

# Driving While Black: It's Getting Worse

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## Abstract

North Carolina mandated the first collection of demographic data on all traffic stops during a surge of attention to the phenomenon of “driving while black” in the late 1990s. Based on analysis of over 18 million traffic stops, we show dramatic disparities in the rates at which black drivers, particularly young males, are searched and arrested as compared to similarly situated whites, women, or older drivers. Further, the degree of racial disparity is growing over time. Finally the rate at which searches lead to the discovery of contraband is consistently lower for blacks than for whites, providing strong evidence that the empirical disparities we uncover are in fact evidence of racial bias. Findings are robust to a variety of statistical specifications.

Keywords: racial profiling, driving while Black, traffic stops, race, gender, age, police, criminal justice, North Carolina.

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The United States has been in a period of intense discussion of police shootings and relations with minority communities for the past two years. Beginning with the acquittal of George Zimmerman for the killing of Trayvon Martin (July 2013), through the killings by police officers of Eric Garner in Staten Island, NY (July 17, 2014), Michael Brown in Ferguson, MO (August 9, 2014), and Freddie Gray in Baltimore, MD (April 12, 2015), these four unarmed black men have become symbols of a national movement made apparent with the #BlackLivesMatter and the “Hands up, don’t shoot” slogans that have now become commonplace. Unequal treatment of black and white citizens is of course nothing new, as can be attested to by such works as those of Michelle Alexander, whose *New Jim Crow* (2010) dramatically and forcefully traced the history of racial disparities in the criminal justice system, brought, she argues, to a new level through the mass incarceration movement in the 1980s and beyond. As Bryan Stevenson (2014) notes, the US DOJ reported almost 7 million American adults under some form of judicial control at year’s end, 2013 (Glaze and Kaeble 2014). This marked a dramatic shift from historical trends, as state and federal prisoners were no more in 1973 than they had been in 1960 (see BJS 1982). The dramatic shift toward mass incarceration began in 1974 and accelerated during the 1980s and the 1990s when the war on drugs generated not only large increases in incarceration rates overall, but an increased focus on the minority community.

Gary Webb’s journalistic exposes of the “driving while black” phenomenon made clear in 1999 the extent to which black and brown drivers were subjected to systematic profiling as part of the war on drugs, also stressing the degree to which a previous police focus on safe driving was diverted into one focused on a needle-in-the-haystack search for drug couriers and largely reliant on very inefficient “behavioral” and racial profiles (see Webb 2007 [1999]).

The US Drug Enforcement Agency (DEA) promoted the use of profiles largely on the basis of the work of Florida state trooper Bob Vogel, later elected Sheriff of Volusia County, Florida. In a laudatory profile in the *Orlando Sentinel*, Charles Fishman (1991) explains Vogel's laser-like focus on drug couriers, in spite of the fact that they typically were only in transit through his rural stretch of I-95 near Daytona Beach. Fishman writes: "The pipeline wasn't causing much of a law enforcement problem for Vogel. (An early element of the courier profile, in fact, was that cars obeying the speed limit were suspect -their desire to avoid being stopped made them stand out.)" In fact, according to Webb (2007), Fishman's early work on drug interdiction was thrown out by various judges who considered his "hunch" that drugs may be in the car an unconstitutional violation of the need to have probable cause before conducting a search. Vogel responded by studying the Florida vehicle code, finding that there were hundreds of reasons why he could legally pull a car over.

He found them by the hundreds in the thick volumes of the Florida vehicle code: rarely enforced laws against driving with burned-out license plate lights, out-of-kilter headlights, obscured tags, and windshield cracks. State codes bulge with such niggling prohibitions, some dating from the days of the horseless carriage.

"The vehicle code gives me fifteen hundred reasons to pull you over,' one CHP [California Highway Patrol] officer told me (Webb 2007).

In a major victory for this police strategy in the war on drugs, the Supreme Court decided in *Whren v. United States* (1996) that *any* traffic violation was a legitimate reason to stop a driver, even if the purported violation (e.g., changing lanes without signaling) was clearly a pretext for the officer's desire to stop and search the vehicle for other reasons, such as a general suspicion. There was no requirement that speeding laws, for example, be equitably enforced; if all the drivers are speeding, it is constitutionally permissible, said the Justices, to pick out just the minority drivers and enforce the speeding laws selectively. Of course, once a car is stopped, officers are often able to conduct a "consent" search when drivers do not object to the officer's

request to search the vehicle. The *Whren* decision opened the floodgates to pretextual stops. Thus, tens of thousands of black and brown drivers have routinely been stopped and searched in an effort to reduce drug use. As Marie Provine (2007) has pointed out, drug use is no different across race, though drug arrests differ dramatically.

Mark Peffley and Jon Hurwitz (2010) document the dramatic disparities in how white and black Americans experience, perceive, and relate to the police. Given the trends described above, it is no surprise that members of minority communities feel much less trustful of the police as compared to white Americans. Charles Epp and collaborators (2014) have provided the most comprehensive analysis of citizen interactions with the police in the particular context of the traffic stop. They demonstrate that when blacks are stopped for legitimate reasons such as speeding, they show no difference in attitudes about the lawfulness and appropriateness of the traffic stop nor in the behavior of the officer, as compared to whites. However, they note that drivers have a sense of when the stops are pretextual and that being subjected to these pretextual stops is humiliating, threatening, and unjustified. It dramatically reduces the driver's sense of belonging in the community and belief that they are equal citizens awarded the same level of respect and protection by the police as whites. Thus, the racialized character of traffic stops, as in other elements of the criminal justice system, may have dramatic consequences not just for traffic safety, crime, drugs, and incarceration, but for the nature of American democracy itself. It goes to the heart of the question of whether all Americans feel that they are part of a single nation rather than living in separate communities divided by color and subject to differing rights and burdens.

In this article we explore the degree to which motorists in North Carolina experience different outcomes when stopped by the police and add to our collective understandings about

the degree of racial difference apparent in this most common form of police-citizen interaction. For most whites, a speeding ticket is unpleasant, certainly unwelcome, perhaps understandable, and most likely attributed to a perhaps inadvertent lead foot. For many members of minority communities, traffic stops and their aftermaths represent something distinctly more alienating.

### **The US DOJ Report on Ferguson**

In March of 2015, the US Department of Justice released the results of its investigation of the Ferguson Police Department (FPD) (US DOJ 2015). The investigation took two lines of inquiry. The first was a qualitative assessment of department practices, based on interviews with Ferguson residents, police officers, and city officials, reviews of court documents, arrest records, and municipal budgets, and ride-alongs with on-duty officers. The second component was a quantitative analysis of patterns of police enforcement that compared the rate at which blacks were cited, arrested, and searched relative to whites.

Results from these inquiries were complementary and showed flagrant and systematic civil rights violations by the FPD. Among the most egregious violations was that city officials put great pressure on the police department to raise revenues by issuing traffic citations, and that these efforts were directed disproportionately toward the minority community. In effect, the city was perverting its traffic laws to balance municipal budgets, and doing so through the pockets of its black residents. Investigators also found that black motorists were more than twice as likely to be searched as whites following a traffic stop, but were 26% less likely to be found in the possession of contraband. The report concludes that “the lower rate at which officers find contraband when searching African Americans indicates either that officers’ suspicion of criminal wrongdoing is less likely to be accurate when interacting with African Americans or

that officers are more likely to search African Americans without any suspicion of criminal wrongdoing. Either explanation suggest bias, whether explicit or implicit” (US DOJ 2015, 65).

The Department of Justice’s logic in juxtaposing search rates with contraband-hit rates as an indicator of racial discrimination finds support in the criminal justice literature. If studies discover that minority drivers are more likely to be searched, but less likely to be found with contraband, this disparity is taken as evidence of racial bias in police practice (Lamberth 1996; Harris 1999; Meehan and Ponder 2006; Persico and Todd 2008; Bates 2010). Conversely, when evidence shows that contraband hit-rates are equal or higher among minorities, then the differences in search rates are considered to be part of good policing, not bias (Knowles, Persico, and Todd 2001). Others have used more complicated multivariate models that control for estimated rates of participation in crime across racial groups (Gelman, Fagan, and Kiss 2007). (Of course, higher contraband hit rates for relatively minor substances, such as user-amounts of marijuana, may not be an appropriate police focus, but this is a discussion beyond the scope of this analysis. We do not distinguish among the various types or amounts of contraband found here, which is a limitation we share with many previous analyses.)

