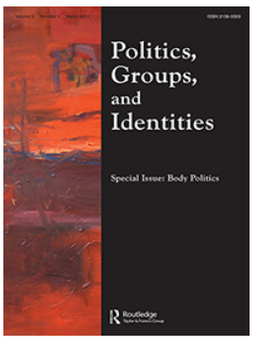

Routledge
Taylor & Francis Group

Politics, Groups, and Identities

ISSN: 2156-5503 (Print) 2156-5511 (Online) Journal homepage: https://www.tandfonline.com/loi/rpgi20

Targeting young men of color for search and arrest during traffic stops: evidence from North Carolina, 2002–2013

Frank R. Baumgartner, Derek A. Epp, Kelsey Shoub & Bayard Love

To cite this article: Frank R. Baumgartner, Derek A. Epp, Kelsey Shoub & Bayard Love (2017) Targeting young men of color for search and arrest during traffic stops: evidence from North Carolina, 2002–2013, Politics, Groups, and Identities, 5:1, 107-131, DOI: 10.1080/21565503.2016.1160413

To link to this article: https://doi.org/10.1080/21565503.2016.1160413

View supplementary material

Published online: 13 Apr 2016.

Submit your article to this journal

Article views: 508

View related articles

View Crossmark data

Citing articles: 12 View citing articles

Full Terms & Conditions of access and use can be found at
https://www.tandfonline.com/action/journalInformation?journalCode=rpgi20

POLITICS, GROUPS, AND IDENTITIES, 2017
VOL. 5, NO. 1, 107–131
http://dx.doi.org/10.1080/21565503.2016.1160413

Routledge
Taylor & Francis Group

RESEARCH ARTICLE

Check for updates

Targeting young men of color for search and arrest during traffic stops: evidence from North Carolina, 2002–2013

Frank R. Baumgartner[a], Derek A. Epp[b], Kelsey Shoub[a] and Bayard Love[c]

[a]Political Science, University of North Carolina at Chapel Hill, Chapel Hill, NC, USA; [b]Rockefeller Center for Public Policy, Dartmouth College, Hanover, NH, USA; [c]International Civil Rights Center & Museum, Greensboro, NC, USA

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. The findings are robust to a variety of statistical specifications and consistent with findings in other jurisdictions.

ARTICLE HISTORY
Received 7 August 2015
Accepted 26 February 2016

KEYWORDS
Racial profiling; driving while black; traffic stops; race; gender; age; police; criminal justice; North Carolina

The US has been in a period of intense discussion of police shootings and relations with minority communities for the past three 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 (17 July 2014), Michael Brown in Ferguson, MO (9 August 2014), and Freddie Gray in Baltimore, MD (12 April 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 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 Stevenson (2014) notes, the US Department of Justice (DOJ) reported almost 7 million American adults were under some form of judicial control at the end of 2013 (see also 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 also an increased focus on the minority community.

CONTACT Frank R. Baumgartner frankb@unc.edu
Supplemental data for this article can be accessed here. http://dx.doi.org/10.1080/21565503.2016.1160413
© 2016 Western Political Science Association

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*, 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), Vogel'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 a 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 Provine (2007) has pointed out, drug use is no different across race, though drug arrests differ dramatically.

Peffley and 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. Epp, Maynard-Moody, and Haider-Markel (2014) have provided the most comprehensive analysis of citizen interactions with the police in the particular context of 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.

Recent studies by Burch (2013), Lerman and Weaver (2014), and Moore (2015) have further documented the adverse effects of such disparate police practices (see also the studies included in Rice and White (2010)). Burch shows the collective impact on entire neighborhoods stemming from high levels of police interaction and incarceration. While feelings of trust toward the police are highly related to neighborhood crime rates (which *increase* trust in the police, who are seen as helping solve the problem), the nature of those interactions matters as well. As Epp and colleagues argued, where individuals feel they cannot count on being treated fairly by the police, social connections, efficacy, voting, and participation in politics all decline, as does a full sense of citizenship. Lerman and Weaver document a wide variety of social ills stemming from adverse interactions with police, including reduced willingness to use relevant government programs, fear of reprisals that keeps individuals from asking for services to which they are entitled, and further involvement with the criminal justice system. In fact, they find that a mere interaction with a police officer (not resulting in arrest) is associated with a reduction in the probability of voting of almost 10% (223). Moore (2015, 5–7) documents relatively similar levels of interactions with the police, in particular in traffic stops, but significant differences in the reasons for the traffic stops and their outcomes, with black drivers much more likely to see adverse outcomes such as search and arrest. Interactions with the criminal justice system can have dramatic and adverse outcomes to individuals and to entire communities, as these scholars show.

For many, the first and most straightforward interaction with a criminal justice official comes in the context of a routine traffic stop. 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 subverting 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.)

