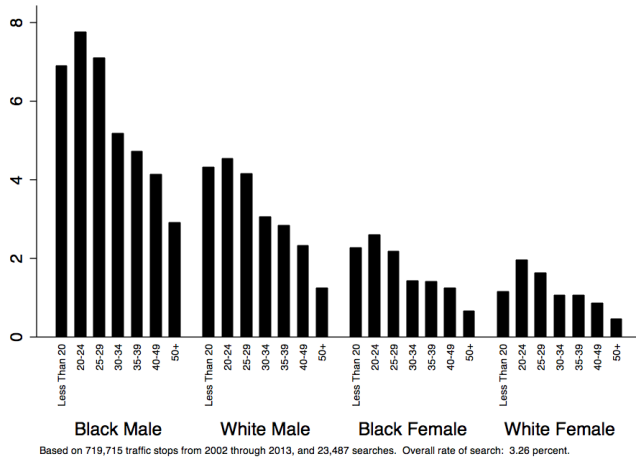
Greensboro chart — Based on 488,758 traffic stops from 2002 through 2013, and 24,011 searches. Overall rate of search: 4.91 percent.

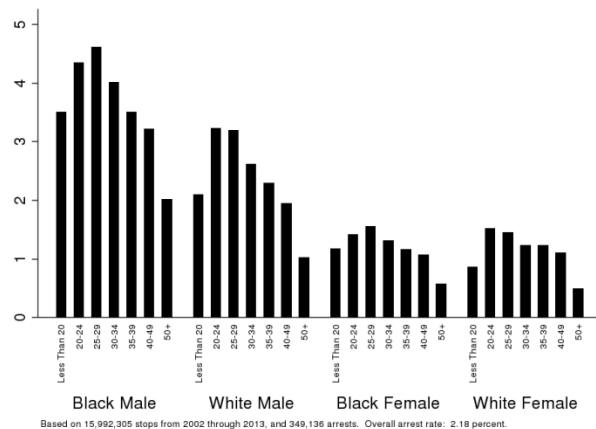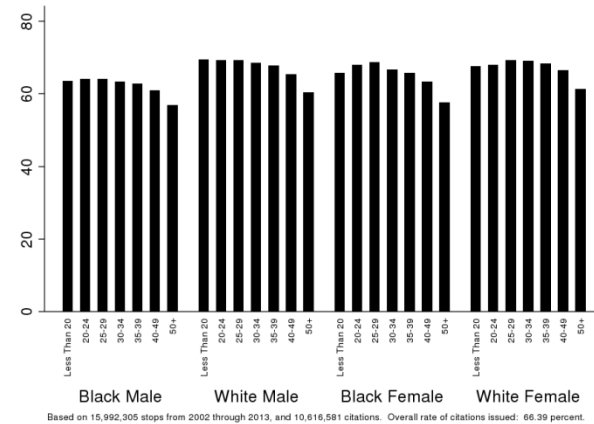# It's the same in every city

- Raleigh, Durham
- Chapel Hill, Carrboro
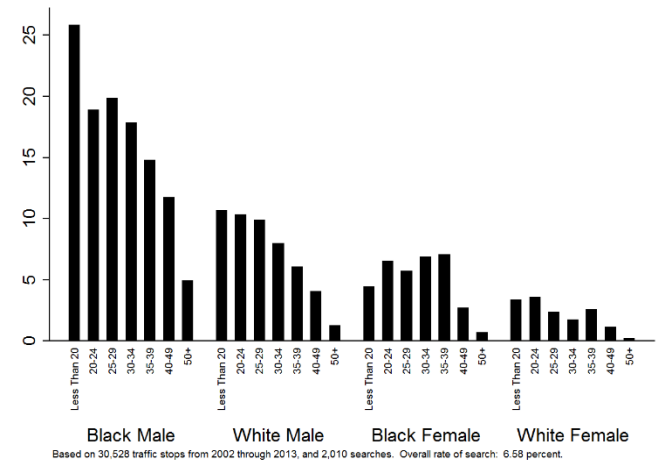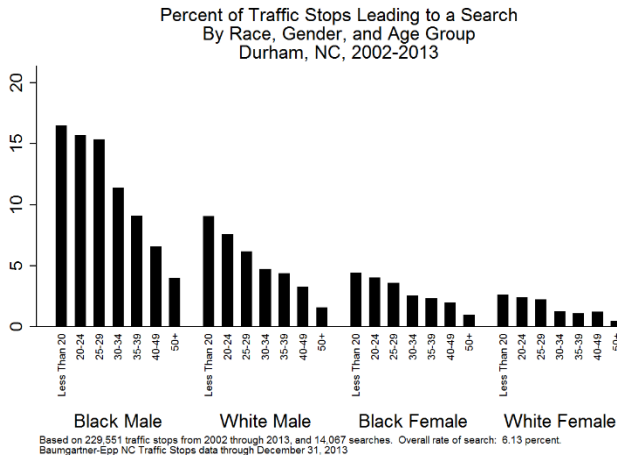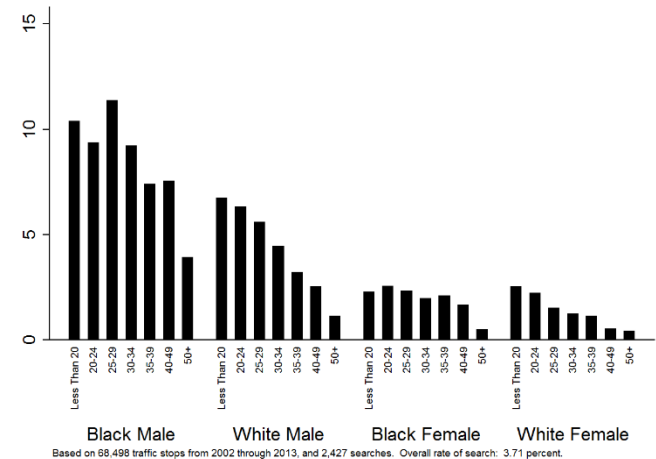
Searches, Citations, Arrests by Age, Gender, and Racial Group