We replicate the empirical component of the Ferguson investigation for North Carolina. North Carolina maintains the longest and most detailed record of traffic stops in the nation, allowing a wholesale replication of the quantitative segment of the report. We also push forward and measure the effects of other demographic factors that data limitations prevented the Department of Justice from considering in the Ferguson case. In particular, we consider how police enforcement varies not only by race, but also by age and gender. We determine that for North Carolina, racially disparate policing is predominantly a male-oriented phenomenon;

female motorist experience only marginally different outcomes across racial lines. We briefly review the data before proceeding to results.

## **Data and Preliminary Analysis**

North Carolina was the first state in the nation to mandate the collection of police-stop data, after public attention surged to this issue in the late-1990s. At least 15 states considered legislation during 1999 mandating the collection of police-stop information, and North Carolina was the first in the nation to pass such a law (GAO 2000, 15). Since Jan 1, 2002, the NC DOJ has collected information on every traffic stop from law enforcement agencies throughout the state.<sup>1</sup> Appendix A shows the “SBI-122 Form,” the two-page paper form which the officers fill out after any traffic stop. Data are relayed to the state DOJ and made available to the public in an on-line searchable database: <http://trafficstops.ncdoj.gov/>. Though the underlying legislation required the state to collect the data, police departments to report it, and the Attorney General to analyze it and issue reports on a biennial basis (see Mance 2012, fn. 3), the state has never issued any official analysis of the trends and patterns associated with the data collected.

North Carolina now makes an enormous amount of data available to the public: over 18 million traffic stops are documented in the NC DOJ database across the entire state, from 2000 to present. Before conducting any analysis we drop observations from years where the data is incomplete. These include 2000 and 2001 when only the State Highway Patrol was reporting data, and 2014, which was the year of the last data update we received from the NC DOJ. We also drop observations relating to passengers and checkpoint stops. NC law requires these records to be collected only in the case when a search occurs, not for every stop. Therefore we

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<sup>1</sup> The law exempts only police departments in towns with fewer than 10,000 population. The State Highway Patrol has been subject to the law since January 1, 2000, but it was phased in for other agencies in 2002.

do not know how many drivers were stopped at a checkpoint, nor how many passengers were in vehicles that were stopped. Table 1 presents an overview of the data.

Table 1. Overview of the Data

Data Subsets	Observations	Rates (%)
Total stops	18,194,110	-
-2000	641,397	-
-2001	598,733	-
-2014	515,852	-
-Passengers	298,459	-
-Checkpoint stops	183,691	-
Stops for analysis	15,992,317	-
Citations	10,616,581	66.3
Searches	511,813	3.2
Arrests	349,136	2.1
Contraband	128,918	0.8

The top part of Table 1 shows first how we move from 18.2 million observations to 15.99 million by eliminating years with incomplete data, checkpoint stops, and passengers. Then, based on the remaining cases, the bottom half of the table reports the number of times various outcomes have occurred following a traffic stop, with the right column showing the associated rates. Most traffic stops in NC result in a citation; this takes place in 66% of all cases. Searches occur in approximately 3% of the cases; arrests in 2.1%; and contraband in 0.8% of all stops, just 129,000 stops out of 16 million. The overall contraband-hit rate (simply the number of contraband finds divided by the number of searches) is 25%. So a quarter of the searches conducted by NC officers are successful in the sense that they lead to contraband.<sup>2</sup>

Officers record the reason for each traffic stop and the SBI form allows for ten different possibilities. For example, drivers can be stopped for speeding, safe movement violations, or not having their seat belt buckled. Table 2 shows how the 16 million stops are distributed across nine

<sup>2</sup> Other outcomes that can result from a traffic stop include verbal or written warnings and “no enforcement action.” In concert with the Ferguson report, we focus on only citations, arrests, and searches because they are the most invasive and punitive of the possible outcomes.



of these stop purposes, excluding checkpoint stops. By far the most common reason NC motorists are pulled over is for speeding, followed by vehicle regulatory issues (having expired registration tags for example). Other outcomes are less common. The table also shows the racial breakdown associated with each type of stop, making clear that the majority of motorists stopped for each type of violation are white. As whites greatly outnumber blacks in NC this is not surprising. In fact, blacks are overrepresented for each type of stops relative to their numbers in the population. (The US Bureau of the Census reports that for 2013, 71.7% of North Carolinians identify as white, and 22.0% as black.) Overall 31% of motorists stopped are black and 63% are white, with the remainder belonging to other races. Reading down the two rightmost columns of the table tells us what types of stops break in a black or white direction relative to these baseline percentages. Vehicular issues skew strongly in the black direction. Blacks make up 31% of total stops, but 38% of stops relating to regulatory violations, 38% of those relating to equipment issues, and 34% of “other vehicle” stops. The table also shows stops that skew in the white direction, though in no case does the percentage of motorists stopped rise to the percentage in the population. These include speeding, seat belt violations, and driving impaired.

Table 2. Racial Composition of Traffic Stops by Purpose

Purpose	Number	% Total	% White	% Black
Total Stops	15,992,305	-	62.85	30.64
Driving Impaired	158,264	0.99	66.22	22.32
Seat Belt	1,492,624	9.33	66.88	26.56
Speed Limit	6,665,939	41.68	66.64	26.65
Safe Movement	886,090	5.54	62.93	29.82
Stop Light/Sign	758,136	4.74	62.63	31.18
Investigation	1,130,736	7.07	59.13	31.43
Other Vehicle	851,550	5.32	57.49	33.53
Vehicle Equipment	1,422,461	8.89	56.50	38.12
Vehicle Regulatory	2,626,505	16.42	57.55	38.41

The Ferguson report focused on the rate at which blacks were searched, cited, and arrested relative to whites. We do the same in Table 3. For each of the nine stop purposes, the

table shows the racial breakdown for experiencing these different outcomes. We also calculate a “percent difference,” which is simply the rate at which black drivers experience an outcome divided by the rate at which whites experience the same outcome, multiplied by 100. For example, if 10% of black motorists are searched following a stop for speeding and 5% of whites are searched, then the percent difference between them is 100%, indicating that blacks are 100% more likely to experience a search following a stop for speeding.

Black drivers are much more likely to be searched or arrested than whites following each type of stop, with the exception of driving impaired. Blacks are 200% more likely to be searched and 190% more likely to be arrested after being pulled over for a seat belt violation; 110% more likely to be searched or arrested following a stop for vehicle regulatory violations; 60% more likely to be searched or arrested after being stopped for equipment issues. In contrast, citations appear almost race-neutral. For six of the stop purposes, white motorists are slightly more likely to receive a citation and the only double-digit disparity is for driving impaired where black drivers are 11% more likely to be ticketed. Driving impaired appears to be an outlier; whites are more likely to be arrested and blacks more likely to be cited.

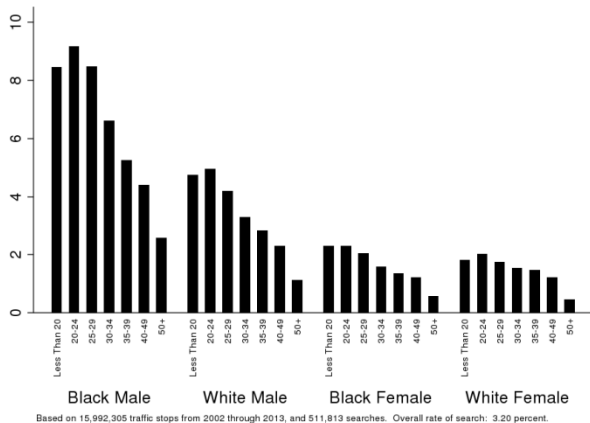
Table 3: Percent Searched, Cited, and Arrested by Race and Purpose of Stop, Drivers