Theory and expectations

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 wholescale 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 focus on particular empirical questions and draw out theoretical expectations from the literature on race and criminal justice as well as findings discussed above concerning the diversion of traffic control into part of the war on drugs. Our expectations are simply that the war on drugs has led to a sharp, but unjustified, focus on young men of color. Further, given that attention has only recently focused on the politically sensitive nature of these activities, and that no previous studies have given reason to expect any changes over time in the degree of racial disparities we might observe, we hypothesize no changes over time in these levels of disparity. Further, if the process is related to unjustified targeting, then any changes over time, if observed, should be uncorrelated with changes in contraband hit rates. Finally, we expect nothing in North Carolina to be exceptional. The Ferguson report showed an extreme case, perhaps, but incidents of racial profiling by the nation's police departments do not lend themselves to the conclusion that there is a single "hot spot" – rather there seems to be a broad and widespread institutional system at play. With that in mind, we lay out these hypotheses for testing:

H1: Young men of color will be subjected to harsher outcomes following a traffic stop compared to any other demographic group.
H2: These patterns are institutional rather than the results of individual "bad apple" police officers.
H3: A focus on young men of color goes beyond what can be explained by higher rates of contraband found in those groups.
H4: Trends over time will show no significant change in the degree of focus on young men of color over the study period of 2002–2013.
H5: Any trends over time in the degree of disparity will not be justified by corresponding changes in contraband hit rates.
H6: To the extent that it can be tested, the results from North Carolina analysis will be consistent with simple tests in other jurisdictions.

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 1 January 2002, the NC DOJ has collected information on every traffic stop from law-enforcement agencies throughout the state.[1] Our Supplemental Materials include a copy of 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 online 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. Because of the highly detailed nature of the NC database, we can add to the literature not only by exploring trends in stops, searches, and arrests as others have done (e.g. Moore 2015, using national data), but also with a multivariate analysis with controls not possible in other databases. We also note significant differences from one agency to the next (and from officer to officer), so we control for these in our statistical analyses as has not previously been possible in other studies.

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 are 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 do not know how many drivers were stopped at a checkpoint, or how many passengers were in vehicles that were stopped. Table 1 presents an overview of the data.

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.[2]

Officers record the reason for each traffic stop and the State Bureau of Investigation (SBI) form allows for 10 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 9 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. (The US Bureau of the Census reports that in 2013, 71.7% of North Carolinians identified as white, and 22.0% as black.) Overall 31% of stopped motorists 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

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

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

equipment issues, and 34% of "other vehicle" stops. The table also shows that some stops skew toward white drivers. These include speeding, seat belt violations, and driving impaired; white drivers are more likely to be stopped for one of these violations relative to their baseline rate of 63%. The data in Table 2 are for descriptive purposes only. As we do not know what percent of the driving public is black or white, or what percent of drivers engaging in various infractions are white or black, we do not interpret these results in any way at all, except to note dramatic differences in the proportions of blacks pulled over for various reasons (from 22% for driving while impaired to 38% for regulatory issues).

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 describes the likelihood that a black driver experiences an outcome relative to a white driver. 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.[3] Percent differences will feature prominently in subsequent analysis as they highlight how black and white experiences with police differ. Table 3 thus starts our analysis of who experiences a relatively harsh outcome following their traffic stop. In contrast to Table 2, where we are limited because we do not know who was engaged in the behavior that led to the traffic stop, in Table 3 we know both the numerator and the denominator in the equation. Given all the people pulled over for a given reason, what was the outcome? And how does that differ by race?

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% are more likely to be searched or arrested following a stop for vehicle regulatory violations; and 60% are 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.

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

Table 3. Percent of drivers searched, cited, and arrested by race and purpose of stop.

	Searched			Cited			Arrested		
Purpose	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