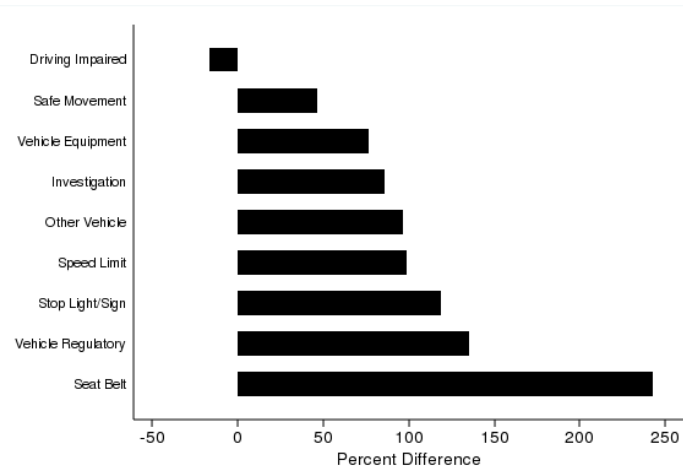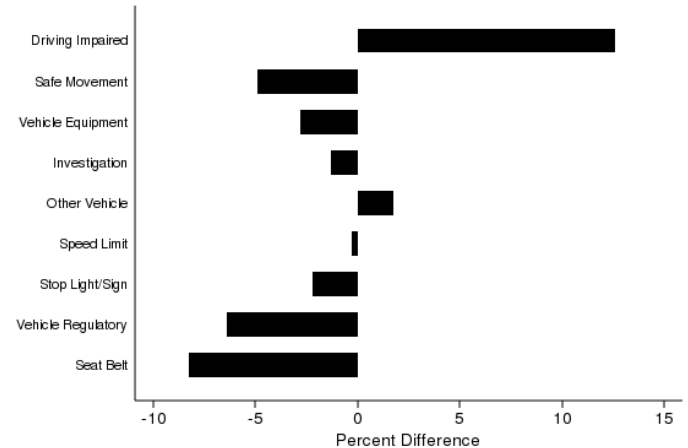- ## Searches, Arrests
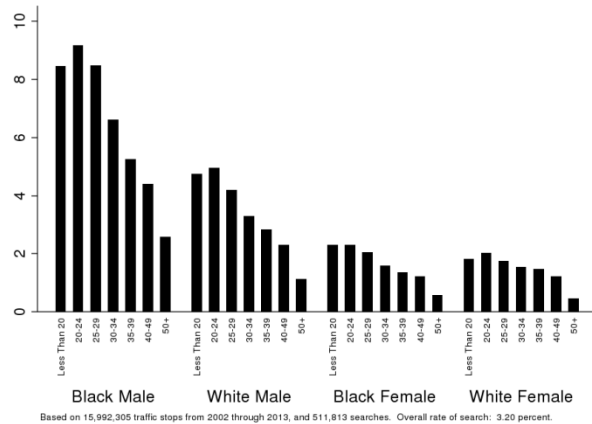
- ## Citations

Racial Disparities in Outcomes by Purpose of Stop

- ## Searches, Arrests

The figure shows the percentage difference in the likelihood of Black Males being searched as compared to White Males by purpose of stop.
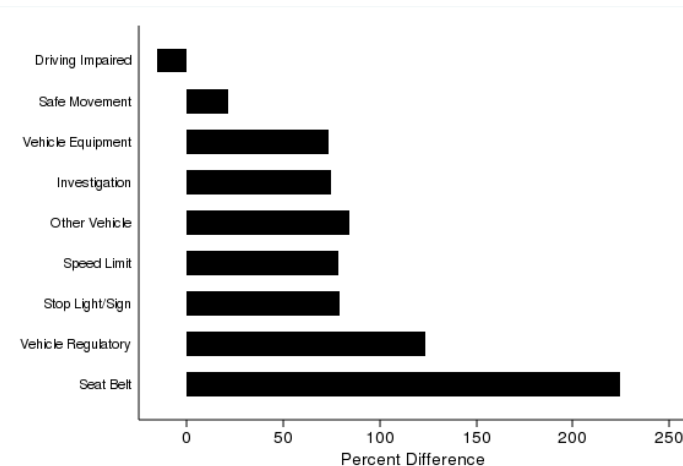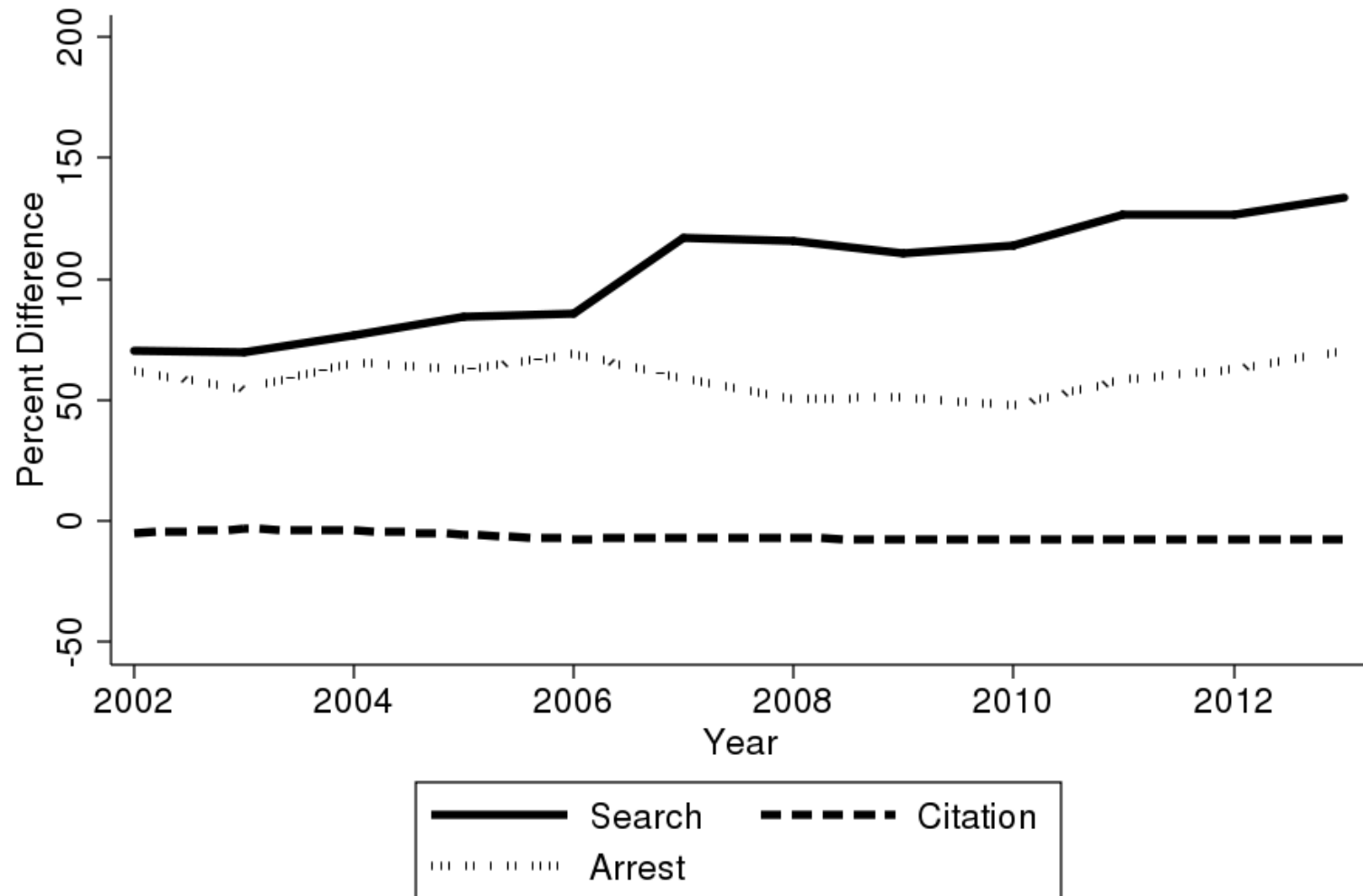