Purpose	Searched			Cited			Arrested		
	Percent White	Percent Black	Percent Difference	Percent White	Percent Black	Percent Difference	Percent White	Percent Black	Percent Difference
Total	2.61	4.57	75	66.88	63.43	-5	1.90	2.71	43
Driving Impaired	37.24	30.51	-18	24.56	27.25	11	56.26	46.82	-17
Safe Movement	5.54	7.41	34	38.29	37.50	-2	3.25	3.62	11
Investigation	5.79	9.57	65	48.05	47.15	-2	4.03	6.39	59
Vehicle Equipment	4.39	6.88	57	31.50	31.06	-1	1.75	2.78	59
Speed Limit	0.95	1.67	76	78.35	79.16	1	0.69	1.12	62
Stop Light/Sign	2.31	4.55	97	57.03	56.89	0	1.42	2.33	64
Other Vehicle	3.68	6.52	82	56.70	58.42	3	2.43	4.14	70
Vehicle Regulatory	2.39	4.95	107	64.92	61.70	-5	1.23	2.56	108
Seat Belt	1.09	3.30	203	90.00	84.21	-6	0.53	1.54	191

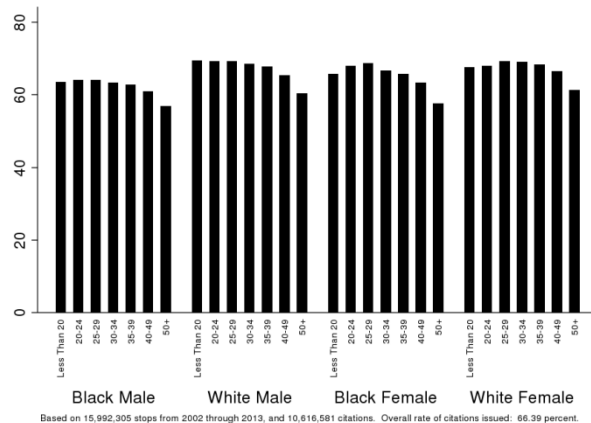
The only demographic distinction the Ferguson report makes is for race, but because the data for NC is more detailed and extensive than what is available for MO we can also separate motorists by age and gender, and still retain enough observations to ensure robust calculations. Figure 1 presents this analysis in a series of bar charts that show the rate at which different groups are searched, cited, or arrested following a stop. Looking first at searches, there are dramatic age disparities; older motorists are less likely to be searched and this holds true across racial and gender groups. There are also stark gender disparities. Male motorists of both races are more likely to be searched than their female counterparts. Comparing extremes, 9% of the black men between the ages of 20 and 24 who are stopped are searched, while less than 1% of white women over the age of 50 are searched. Young black men are 1,800% more likely to be searched after a traffic stop than older white women.

Figure 1. Rates by Race, Gender, and Age Group

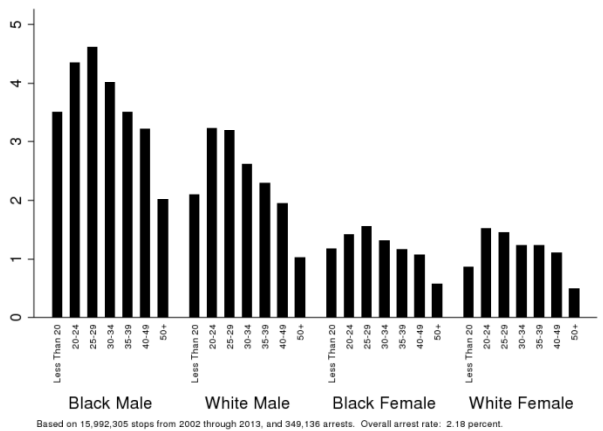
A) Searches



B) Citations



### C) Arrests



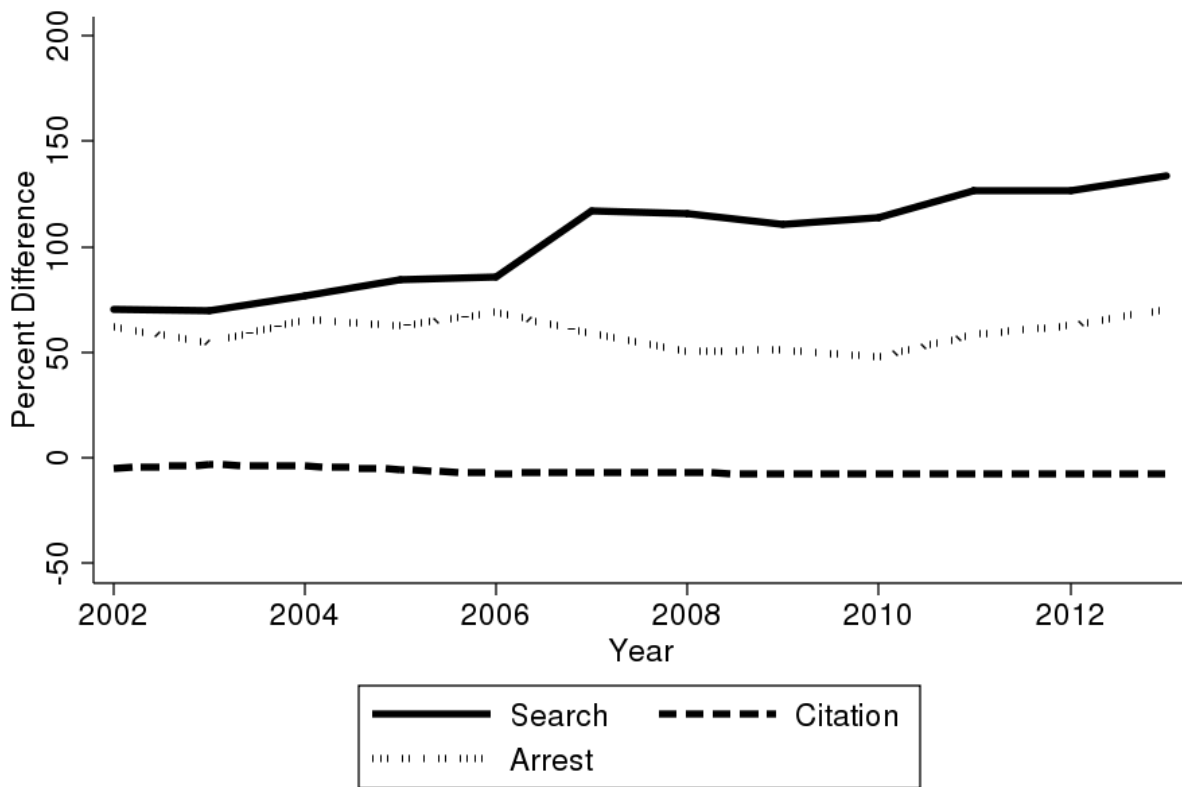
Of particular interest is that the racial disparities so clearly visible between black and white males are only very modest for female drivers. In fact, black and white females are searched at a roughly equivalent rate across each age group and the same is true when looking at Panel C for arrests. This signals an important point of departure for our analysis from the Ferguson report. In NC, it appears that racially disparate policing predominately affects male drivers. Subsequent analysis will therefore focus only on males. Complementary analysis looking at female drivers is available in the appendix.

Finally, looking at Panel B it is clear that NC police approach citations differently than either searches or arrests. Table 2 indicated that ticketing was neutral with respect to race and Panel B suggests that it is also age- and gender-neutral. Black men of any age are actually marginally less likely to be ticketed than their counterparts. In this respect, policing in NC and Ferguson is very different. Furthermore, the conventional wisdom that women are less likely to be ticketed after being pulled over appears to be false. Having established that pronounced disparities exist for searches and arrests, and having narrowed our focus to male drivers, we turn now to documenting trends over time and assessments of racial bias.

## **Twelve Years of NC Policing**

Table 2 showed that black drivers (men and women) are 75% more likely to be searched than whites, 5% less likely to be ticketed, and 43% more likely to be arrested. Figure 2 shows how these differences have varied over time, for male motorists. Because gender differences are so obvious in Figure 2, we focus in the section below on men. In 2002, black men were 70% more likely to be searched than whites and this disparity has grown steadily over the period of study. Beginning in 2007, black men were twice as likely to be searched and by 2013 this difference had grown to over 140%. Black men are also more likely to be arrested; however this disparity has remained stable at about a 60% increased likelihood. We also see that black men are marginally less likely to receive citations. There is almost no variance for this outcome; NC police are highly consistent over time in their relative treatment of whites and black men when it comes to ticketing.