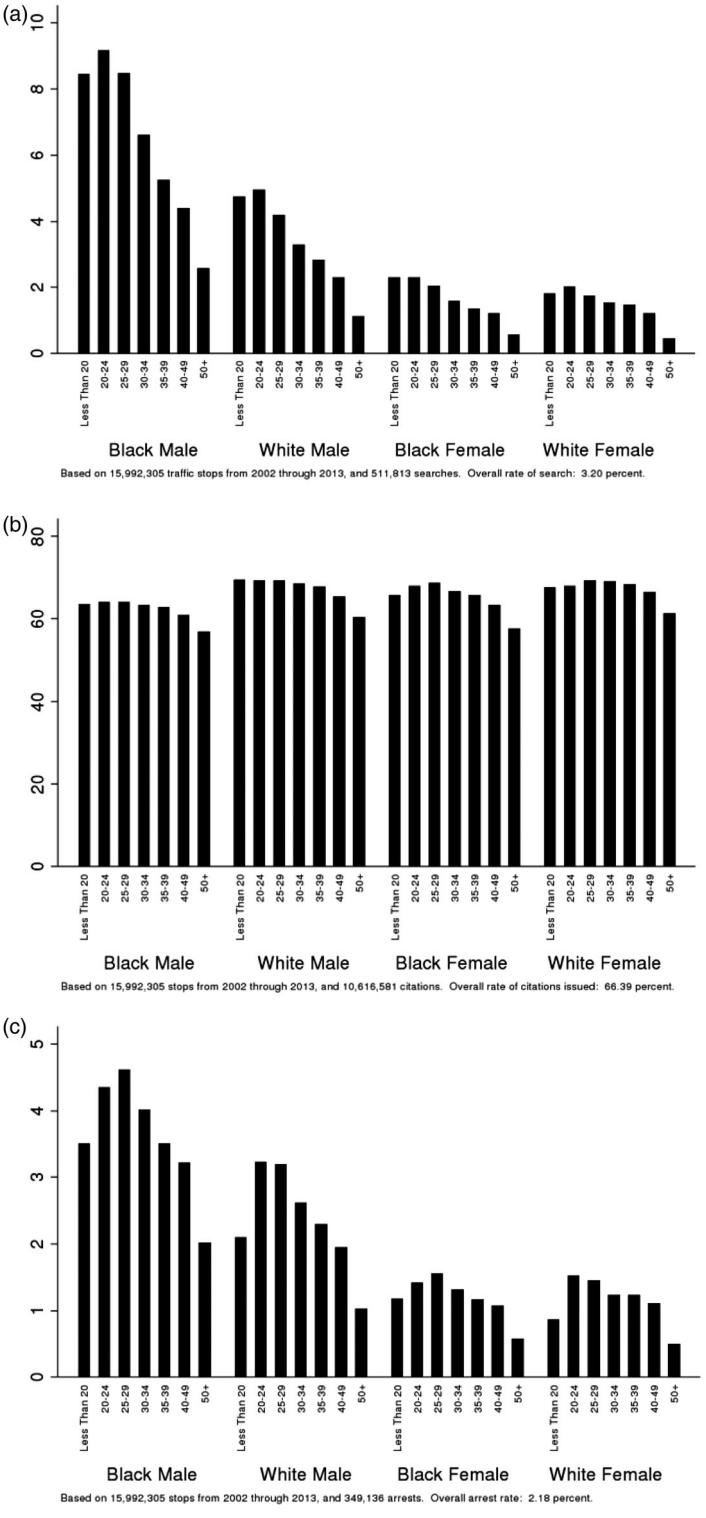

Figure 1. Rates by race, gender, and age group.

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 years who are stopped are searched, while less than 1% of white women over the age of 50 years are searched. Young black men are 1800% more likely to be searched after a traffic stop than older white women.

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 indicates 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 white or female 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 (but not for citations), and having narrowed our focus to male drivers, we turn now to documenting trends over time and assessments of racial disparities.

Twelve years of NC policing

Table 2 shows 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. 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 and there is almost no variance; NC police are highly consistent over time in their relative treatment of whites and black men when it comes to ticketing.

Figure 3 shows the 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.

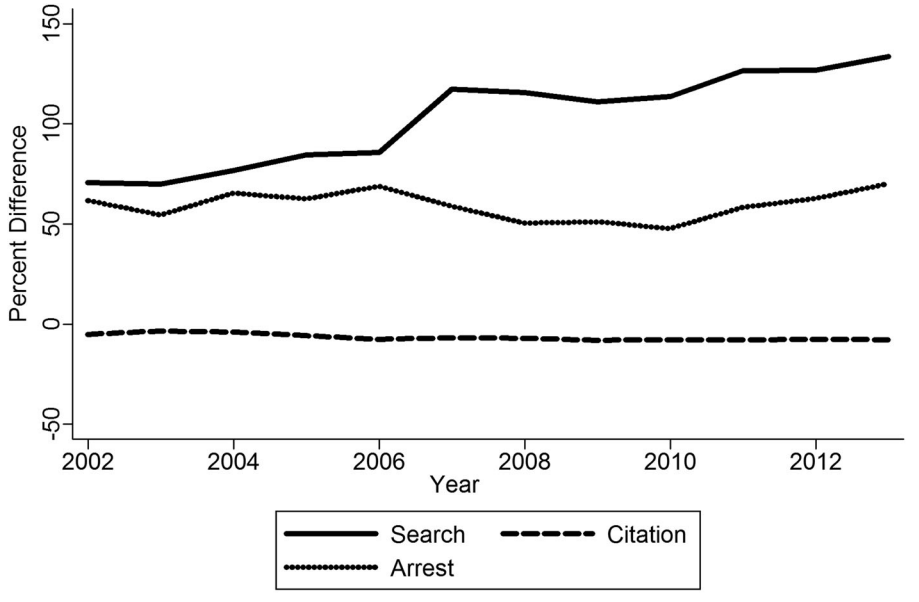

Figure 2. Percent difference in the likelihood of search, citation, or arrest for black men.

There are two possible explanations for the disparities documented in Figures 2 and 3. One is racially differential policing and the other is racially differential possession of contraband.[4] 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 of 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 three most common types of search are those based on driver consent, searches that occur incident to an arrest, and searches based on probable cause. Searches conducted when executing a warrant or as protective frisks are very rare. The top cell 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

Table 4. Rates of search by race for men.

Search type	Number	% Total	% White	% Black	Percent difference
Total stops	10,320623				
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