The figure shows the percentage difference in the likelihood of Black Males being arrested as compared to White Males by purpose of stop.

- ## Citations

The figure shows the percentage difference in the likelihood of Black Males being ticketed as compared to White Males by purpose of stop.
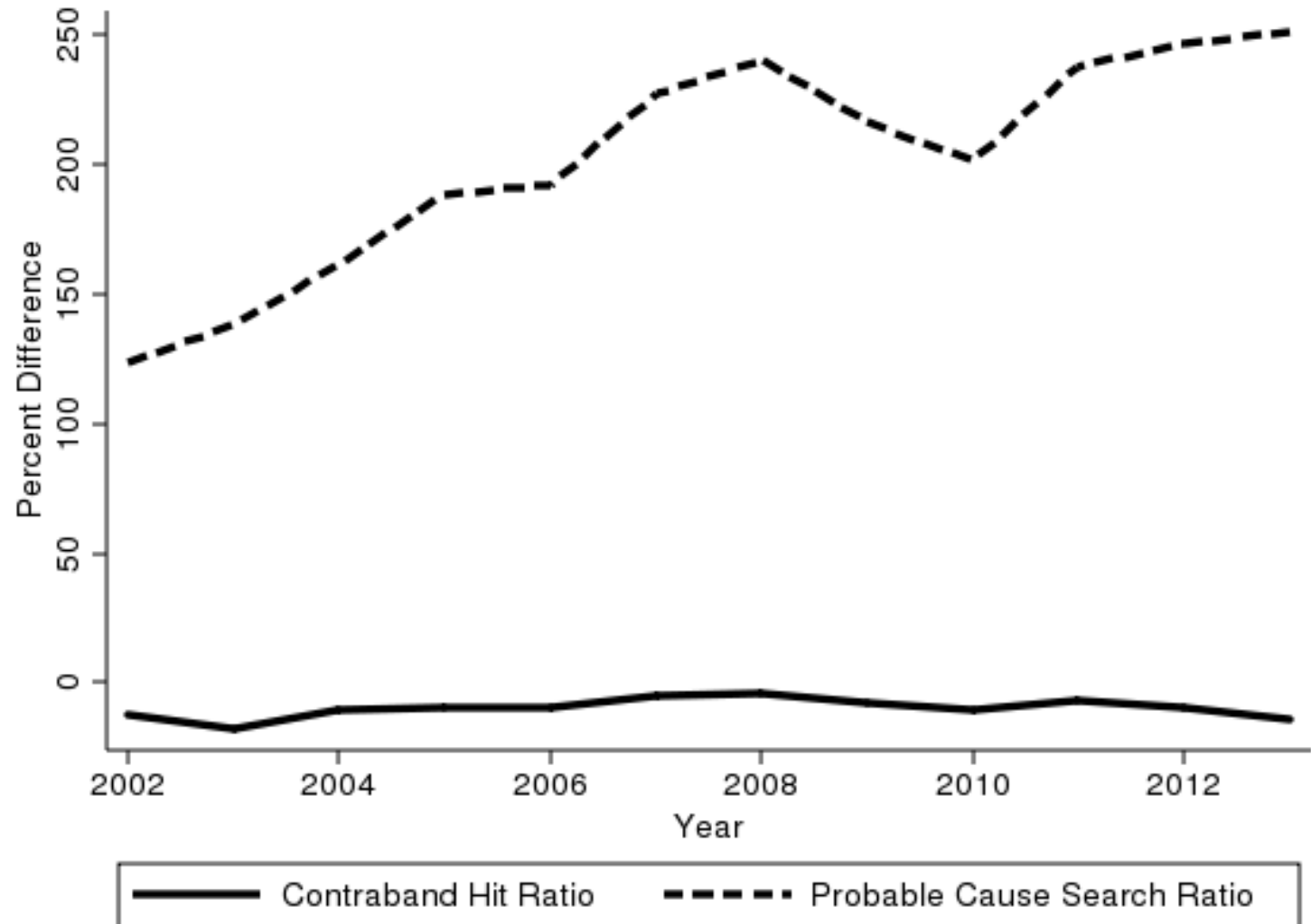
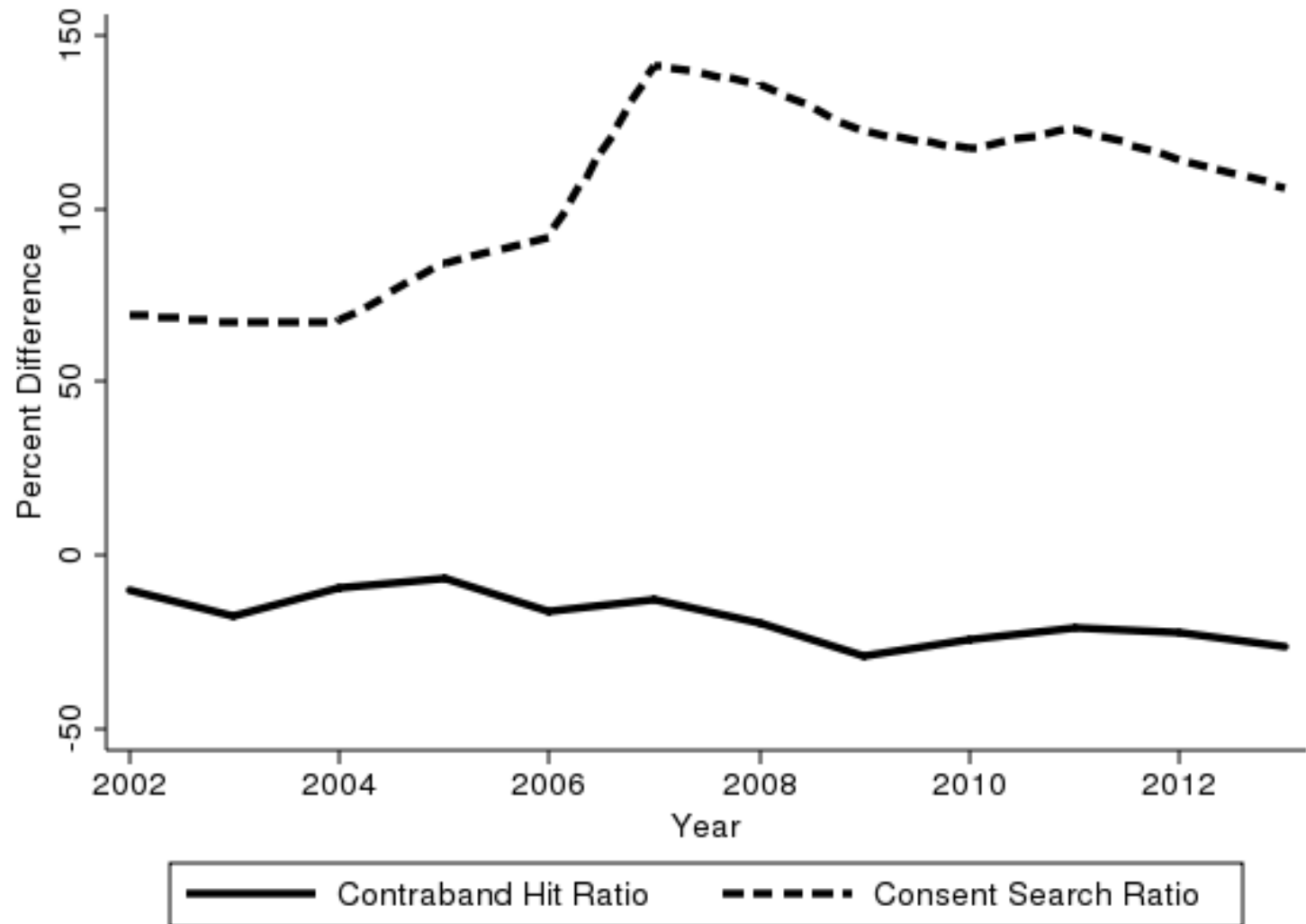# Disparities in Outcomes for Black Males Compared to White Males

The figure shows the percentage difference in the likelihood of different outcomes for Black Males as compared to White Males.

Probable Cause Searches Increasingly Targeted, but Continued Low Hit Rate

# Similar Pattern for Consent Searches

Officer – by – Officer Analyses

- Each officer has a unique ID number
- Linking to the identity of that officer requires legal work, but can be done
- Agencies can use data to review patterns

- Many typos in the officer ID numbers
- I analyze only if:
  - Greater than the department average search rate
  - At least 50 Black and 50 White Stops