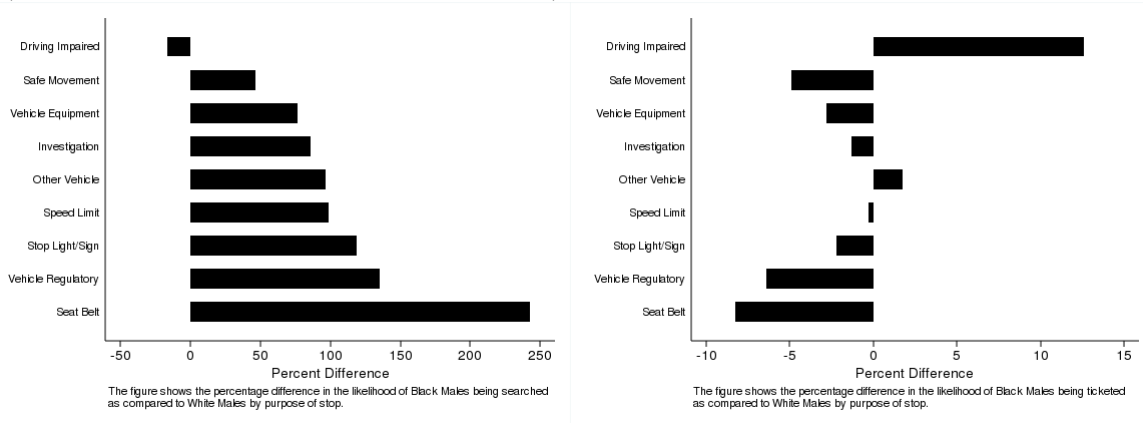
Figure 2. Percent Difference in the Likelihood of Search, Citation, or Arrest for Black Men



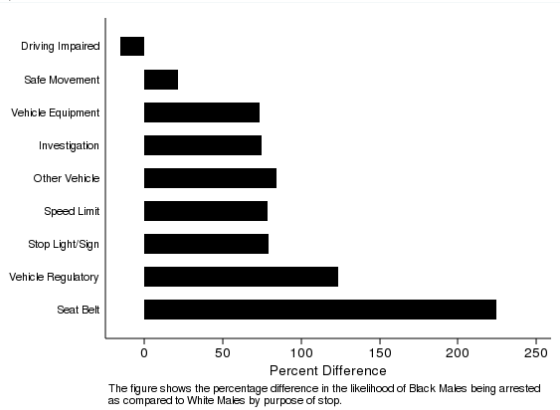
The figure shows the percentage difference in the likelihood of different outcomes for Black Males as compared to White Males.

Figure 3 shows percent differences for citations, arrests, and searches across the various stop purposes. (Table 2 presents the same information for men and women combined.) Isolating men does little to change the overall pattern, except that the disparities are greater when we focus only on men. Compared to white men, black men are more likely to be searched and arrested for every type of stop with the exception of driving while impaired. Disparities in ticketing are comparatively minor and fluctuate around zero. (Note the maximum values in Figure 3A and C are 250 percent increased likelihood, whereas Figure 2B goes only from -10 to +15.)

Figure 3. Percent Difference in the Likelihood of Outcomes for Blacks, by Purpose of Stop  
 A) Search B) Citation



C) Arrest



There are two possible explanations for the disparities documented in Figures 2 and 3.

One is racially biased policing and the other would be if black men in North Carolina are more likely to be in possession of contraband, relative to white male motorists.<sup>3</sup> Both explanations could account for higher search and arrest rates of black men, but they point to very different problems so we want to distinguish between them. To do so, we first take a closer look at the types searches to which NC motorists are subjected. The SBI form lists five different search types and Table 4 shows the rate at which each type of search occurs. The most common are

<sup>3</sup> For example, a study by Lange, Johnson, and Voas (2005) of drivers on the New Jersey Turnpike found that speeders were more likely to be black and that patterns of police traffic stops accurately reflected the racial make-up of speeders, rather than the racial composition of the surrounding communities.



searches based on driver consent, followed by searches that occur incident to arrest, and finally searches based on probable cause. Searches conducted when executing a warrant or as protective frisks are relatively rare. The top row of the rightmost column shows the overall percent difference; black men are 97% more likely to be searched than white men. Reading down this column reveals how different types of search deviate from this baseline rate. Probable cause searches skew strongly toward blacks, indicating that officers are much more likely to be suspicious of criminal wrongdoing when interacting with black motorists. Black men are also twice as likely to be searched with consent. This indicates either that black men are more willing to give their consent to be searched or that officers are more likely to request consent after stopping a black driver.

Table 4. Rates of Search by Race for Men

Search Type	Number	% Total	% White	% Black	Percent Difference
Total Stops	10,320,623	-			-
Total Searches	427,677	4.14	3.23	6.38	97
Incident to Arrest	148,326	1.44	1.23	1.90	55
Search Warrant	1,127	0.01	0.01	0.01	61
Protective Frisk	14,316	0.14	0.11	0.21	94
Consent	194,236	1.88	1.47	2.94	100
Probable Cause	69,672	0.68	0.42	1.33	216

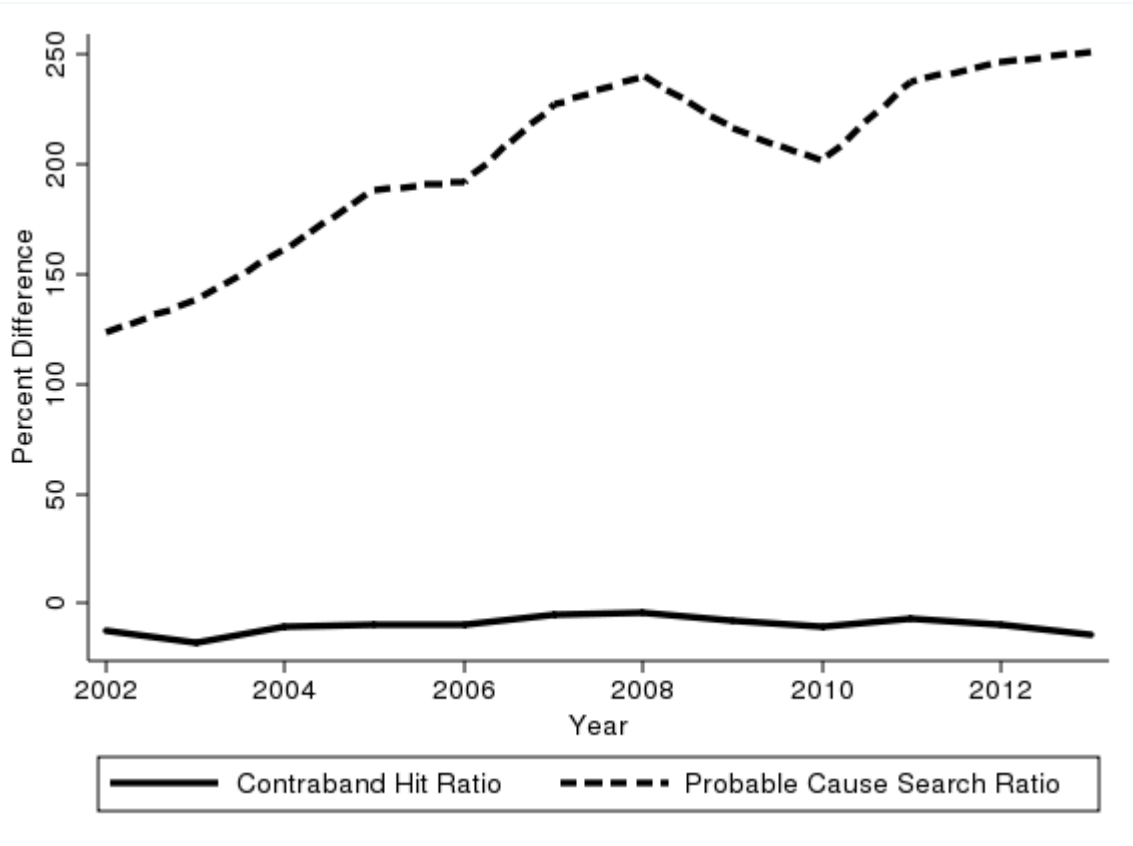
Are the suspicions that lead officers to search black drivers at such disproportionately high rates justified? Table 5 provides the answer by showing the rate at which officers find contraband on drivers subsequent to conducting each type of search. Officers appear less likely to find contraband on black drivers after conducting searches based on consent or probable cause. This suggests that the disproportionate use of these searches on black motorists is unjustified. Indeed it is just such a disparity that the US Department of Justice points to as evidence of racial bias in the Ferguson report.