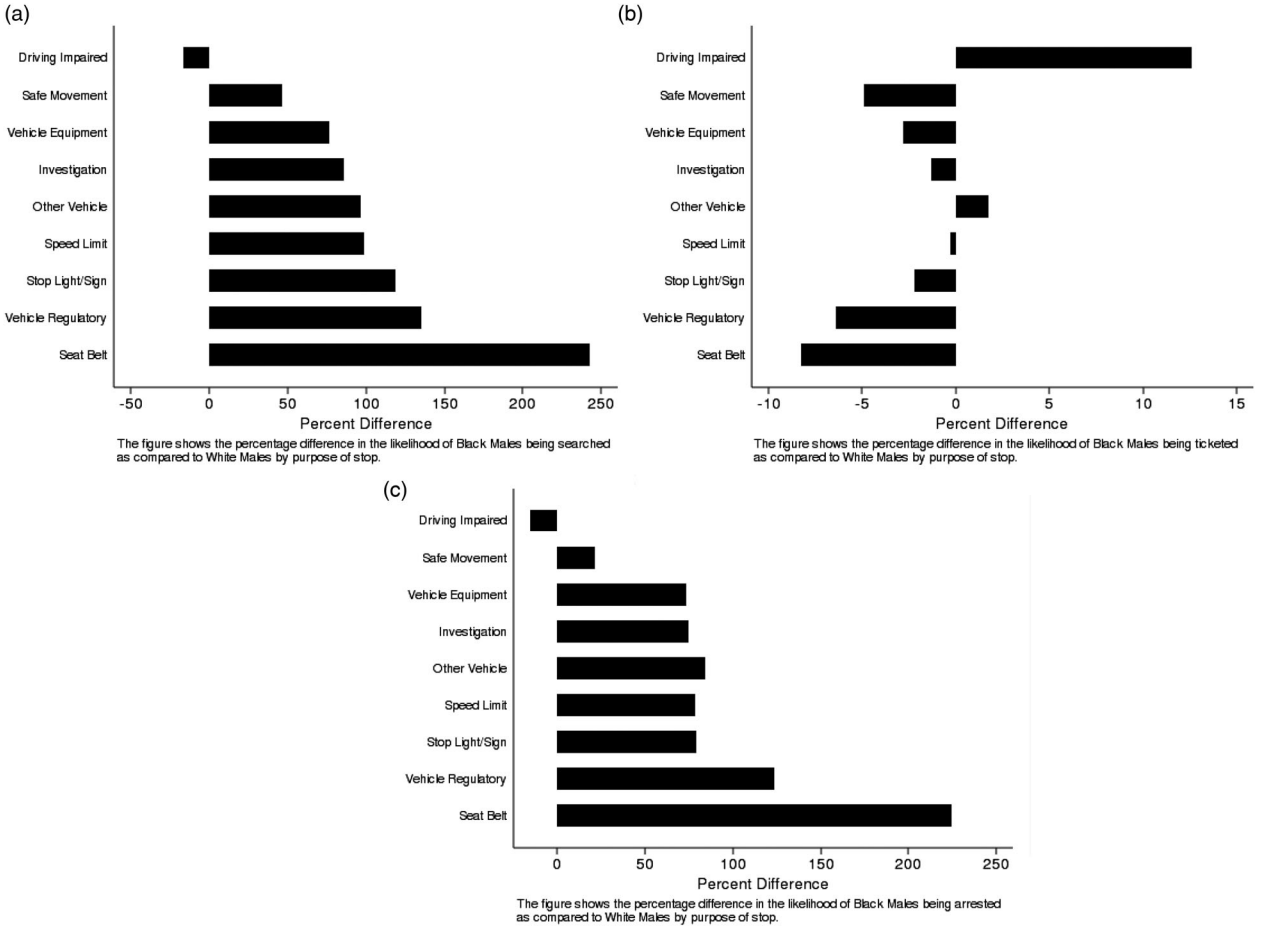

Figure 3. Percent difference in the likelihood of outcomes for blacks, by purpose of stop.

are more willing to give their consent to be searched or that officers are more likely to request consent after stopping a black driver. The other types of search take place under prescribed circumstances and in these instances may be a mandatory component of police protocol, such as making a search in conjunction with an arrest. They therefore have less to tell us about the decision-making of NC police, as officers have less discretion about when to carry out these searches.

Are the suspicions that lead officers to search black drivers at such disproportionately high rates justified? Table 5 provides the answer by showing the rates at which officers find contraband on drivers subsequent to conducting each type of search. Looking first at the row labeled "Total Contraband", we see that overall officers are 2% more likely to find contraband on black drivers after conducting a search. However, reading down the column shows that this increased likelihood is driven entirely by the searches where officers exercise the least discretion. For example, police are 9% more likely to find contraband on black motorists whom they have arrested and they are 11% more likely to find contraband on blacks after exercising a search warrant. These searches are mandated, not discretionary. When officers must make a judgment call about whether or not to search a motorist, they tend to be less successful at searching blacks; in other words, they use a lower probability threshold with blacks or have a "hunch" that is less likely to be accurate with regard to black male drivers than with others. Moreover, we know from Table 4 that consent and probable cause searches are much more likely to be employed on black motorists; so, taken together, these results paint a bleak picture of NC officer's abilities to discern when a black motorist should be searched. Indeed, it is just such a disparity that the US Department of Justice points to as evidence of racial bias in the Ferguson report.

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 unjustified in terms of any increased likelihood of finding contraband.

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	1127	39.31	38.19	42.28	11
Protective frisk	14,316	15.95	15.79	17.76	12