Hypothetical data
Equal search rates (left)
Twice the rate for Blacks (right).
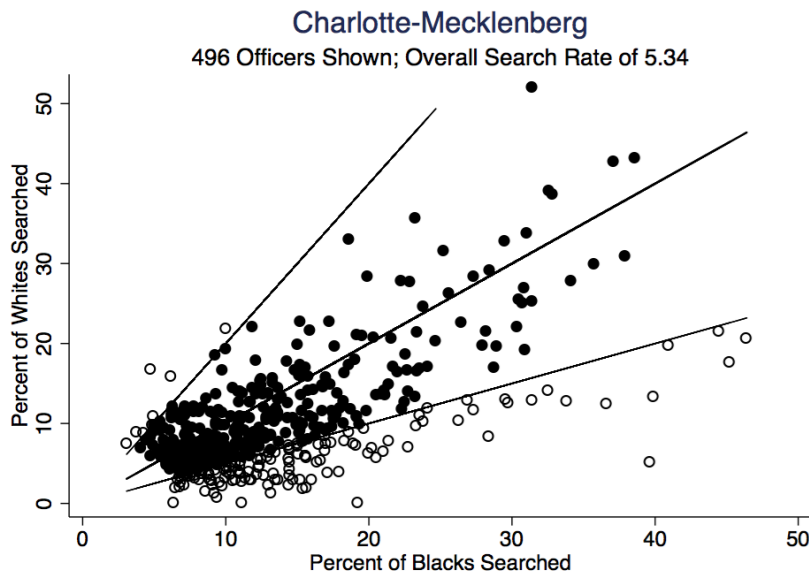# Dots represent individual officers.
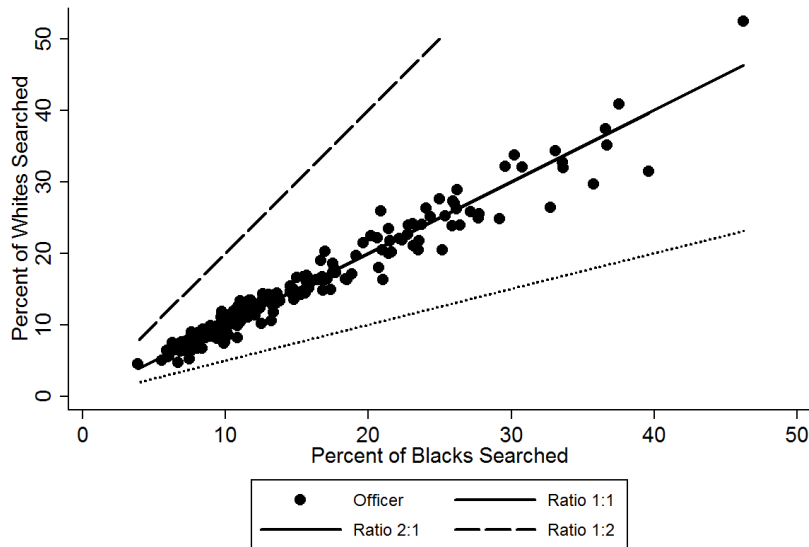
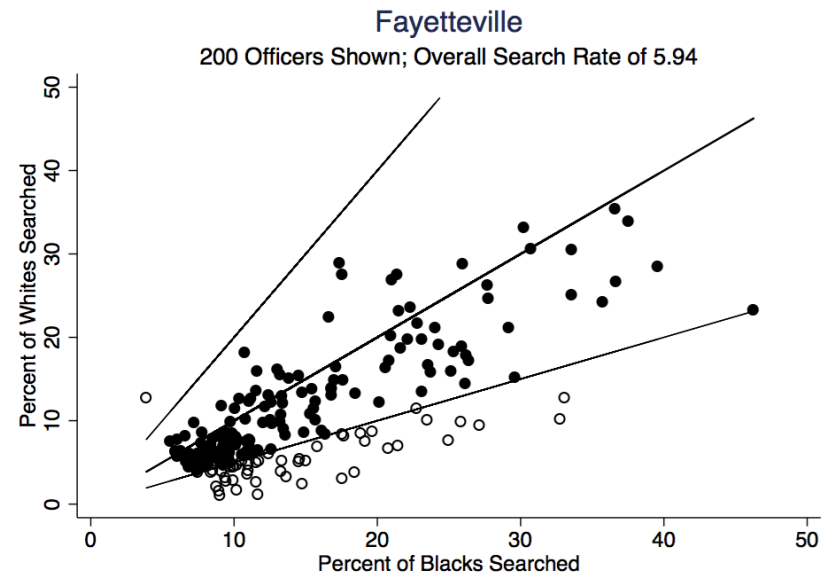Black Rate and White Rate are the same, with some random fluctuation
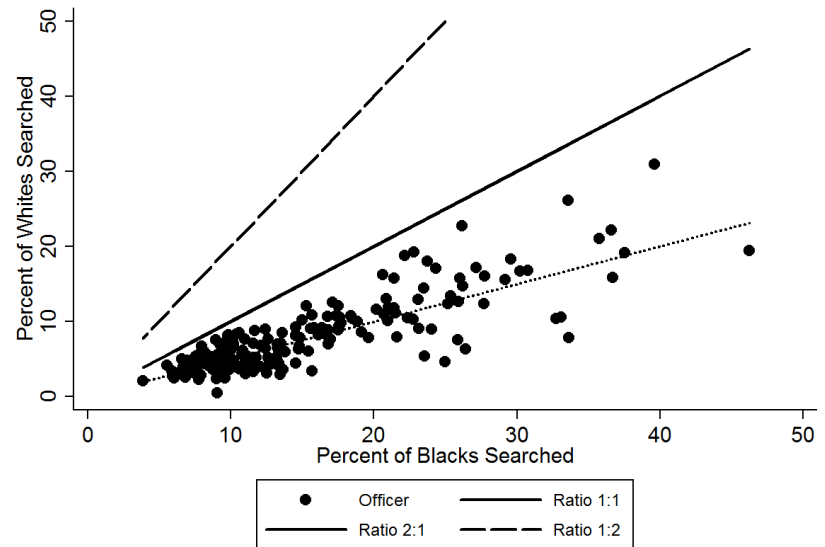
Black Rate is twice the White Rate, with some random fluctuation