Table 5. Likelihood of Finding Contraband Given a Search for Men, by Race and Type of Search

Search Type	Number	% Total	% White	% Black	Percent Difference
Total Searches	427,677	4.14	3.23	6.38	97
Total Contraband	108,198	25.30	25.64	26.07	2
Consent	194,236	20.91	23.30	19.13	-18
Probable Cause	69,672	52.81	56.39	50.68	-10
Incident to Arrest	148,326	18.92	18.68	20.39	9
Search Warrant	1,127	39.31	38.19	42.28	11
Protective Frisk	14,316	15.95	15.79	17.76	12

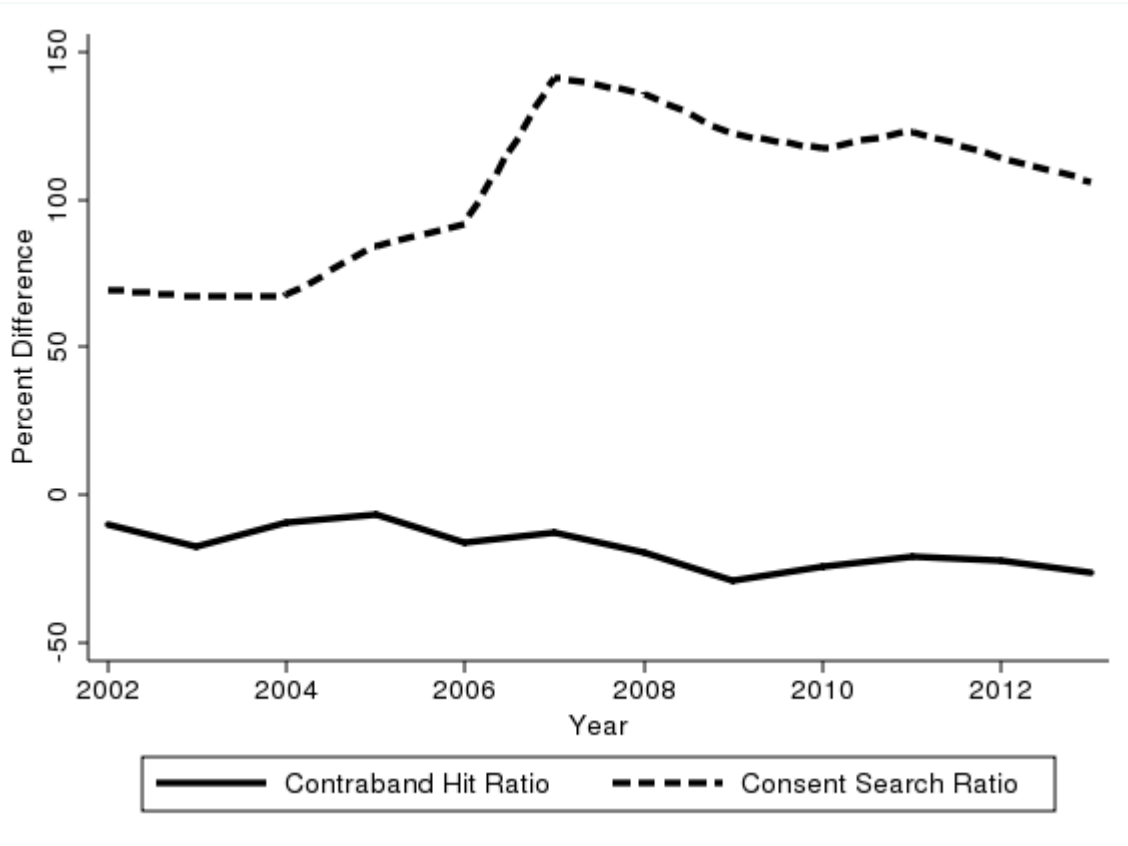
Figure 4 shows trends in the differential use of probable cause searches and the success of these searches at recovering contraband from 2002 to 2013 between white and black males. A dramatic change is evident. Police today are much more suspicious of black motorists than they were in 2002. In 2002, officers were almost 125% more likely to search black men than white men using a probable cause search. By 2013, officers were almost 250% more likely to use probable cause as a justification for searching blacks – essentially doubling the disparity in the use of probable cause searches. Tracking the contraband hit-rate associated with this type of search reveals that officers’ suspicions of wrongdoing have always been less accurate when engaging with black motorists; officers consistently find contraband on black males at modestly lower rates than white males. So the increased reliance on probable cause to search blacks is not associated with more accurate assessments of the likelihood of blacks engaging in criminal behavior. And the increased racial disparities in probable cause searches over time appear to be completely unjustified in terms of any increased likelihood of finding contraband.

Figure 4. Percent Difference in the Likelihood of Probable Cause Searches and Finding Contraband for Black Men



Similar trends are apparent when looking at consent searches. Figure 5 shows that in 2002 officers were 75% more likely to search black men with consent, but by 2013 consent searches were used at an even greater disparate rate. During this time officers became less likely to find contraband on blacks; from 10% less likely in 2002 to 25% in 2013. It appears that the increased use of consent searches on black motorists corresponds to a decrease in the quality of such searches, if quality can be measured by contraband hit-rates.

Figure 5. Percent Difference in the Likelihood of Consent Searches and Finding Contraband for Black Men



So far, we have looked at simple percentage differences in searches and contraband hits by race. In the next section we turn to multiple logistic regressions in order to control for possibly confounding factors.

### Multivariate Regression Analyses

A number of factors could explain some of the apparent racial differences that we uncovered in the analyses above. The data collected as part of the North Carolina law allow us to control for the purpose of the stop, the time of day and day of week, and a number of other factors. In Table 6, we take advantage of these opportunities to present three statistical models. In each case, the dependent variable is whether the drive was: a) searched, b) cited, or c) arrested, and the independent variables include demographics, the purpose of the stop, the day and hour of the

stop, whether the individual officer conducting the stop was a “high disparity” officer, and, for the citation and arrest models, whether contraband was found. Here we focus only on male drivers. Our appendix presents similar results for females, and a model in which we include a fixed-effects term for the agency conducting the stop, since different agencies have different overall rates of search, on average. (These robustness checks produce very similar results to those presented here.)

Table 6. Predicting the Occurrence of a Search, Citation, or Arrest for Men

Variable	Search	Citation	Arrest
<b>Demographics</b>			
Race	1.75*(0.01)	1.08*(0.00)	1.51*(0.01)
Hispanic	1.16*(0.01)	1.83*(0.01)	1.72*(0.01)
Age	0.97*(0.00)	0.99*(0.00)	0.99*(0.00)
<b>Stop Purpose</b>			
Speed Limit	-	-	-
Stop Light	1.45*(0.01)	0.52*(0.00)	1.25*(0.02)
Impaired	23.65*(0.24)	0.08*(0.00)	59.21*(0.68)
Movement	2.96*(0.02)	0.21*(0.00)	2.04*(0.02)
Equipment	2.38*(0.02)	0.17*(0.00)	1.27*(0.01)
Regulatory	1.90*(0.01)	0.55*(0.00)	1.57*(0.01)
Seat Belt	2.10*(0.02)	0.89*(0.00)	1.26*(0.02)
Investigation	5.38*(0.04)	0.27*(0.00)	3.98*(0.04)
Other	2.61*(0.02)	0.47*(0.00)	2.38*(0.03)
<b>Officer Type</b>			
Black Disparity †	1.20*(0.01)	0.98*(0.00)	1.12*(0.00)
White Disparity †	0.84*(0.01)	0.97*(0.01)	1.32*(0.02)
<b>Contraband</b>			
Contraband Found	-	0.88*(0.01)	23.49*(0.19)
<b>Time</b>			
Hour of Day	Included	Included	Included
Day of Week	Included	Included	Included
<b>Constant</b>	0.09*(0.00)	2.63*(0.02)	0.03*(0.00)
<b>N</b>	4,752,908	4,752,908	4,752,908
<b>Pseudo R<sup>2</sup></b>	0.10	0.10	0.23

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

Note: The number of observations is smaller than the total number of male stops because the “hour of stop” variable is missing in some cases.

\*  $p < 0.05$

† High disparity officers search white (black) drivers at more than twice the rate of a black (white) driver. Additionally, the office must have stopped at least 50 black drivers, 50 white drivers and have a search rate greater than the state-wide average of 3.20 percent.