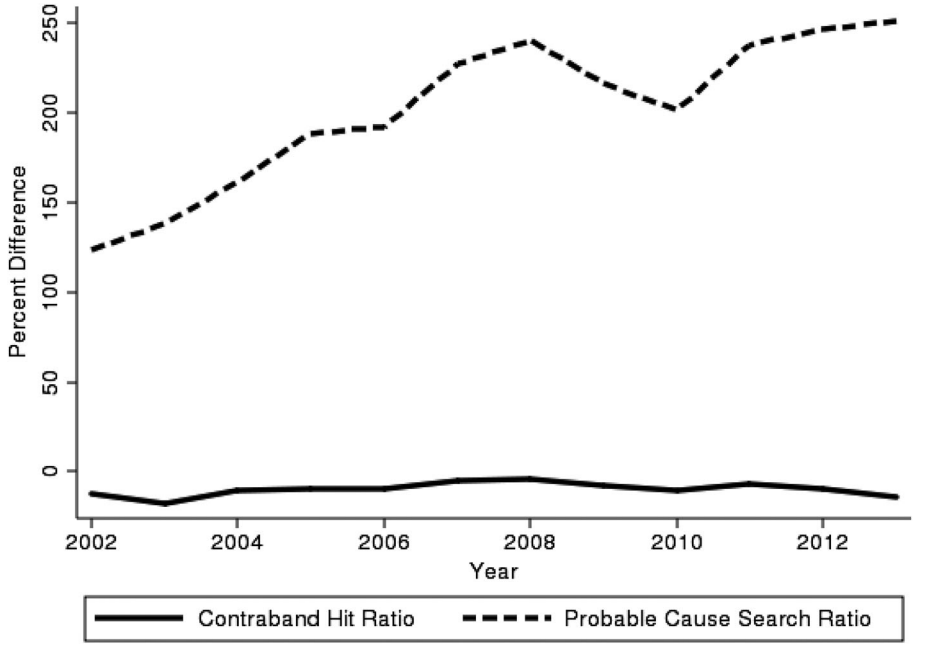

Figure 4. Percent difference in the likelihood of probable cause searches and finding contraband for black men.

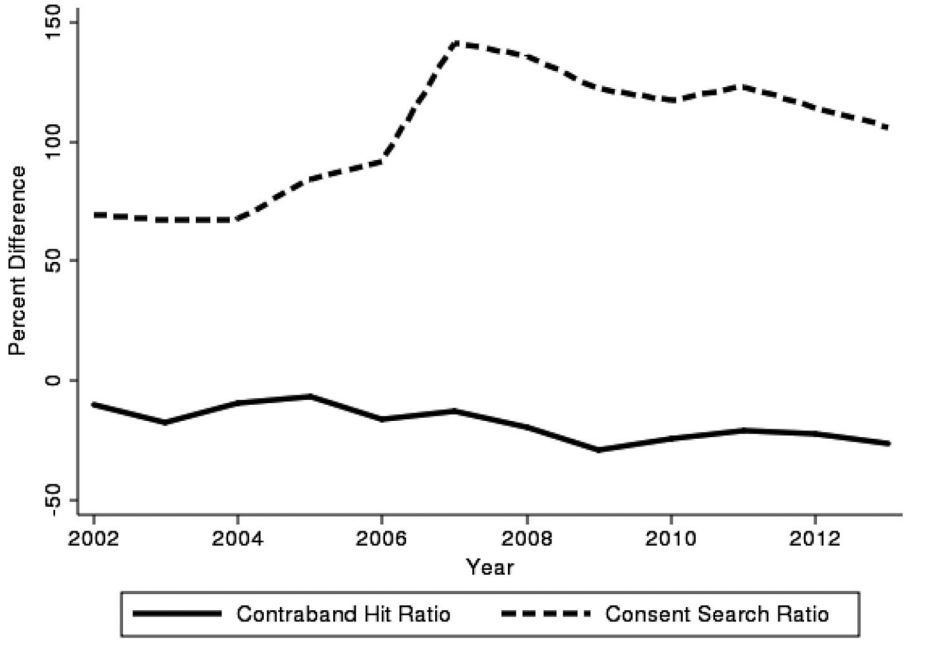

Figure 5. Percent difference in the likelihood of consent searches and finding contraband for black men.

Similar trends are apparent when looking at consent searches. Figure 5 shows that in 2002 officers were 75% more likely to conduct a consent search on a black man as compared to a white man, but by 2013 this disparity had grown even higher. During this time officers became less likely to find contraband on blacks; from 10% less likely in 2002 to 25% in 2013. The data make clear that with regard to consent and probable cause searches, an increased targeting of black males was completely unjustified by any corresponding increase in contraband hit rates. These were either flat or declining.

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 driver 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

Table 6. Predicting the occurrence of a search, citation, or arrest for men.

Variable	Search	Citation	Arrest
Demographics			
Black	1.75*(0.01)	1.08*(0.00)	1.51*(0.01)
Hispanic, not black	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)
Stop purpose			
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)
Officer type			
Black disparity[a]	1.20*(0.01)	0.98*(0.00)	1.12*(0.00)
White disparity[a]	0.84*(0.01)	0.97*(0.01)	1.32*(0.02)
Contraband			
Contraband Found	–	0.88*(0.01)	23.49*(0.19)
Time			
Hour of Day	Included	Included	Included
Day of Week	Included	Included	Included
Constant	0.09*(0.00)	2.63*(0.02)	0.03*(0.00)
N	4,752,908	4,752,908	4,752,908
Psuedo R^2	0.10	0.10	0.23

Notes: Entries are odds-ratios, with standard errors in parentheses. The number of observations is smaller than the total number of male stops because the "hour of stop" variable is missing in some cases. Race is coded in mutually exclusive categories here, with "White, non-Hispanic" being the reference category. "Other" race drivers are omitted in this table.
*$p < .05$.
[a]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 statewide average of 3.20%.

stop was a "high disparity" officer, and, for the citation and arrest models, whether contraband was found. The models exclude a small number of motorists coded as "other" in the race category, so coefficients for the black and Hispanic variables can be interpreted as the differential likelihood of these groups experiencing a search, citation, or arrest relative to whites. Furthermore, 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, though the results for females show much lower levels of racial disparity.)