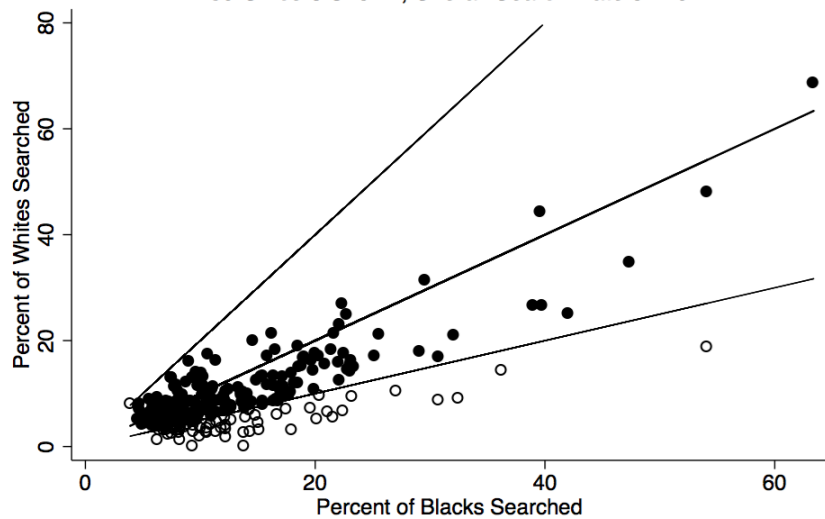# Real data show significant disparities

Charlotte   **Fayetteville**
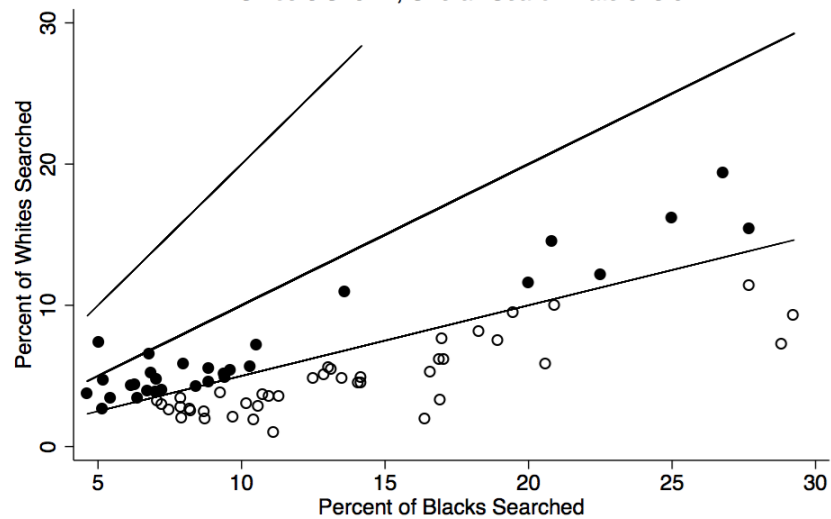
Greensboro
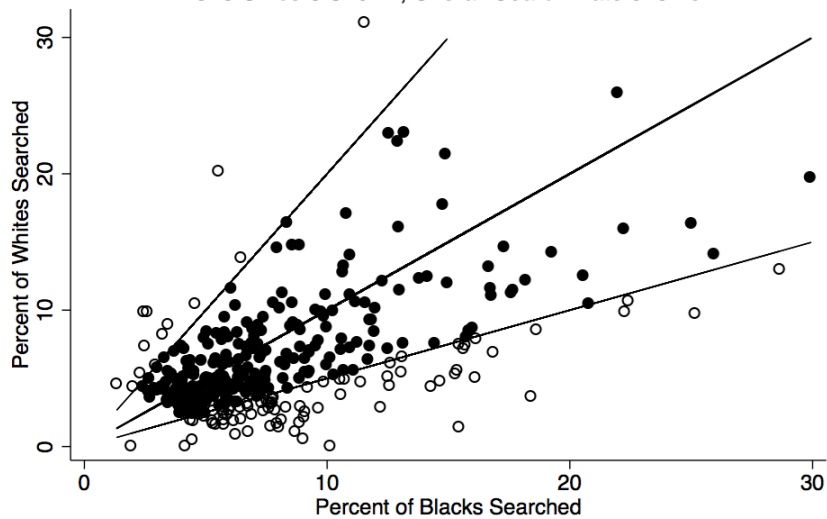259 Officers Shown; Overall Search Rate of 4.91

Jacksonville
71 Officers Shown; Overall Search Rate of 3.94

Raleigh
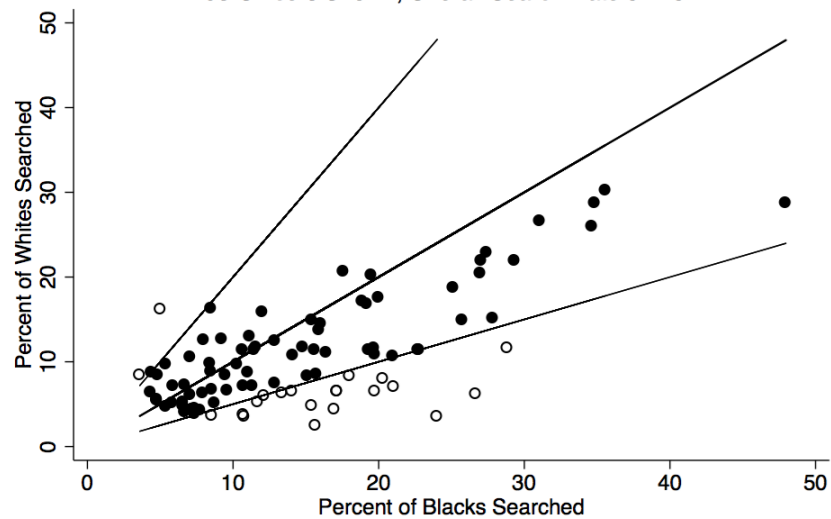328 Officers Shown; Overall Search Rate of 3.26