Table 6 provides clear evidence that the comparisons of percentages presented in earlier sections are robust to a more sophisticated set of controls. Coefficients indicate the percent difference in likelihood from 1.00 in one of the three events occurring. In the first model, black men are shown to have a 75 percent increased likelihood of search compared to white men, controlling for all other factors in the model, and based on over 4.7 million observations. The officer-disparity variables allow us to control for a “bad apple” hypothesis. While it is true that a driver stopped by an individual officer who tends to search many more blacks than whites will be more likely to be searched, inclusion of this variable in the model allows us to see if the race-of-driver variable remains significant even when that is controlled for. So the 75 percent increased likelihood can be interpreted as the increased chance, after controlling for all the other factors, including the “bad apple” hypothesis. Clearly, there are some officers with great disparities in their behaviors. However, the patterns we document here cannot be explained away with reference only to these individuals; these are widespread patterns of differential treatment.

The single greatest predictor of being searched, it is important to note, is being stopped for impaired driving: a coefficient of 23.65 indicates more than a 2,000 percent increased likelihood in search. In fact, all the search purpose variables are relatively large (and of course are all significant, which we expect since there are almost five million observations); this means that the baseline category, speeding, is significantly less likely to lead to a search than any other type of traffic stop. Safe movement, equipment, and seat belt violations have high coefficients in the search model, and of course stops relating to investigations have very high rates of both search and arrest.

Looking at the citation model, as speeding tends to lead to a ticket, all the other stop purposes have low coefficients (a coefficient of 0.90 would indicate a 10 percent lower

likelihood of that outcome, compared to the baseline, which in our model is speeding). Driving while impaired has an extremely low coefficient for citation, and a very high one for arrest, indicating that such drivers are searched and arrested, not simply given a ticket. These common-sense outcomes are evidence that the models are indeed capturing the results of most traffic stops, giving confidence that the other coefficients can similarly be interpreted with confidence.

In the second (citation) and third (arrest) models, we include a variable for whether contraband was found. Again, consistent with common sense, these coefficients indicate that the presence of contraband is a strong predictor that the driver will be arrested, not ticketed. In the citation and arrest models, we can see that blacks are marginally more likely to be cited (with an eight percent increased likelihood) and much more likely to be arrested (51 percent increased likelihood), all other factors equal. Hispanic males show a 16 percent increased likelihood of search; 83 percent increased likelihood of citation, and 72 percent increased chance of arrest. In all cases, the odds of these outcomes decline with age.

In general, the results from Table 6 present a chilling picture of the odds of negative outcomes for black and Hispanic male drivers in North Carolina. Controlling for what they are doing at the time of the stop, why, at what time or day, by which officer they were stopped, and whether or not they had contraband in the car, minority drivers are much more likely to see adverse outcomes. These multivariate results corroborate and extend the findings from our earlier presentations of simple percentage differences in the rates of search or arrest.

## **Conclusion**

The War on Drugs may very well be the most costly war in American history. This is true both of the fiscal burdens – the price society pays to convict and incarcerate more people than any other country in the world – but also the dramatic costs in human life and lost opportunity. A more insidious consequence has been the gradual alienation of minority communities; a trend that recent events in Ferguson, New York, and Baltimore have forced the nation to confront. Having conducted an extensive statewide analysis of traffic stops using state-of-the-art data, we can conclude that blacks in North Carolina appear to have good reasons to be mistrustful of the police. This is particularly true for North Carolina’s young black men, who are searched and arrested at dramatically higher rates than their white counterparts. Furthermore, there is nothing in the data to suggest that this disproportionate police attention is a result of young black men being more likely to commit crimes. In fact, police are somewhat less likely to find contraband on black men than on whites. If we follow the precedent used by the US Department of Justice in the Ferguson report, then our analysis point strongly toward racial bias in the policing of NC motorways.

Our most surprisingly and worrisome finding is that evidence for racial discrimination appears to be growing stronger over time. Black motorists today are much more likely to be searched relative to whites than they were 10 years ago. This is a trend that deserves immediate attention by NC and national policymakers. We conclude by noting that we have no reasons to believe that NC is an outlier among states. Rather, it is simply the only state that has mandated the collection of such comprehensive data over such a long period of time. For this NC deserves praise and we would call upon other states to follow suit and establish data-collection programs as national attention to these issues grows.



## Appendix B: Alternative Model Specifications

Table 6 presented a model for the entire state. Each agency has a different baseline rate of search, however, so it may be appropriate to include fixed effects for the agency. We do so in Table A1, limiting our analysis in this case to the 25 largest police agencies in the state. Note that the N here declines to just over 3 million, as we exclude many smaller agencies. Results in Table A1 suggest that the findings in Table 6 are highly robust.

Table A1. Predicting the Occurrence of a Search, Citation, or Arrest for Men for the Top 25 Agencies

Variable	Search	Citation	Arrest
<b>Demographics</b>			
Race	2.08*(0.01)	0.94 *(0.00)	1.61*(0.01)
Hispanic	1.23*(0.01)	1.70*(0.01)	1.78*(0.02)
Age	0.97*(0.00)	0.97*(0.00)	0.99*(0.00)
<b>Stop Purpose</b>			
Speed Limit	-	-	-
Stop Light	1.62*(0.02)	0.45*(0.00)	1.23*(0.02)
Impaired	29.44*(0.42)	0.05*(0.00)	75.48*(1.18)
Movement	2.85*(0.03)	0.20*(0.00)	2.11*(0.03)
Equipment	2.52*(0.02)	0.15*(0.00)	1.28*(0.02)
Regulatory	1.98*(0.02)	0.43*(0.00)	1.49*(0.02)
Seat Belt	2.55*(0.03)	0.68*(0.00)	1.35*(0.03)
Investigation	5.52*(0.05)	0.22*(0.00)	4.07*(0.05)
Other	2.96*(0.03)	0.39*(0.00)	2.59*(0.04)
<b>Officer Type</b>			
Black Disparity †	1.30*(0.01)	0.92*(0.00)	1.10*(0.00)
White Disparity †	0.90*(0.02)	1.07*(0.01)	1.42*(0.03)
<b>Contraband</b>			
Contraband Found	-	0.76*(0.01)	26.90*(0.30)
<b>Time</b>			
Hour of Day	Included	Included	Included
Day of Week	Included	Included	Included
<b>Agency Fixed Effects</b>			
	Included	Included	Included
N	3,052,024	3,052,024	3,052,024
<b>Log Likelihood</b>	-627322.11	-1839413.2	-366595.01

Note: Entries are odds-ratios, with standard errors in parenthesis. Constant Suppressed.

Note: The number of observations is smaller than the total number of male stops because the “hour of stop” variable is missing in some cases.