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 a baseline of 1.00 that a search, arrest, or citation occurs. In the first model, black men are shown to have a 75% 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% 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. Overall 32.77% of male drivers stopped for impaired driving are searched, as compared to 3.2% of drivers overall, and the large coefficient for this variable accurately reflects this huge increase in likelihood. 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% 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 more likely to be searched and/or 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 8% increased likelihood) and much more likely to be arrested (51% increased likelihood), all other factors equal. Hispanic males show a 16%

increased likelihood of search; 83% increased likelihood of citation, and 72% increased chance of arrest. In all cases, the odds of these outcomes decline with age.

In general, the results from Table 6 present a stark picture of the odds of negative outcomes for black and Hispanic male drivers in North Carolina. Controlling for why and when they were stopped, which officer pulled them over, and whether or not they had contraband in the car, young men of color are much more likely to see adverse outcomes. Of course, the analysis is limited in that we do not know the extent to which motorists were breaking the law when they were pulled over. It may be that minorities systematically break the law in more egregious ways than whites, as the Lange, Johnson, and Voas (2005) study found. In part, we account for this possibility by controlling for contraband, but this is incomplete as there are many ways to break law beyond carrying contraband. Still, these multivariate results corroborate and extend the findings from our earlier presentations of simple percentage differences in the rates of search or arrest. Minorities are much more likely to be searched and arrested than similarly situated whites, controlling for every variable that the state of North Carolina mandates to be collected when traffic stops are carried out.

Conclusion

The war on drugs comes with readily apparent costs, both fiscal and in lost human opportunity. Much has been written about the price of incarcerating minor drug users and the effects on community development of "missing black men". Burch's (2013) careful work has shown the enormous collective costs to entire communities of mass incarceration. Epp, Maynard-Moody, and Haider-Markel (2014) have clearly documented how pretextual traffic stops alienate, humiliate, and demean minority drivers, depriving them of a full sense of citizenship and promoting distrust with government. An insidious but growing consequence of the war on drugs, we believe, has been the gradual alienation of minority communities whose residents feel that the police unreasonably target them; 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, and that these trends appear to be growing over time. This is particularly true for North Carolina's black men, who are searched at much higher rates than their white counterparts, but are less likely to be found with contraband in discretionary police searches. If we follow the precedent used by the US Department of Justice in the Ferguson report, then this discrepancy points strongly toward racial bias in the policing of NC motorways.

Our most surprising 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 and these higher search rates find no justification in contraband hit rates. This is a trend that deserves immediate attention by NC and national policy-makers. In a recent study of the Texas Department of Highway Safety (their Highway Patrol), Baumgartner et al. (2015) show that black drivers in Texas were subject to search 51% more often than white drivers in 2003, but that this disparity has also grown over time, reaching 97% in 2011, and 86% in 2014, the most recent year available. If the US DOJ report on Ferguson was troubling, these two statewide

reports document something perhaps even more troubling: these racial disparities are increasing over time.

Our findings confirm all of our hypotheses but one, and all of the findings are troubling, if not all unexpected. Young men of color are indeed targeted for harsher outcomes (searches and arrest); these patterns cannot be explained by our high disparity officer variable, debunking a "bad apple" hypothesis; this targeting cannot be explained by contraband hit rates; trends over time disconfirm our naïve hypothesis that there would be no trends, as disparities are sharply increasing; these disparities are uncorrelated with contraband hit rates and therefore cannot be explained by them; and the findings in North Carolina are similar to the extent that they can be replicated in Texas, with the limited data available there.

Notes

1. 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 1 January 2000, but it was phased in for other agencies in 2002.
2. 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.
3. The mathematics behind this calculation are straightforward: ((10/5)*100)−100.
4. 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.

Disclosure statement

No potential conflict of interest was reported by the authors.

References

Alexander, Michelle. 2010. *The New Jim Crow: Mass Incarceration in the Age of Colorblindness*. New York: The New Press.

Bates, Timothy. 2010. "Driving While Black in Suburban Detroit." *Du Bois Review: Social Science Research on Race* 7: 133–150.

Baumgartner, Frank R., Bryan D. Jones, Julio Zaconet, Colin Wilson, and Arvind Krishnamurthy. 2015. "Racial Disparities in Texas Department of Public Safety Traffic Stops, 2002–2014." Testimony presented to the Texas House of Representatives Committee on County Affairs, November 18. http://www.unc.edu/~fbaum/TrafficStops/Baumgartner-TexasDPS-Nov2015.pdf.

Burch, Traci. 2013. *Trading Democracy for Justice*. Chicago, IL: University of Chicago Press.

Bureau of Justice Statistics. 1982. *Prisoners, 1925–81*. Washington, DC: US DOJ. http://www.bjs.gov/content/pub/pdf/p2581.pdf.

Epp, Charles R., Steven Maynard-Moody, and Donald Haider-Markel. 2014. *Pulled Over: How Police Stops Define Race and Citizenship*. Chicago, IL: University of Chicago Press.

Fishman, Charles. 1991. "Sheriff Bob Vogel: He's The Mayor of I-95, and a Terror to Drug Smugglers." *Orlando Sentinel*, August 11. Accessed June 6, 2015. http://articles.orlandosentinel.com/1991-08-11/news/9108091173_1_bob-vogel-drug-trade-drug-traffic.

GAO (Government Accounting Office). 2000. *Racial Profiling: Limited Data on Motorist Stops*. Washington, DC: US General Accounting Office.