Wilmington
93 Officers Shown; Overall Search Rate of 4.84

Percent of Blacks Searched

Percent of Whites Searched

State Highway Patrol shows somewhat lower disparities compared to others
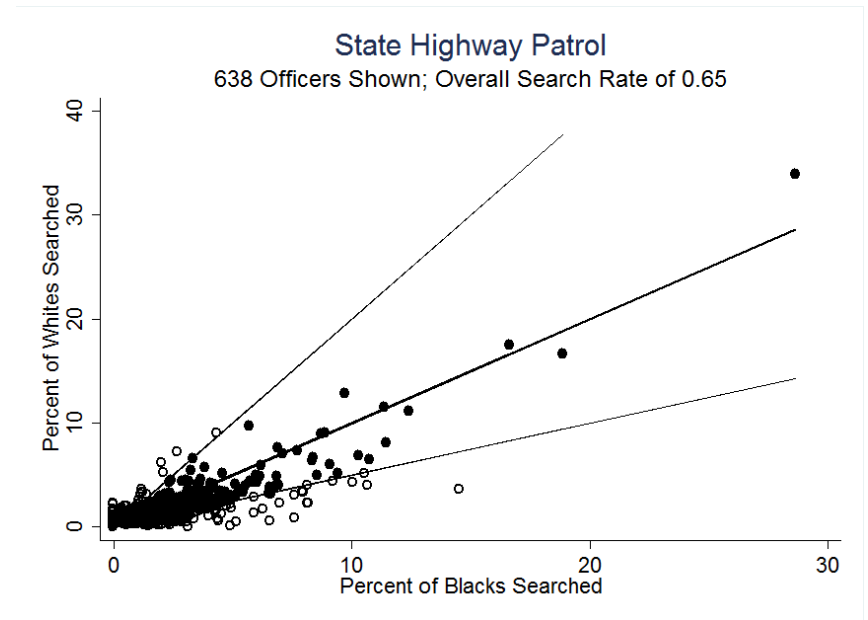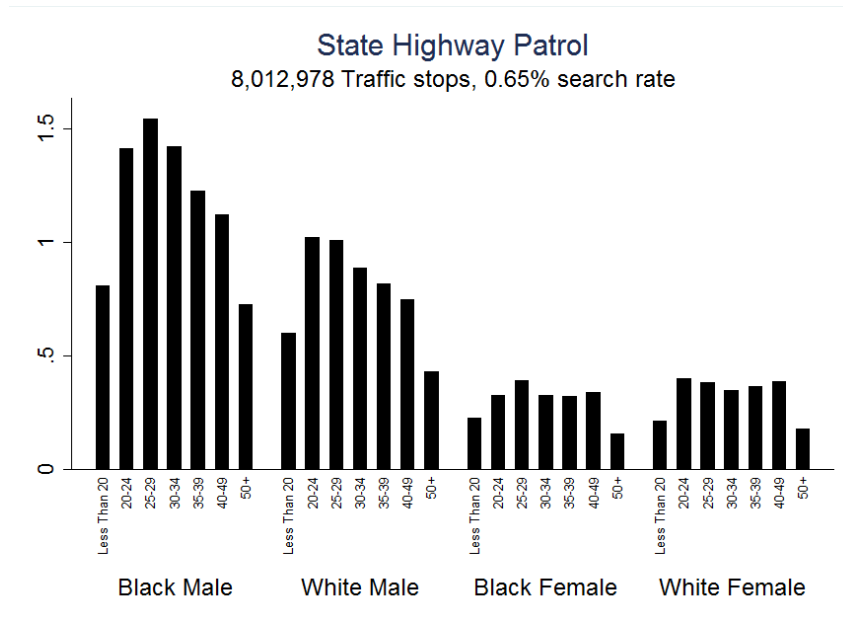
Simple percent differences in odds of search, for males

City	Stops	White Pct Searched	Black Pct Searched	Percent Increase for Blacks
Charlotte	822 K	4.65	10.48	125
Durham	146 K	5.03	11.07	120
Chapel Hill	38 K	4.43	8.64	95
Carrboro	17 K	7.37	16.18	120
Raleigh	456 K	3.28	5.69	74
SHP	5.4 M	0.77	1.19	55
North Carolina	10.3 M	3.23	6.38	98

Multivariate Analyses

- Control for other factors, logistic regression
  - Race
  - Hispanic
  - Age
  - Purpose of the stop (speeding, equipment, etc., 9 categories defined)
  - High disparity officer
  - Hour of the day
  - Day of the week

Results: Focus on Young Black Men

City	Increased Odds of Being Searched, for Black Males compared to White Males, controlling for relevant factors
Charlotte	136 %
Durham	164 %
Chapel Hill	111 %
Carrboro	273 %
Raleigh	130 %
SHP	66 %
State-wide	75 %
Arrest, controlling for same factors as well as whether contraband was found (state-wide)	51 %

Variable	Search	Citation	Arrest
Race	1.75*	1.08*	1.51*
Hispanic	1.16*	1.83*	1.72*
Age	0.97*	0.99*	0.99*
Stop Purpose			
Speed Limit	-	-	-
Stop Light	1.45*	0.52*	1.25*
Impaired	23.65*	0.08*	59.21*
Movement	2.96*	0.21*	2.04*
Equipment	2.38*	0.17*	1.27*
Regulatory	1.90*	0.55*	1.57*
Seat Belt	2.10*	0.89*	1.26*
Investigation	5.38*	0.27*	3.98*
Other	2.61*	0.47*	2.38*
Officer Type			
Black Disparity †	1.20*	0.98*	1.12*
White Disparity †	0.84*	0.97*	1.32*
Contraband			
Contraband Found	-	0.88*	23.49*
Time			
Hour of Day	Included	Included	Included
Day of Week	Included	Included	Included
Constant	0.09*	2.63*	0.03*
N	4,752,908	4,752,908	4,752,908
Psuedo R^2	0.10	0.10	0.23