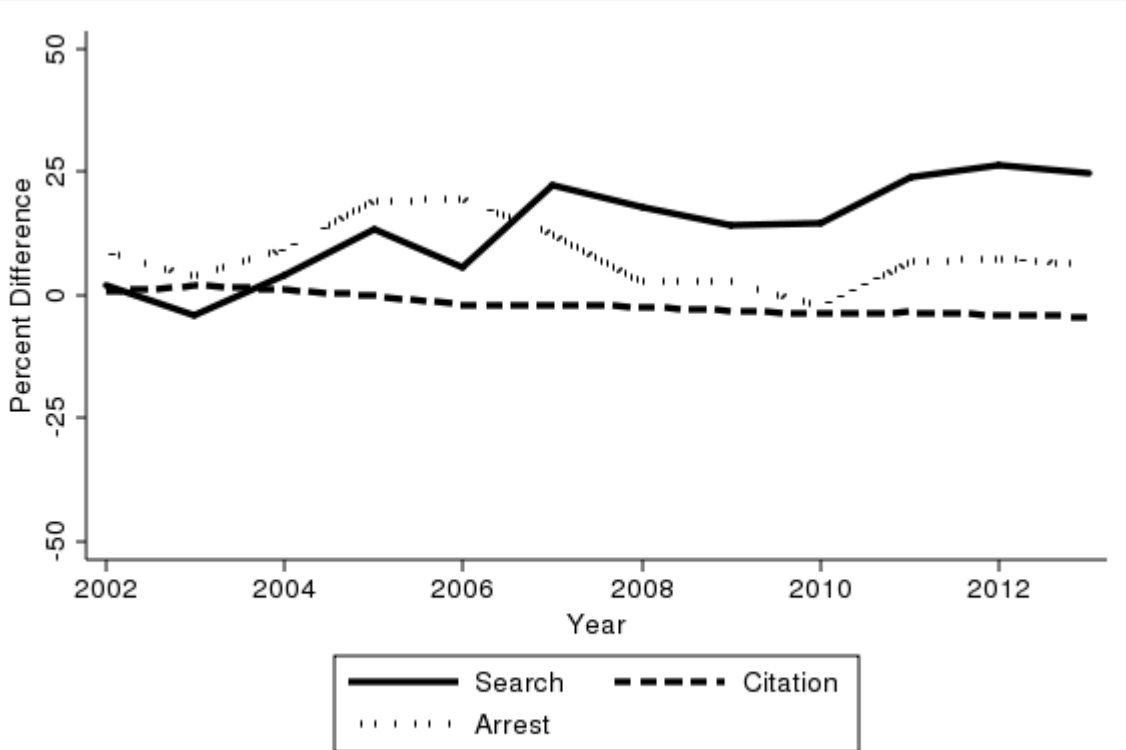
\* p < 0.05

† High disparity officers search white (black) drivers at more than twice the rate of a black (white) driver. Additionally, the office must have stopped at least 50 black and white drivers and have a search rate greater than 3.20 percent.

### Appendix C: Analysis of Female Drivers

Our main text focuses on males. Here we provide parallel information for female drivers, generally showing much more muted racial disparities. Figure B1 presents basic information on the differential likelihood of various outcomes of a stop for black women as compared to white women. As can be seen, women have essentially the same likelihood of being cited; this remains constant over the time period of the study. Over time, black women are increasingly more likely to be searched after being stopped than white women; in 2002 there was no difference, but by 2013 there is a 25% increased likelihood of being searched. The difference in the likelihood of being arrested fluctuates over this time.

Figure B1. Percent Difference in the Likelihood of Traffic Stop Outcomes for Black Women

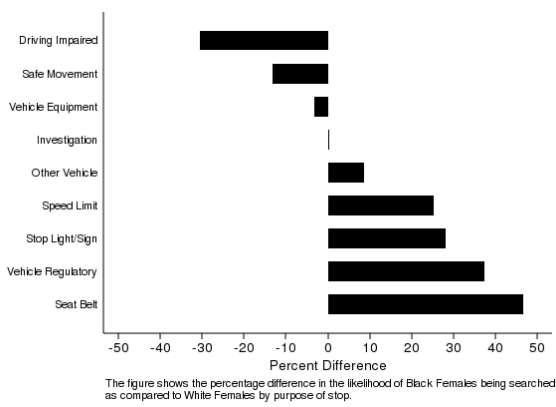


The figure shows the percentage difference in the likelihood of different outcomes for Black Females as compared to White Females.

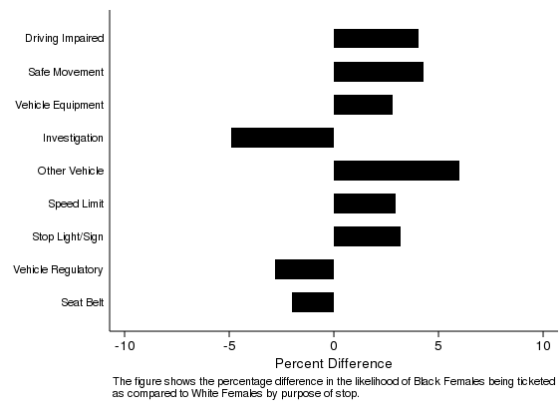
Moving on from the basic trends in time of differences in stop outcomes, Figure B2 presents the percent difference in the likelihood of outcomes for black women as compared to white women by purpose of stop. Unlike for men, there is more variation in the percent differences by purpose and outcome. White women are more likely to be searched after being stopped for driving while impaired, safe movement violations, and vehicle equipment. Black women have an essentially equally likely rate of search when stopped for an investigation. Black women are more likely to be searched following any other type of stop. All women are roughly as likely as being cited following any of type of stop; the differences are all within 5%. Finally, black women are consistently more likely to be arrested following a stop except for DWI and safe movement stops.

Figure B2. Percent Difference in the Likelihood of Outcomes for Black Women by Purpose of Stop

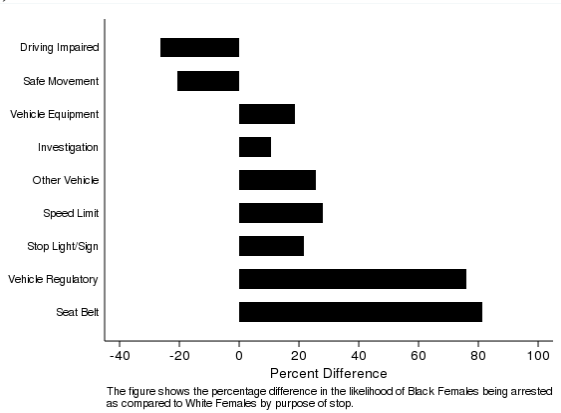
a) Search



b) Citation



### c) Arrest



These differences in the likelihood of being searched following a stop once again leads us to examine whether this difference is being driven by differential use of specific types of searches. Table B1 begins to answer this question. While there are modest differences for consent searches, searches executed given a search warrant, and incident-to-arrest searches, the real differences are in the use of protective frisk and probable cause searches. In both of these cases, black women are much more likely to be subject to these types of searches.

Table B1: Rates of Search by Race for Women

Search Type	Number	% Total	% White	% Black	Percent Difference
Total Stops	5,671,694	-	62.42	33.06	-
Total Searches	84,136	1.48	1.45	1.63	12
Consent	36,974	0.68	0.68	0.65	-5
Search Warrant	218	0	0	0	0
Incident to Arrest	31,457	0.55	0.55	0.59	7
Protective Frisk	1,917	0.03	0.03	0.04	33
Probable Cause	13,570	0.19	0.19	0.35	84

Table B2 extends this line of enquiry by presenting the contraband hit rates following a search by search type. In every case, the police are less to find contraband on black women. This is emphasized in Figures B3 and B4 where the percent difference in the likelihood of a consent and probable cause searches are presented alongside the percent difference in the likelihood of

finding contraband following a search for black women as compared to white women. While these trends are more dramatic than those for men, they are smaller and fluctuate more over time.

Table B2. Likelihood of Finding Contraband Given a Search for Women, by Race and Type of Search

Search Type	Number	% Total	% White	% Black	Percent Difference
Total Searches	84,136	1.48	1.45	1.63	12
Total Contraband	20,720	24.63	25.75	23.03	-11
Protective Frisk	1,917	12.26	12.49	11.99	-32
Incident to Arrest	31,457	15.43	16.88	13.21	-22
Probable Cause	13,570	50.36	54.22	46.29	-21
Search Warrant	218	31.65	35.17	23.94	-15
Consent	36,974	23.61	25.48	20.23	-11

Figure B3. Percent Difference in the Likelihood of Probable Cause Searches and Finding Contraband for Black Women