Gelman, Andrew, Jeffrey Fagan, and Alex Kiss. 2007. "An Analysis of the New York City Police Department's "Stop-and-Frisk" Police in the Context of Claims of Racial Bias." *Journal of the American Statistical Association* 102: 813–823.
Glaze, Lauren E., and Danielle Kaeble. 2014. *Correctional Populations in the United States, 2013*. Washington, DC: US DOJ. http://www.bjs.gov/content/pub/pdf/cpus13.pdf.
Harris, David A. 1999. *Driving While Black: Racial Profiling on Our Nation's Highways*. New York: American Civil Liberties Union.
Knowles, John, Nicola Persico, and Petra Todd. 2001. "Racial Bias in Motor Vehicle Searches: Theory and Evidence." *Journal of Political Economy* 109: 203–229.
Lamberth, John. 1996. *A Report to the ACLU*. New York: American Civil Liberates Union.
Lange, James E., Mark B. Johnson, and Robert B. Voas. 2005. "Testing the Racial Profiling Hypothesis for Seemingly Disparate Traffic Stops on the New Jersey Turnpike." *Justice Quarterly* 22: 193–223.
Lerman, Amy E., and Vesla M. Weaver. 2014. *Arresting Citizenship*. Chicago, IL: University of Chicago Press.
Mance, Ian A. 2012. *Racial Profiling in North Carolina: Racial Disparities in Traffic Stops 2000 to 2011*. Raleigh, NC: North Carolina Advocates for Justice.
Meehan, Albert J. and Michael C. Ponder. 2006. "Race and Place: The Ecology of Racial Profiling African American Motorists." *Justice Quarterly* 19: 399–430.
Moore, Nina M. 2015. *The Political Roots of Racial Tracking in American Criminal Justice*. New York: Cambridge University Press.
Peffley, Mark, and Jon Hurwitz. 2010. *Justice in America: The Separate Realities of Blacks and Whites*. New York: Cambridge University Press.
Persico, Nicola and Petra Todd. 2008. "The Hit Rates Test for Racial Bias in Motor-Vehicle Searches." *Justice Quarterly* 25 (1): 37–53.
Provine, Doris Marie. 2007. *Unequal Under Law: Race in the War on Drugs*. Chicago, IL: University of Chicago Press.
Rice, Stephen K., and Michael D. White, eds. 2010. *Race, Ethnicity and Policing: New and Essential Readings*. New York: New York University Press.
Stevenson, Bryan. 2014. *Just Mercy: A Story of Redemption*. New York, NY: Spiegel & Grau.
United States Department of Justice, Civil Rights Division. 2015. *Investigation of the Ferguson Police Department*. March 4. Washington: US DOJ.
Webb, Gary. 2007. "Driving While Black: Tracking Unspoken Law-Enforcement Racism." *Esquire*, January 29. Accessed May 21, 2015. www.esquire.com/news-politics/a1223/driving-while-black-0499. [Originally published as: DWB, Esquire 131, 4 (April 1999): 118–127].

Appendix 1. 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 from 4.75 million in Table 6 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
Demographics			
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)
Stop purpose			
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)
Officer type			
Black disparity[a]	1.30*(0.01)	0.92*(0.00)	1.10*(0.00)
White disparity[a]	0.90*(0.02)	1.07*(0.01)	1.42*(0.03)
Contraband			
Contraband found	–	0.76*(0.01)	26.90*(0.30)
Time			
Hour of day	Included	Included	Included
Day of week	Included	Included	Included
Agency fixed effects	Included	Included	Included
N	3,052,024	3,052,024	3,052,024
Log likelihood	−627,322.11	−1,839,413.2	−366,595.01

Notes: Entries are odds-ratios, with standard errors in parentheses. Constant suppressed. The number of observations is smaller than the total number of male stops because the "hour of stop" variable is missing in some cases.
*$p < .05$.
[a]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%.

Appendix 2. 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 A1 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.

Moving on from the basic trends in time of differences in stop outcomes, Figure A2 presents the percent difference in the likelihood of outcomes for black women as

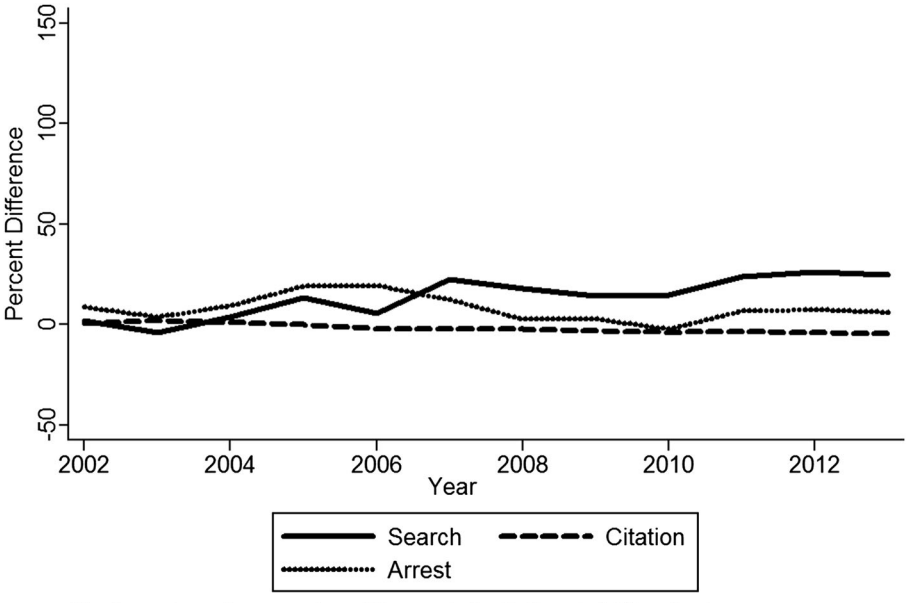

Figure A1. Percent difference in the likelihood of traffic stop outcomes for black women.