Written Consent Searches: Depends on the Implementation

Fayetteville
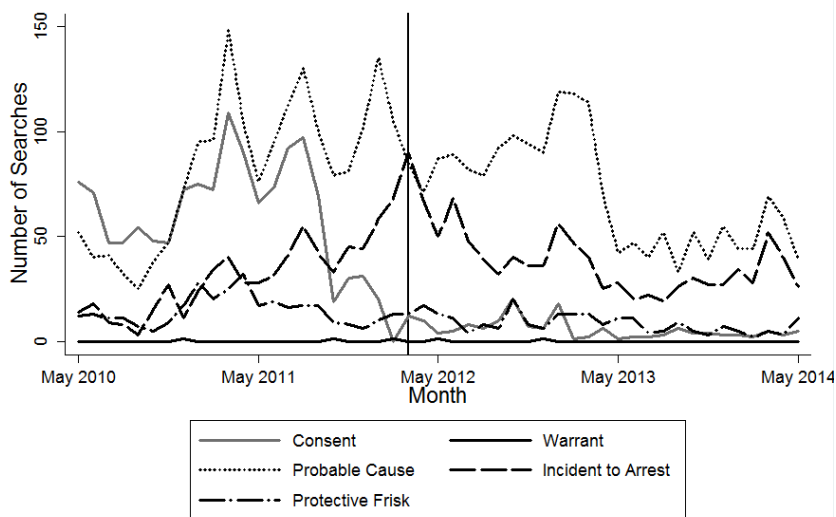
Durham
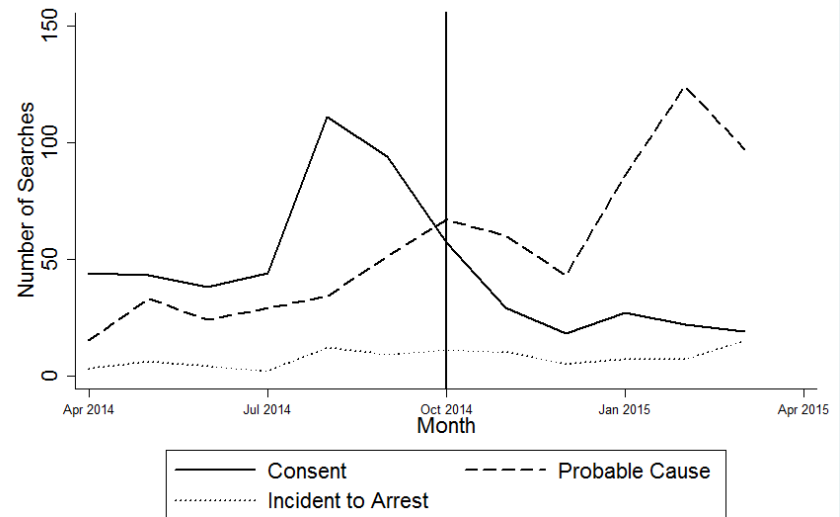

Note: Note: May 2010 - May 2014
Note: The vertical black line is at March, 2012. After the 1st of this month, Fayetteville police were required to obtain written consent.
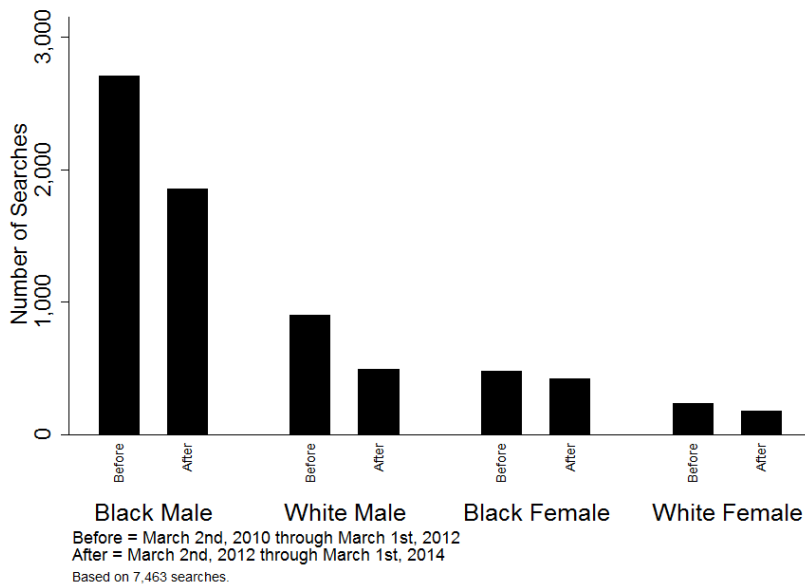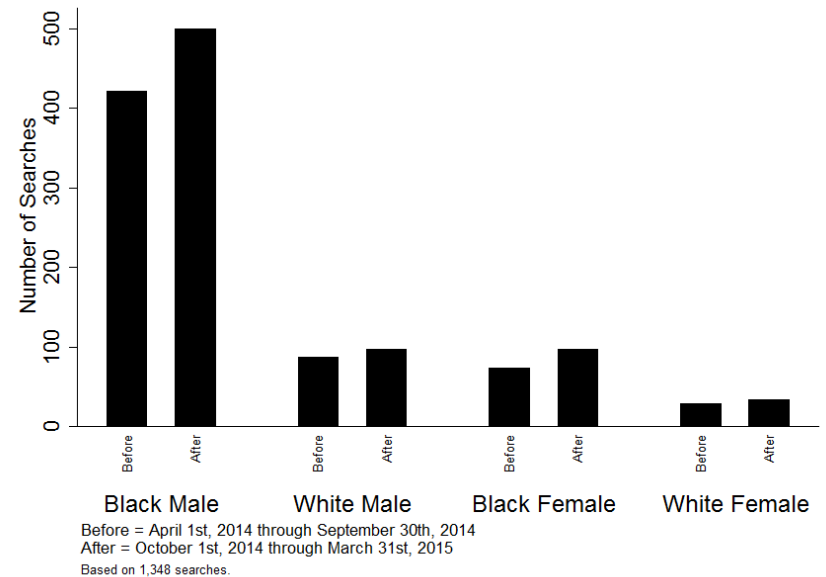
Note: April 2014 - March 2015
Note: The vertical black line is at October 2014. After the 1st of this month, police were required to obtain written consent.

Number of Searches Before and After Written Consent Reforms

Discussion Points

- Great differences in search rates by
  - Agency
  - Officer
  - Race, Gender, Age of Driver
- War on drugs has made many traffic stops pretexts for something else
- My web site includes a spreadsheet listing the data for each officer, by ID number
  - Can show systematic patterns at the officer level

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http://www.unc.edu/~fbaum/traffic.htm