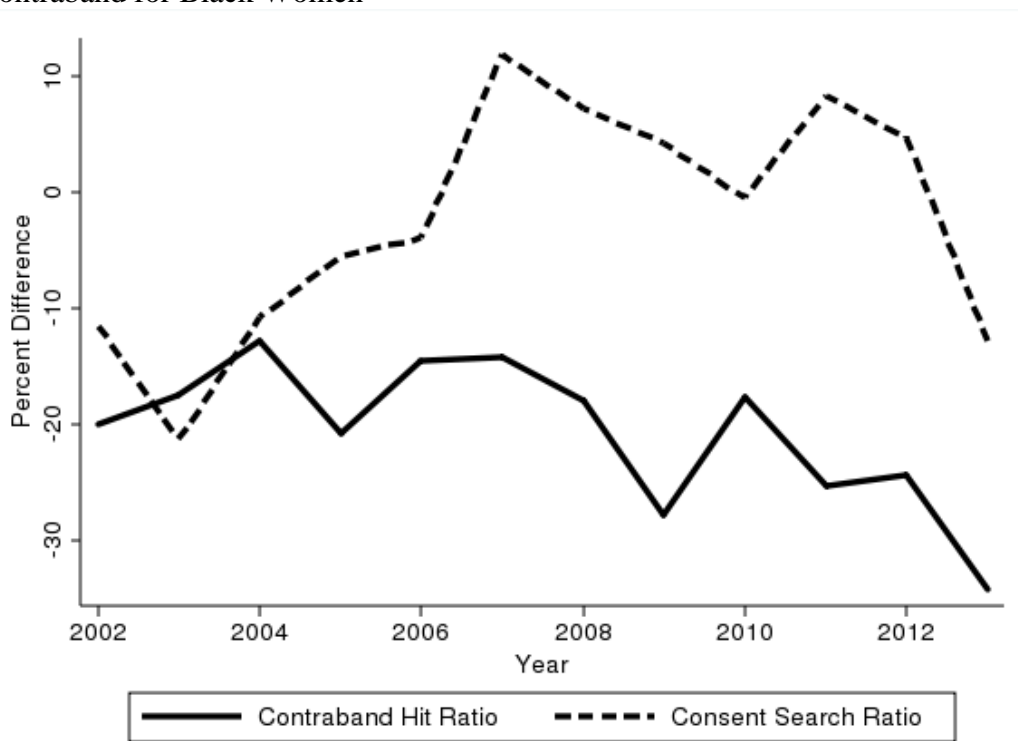


Figure B4. Percent Difference in the Likelihood of Consent Searches and Finding Contraband for Black Women

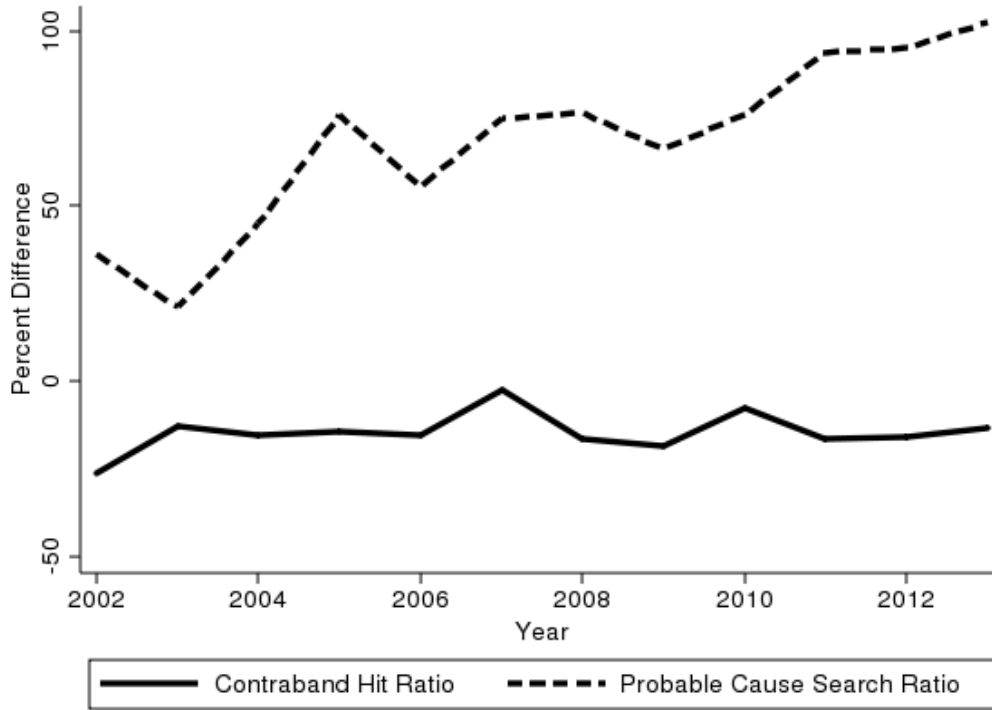


Table B3 presents the same model from Table 6 for women. Findings indicate much more muted racial disparities: Black women are 10 percent less likely to be searched, 21 percent more likely to get a ticket, and six percent more likely to be arrested, compared to similarly-situated white women. Table B4 presents the fixed-effects agency model showing only slightly different results for the race variable: 12, six, and 14 percent increased likelihoods. In no case, however, are the black/white differences among women close to as great as those we document among men.

Table B3. Predicting the Occurrence of a Search, Citation, or Arrest for Women

Variable	Search	Citation	Arrest
<b>Demographics</b>			
Race	0.90*(0.01)	1.21 *(0.00)	1.06*(0.01)
Hispanic	0.48*(0.01)	1.80*(0.01)	0.69*(0.02)
Age	0.97*(0.00)	0.99*(0.00)	0.99*(0.00)
<b>Stop Purpose</b>			
Speed Limit	-	-	-
Stop Light	1.63*(0.03)	0.45*(0.00)	1.36*(0.03)
Impaired	37.05*(0.75)	0.08*(0.00)	93.64*(2.01)
Movement	3.77*(0.06)	0.19*(0.00)	2.90*(0.06)
Equipment	3.06*(0.05)	0.13*(0.00)	1.65*(0.04)
Regulatory	2.44*(0.03)	0.50*(0.00)	1.99*(0.03)
Seat Belt	2.79*(0.07)	0.89*(0.01)	1.68*(0.06)
Investigation	9.70*(0.15)	0.26*(0.00)	7.14*(0.14)
Other	3.86*(0.07)	0.43*(0.00)	3.51*(0.08)
<b>Officer Type</b>			
Black Disparity †	1.12*(0.01)	0.96*(0.00)	1.16*(0.02)
White Disparity †	0.96*(0.03)	0.95*(0.01)	1.24*(0.04)
<b>Contraband</b>			
Contraband Found	-	1.24*(0.02)	35.93*(0.68)
<b>Time</b>			
Hour of Day	Included	Included	Included
Day of Week	Included	Included	Included
<b>Constant</b>	0.04	2.26	0.01
<b>N</b>	2,906,964	2,906,964	2,906,964
<b>R<sup>2</sup></b>	0.12	0.11	0.24

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

Note: The number of observations is smaller than the total number of male stops because the “hour of stop” variable is missing in some cases.

\*  $p < 0.05$

† High disparity officers search white (black) drivers at more than twice the rate of a black (white) driver. Additionally, the office must have stopped at least 50 black and white drivers and have a search rate greater than 3.20 percent.

Table B4. Predicting the Occurrence of a Search, Citation, or Arrest for Women for the Top 25 Agencies

Variable	Search	Citation	Arrest
<b>Demographics</b>			
Race	1.12 *(0.01)	1.06 *(0.00)	1.14*(0.01)
Hispanic	0.52*(0.02)	1.60*(0.01)	0.69*(0.02)
Age	0.97*(0.00)	0.99*(0.00)	0.98*(0.00)
<b>Stop Purpose</b>			
Speed Limit	-	-	-
Stop Light	1.76*(0.05)	0.39*(0.00)	1.36*(0.04)
Impaired	45.54*(1.27)	0.06*(0.00)	112.24*(3.26)
Movement	3.49*(0.08)	0.17*(0.00)	2.93*(0.09)
Equipment	2.96*(0.06)	0.11*(0.00)	1.61*(0.05)
Regulatory	2.40*(0.04)	0.38*(0.00)	1.90*(0.04)
Seat Belt	2.94*(0.10)	0.74*(0.01)	1.72*(0.08)
Investigation	9.27*(0.20)	0.20*(0.00)	7.35*(0.19)
Other	3.90*(0.10)	0.36*(0.00)	3.75*(0.11)
<b>Officer Type</b>			
Black Disparity †	1.23*(0.02)	0.91*(0.00)	1.15*(0.02)
White Disparity †	1.13*(0.04)	1.06*(0.01)	1.36*(0.06)
<b>Contraband</b>			
Contraband Found	-	1.03*(0.03)	45.13*(1.20)
<b>Time</b>			
Hour of Day	Included	Included	Included
Day of Week	Included	Included	Included
<b>Agency Fixed Effects</b>			
	Included	Included	Included
N	1,905,026	1,905,026	1,905,026
<b>Log Likelihood</b>	-154,994.72	-1,122,016.30	-106,235.63

Note: Entries are odds-ratios, with standard errors in parenthesis. Constant Suppressed.

Note: The number of observations is smaller than the total number of male stops because the “hour of stop” variable is missing in some cases.

\*  $p < 0.05$

† High disparity officers search white (black) drivers at more than twice the rate of a black (white) driver. Additionally, the office must have stopped at least 50 black and white drivers and have a search rate greater than 3.20 percent.



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