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 equal 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 driving while intoxicated and safe movement stops.

These differences in the likelihood of being searched following a stop once again lead us to examine whether this difference is being driven by the differential use of specific types of searches. Table A2 begins to answer this question. While there are modest differences for consent searches, searches executed per a search warrant, and incident-to-arrest searches, the real differences are in the use of probable cause searches. In these cases, black women are much more likely to be subject to search.

Table A3 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 A3 and A4 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 A4 presents the same model from Table 6 for women. Findings indicate much more muted racial disparities: Black women are 10% less likely to be searched, 21%

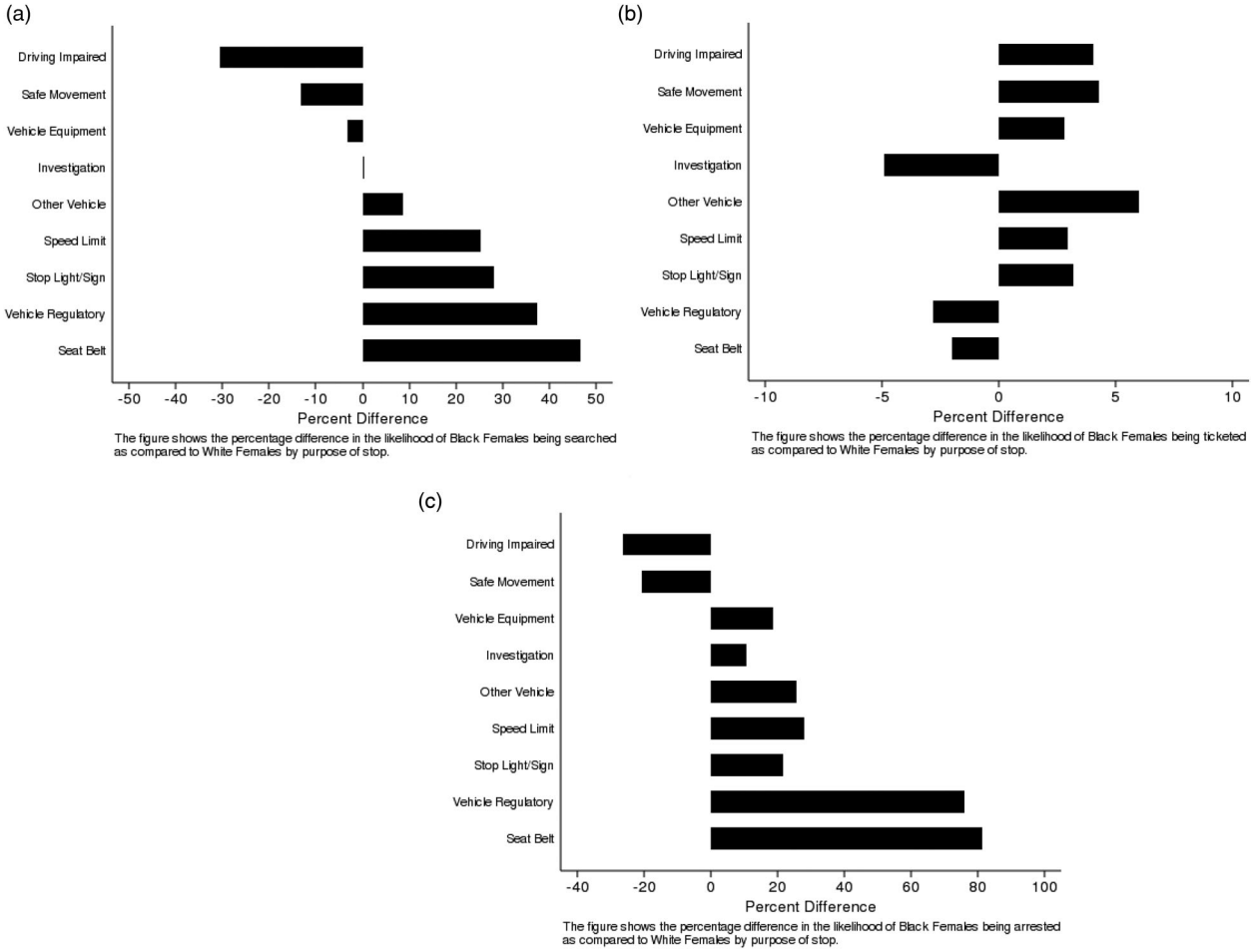

Figure A2. Percent difference in the likelihood of outcomes for black women by purpose of stop.

Table A2. 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	1917	0.03	0.03	0.04	33
Probable cause	13,570	0.19	0.19	0.35	84

Table A3. 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	1917	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

more likely to get a ticket, and six percent more likely to be arrested, compared to similarly situated white women. Table A5 presents the fixed-effects agency model showing only slightly different results for the race variable: 12%, 6%, and 14% increased likelihoods. In no case, however, are the black/white differences among women close to as great as those we document among men.

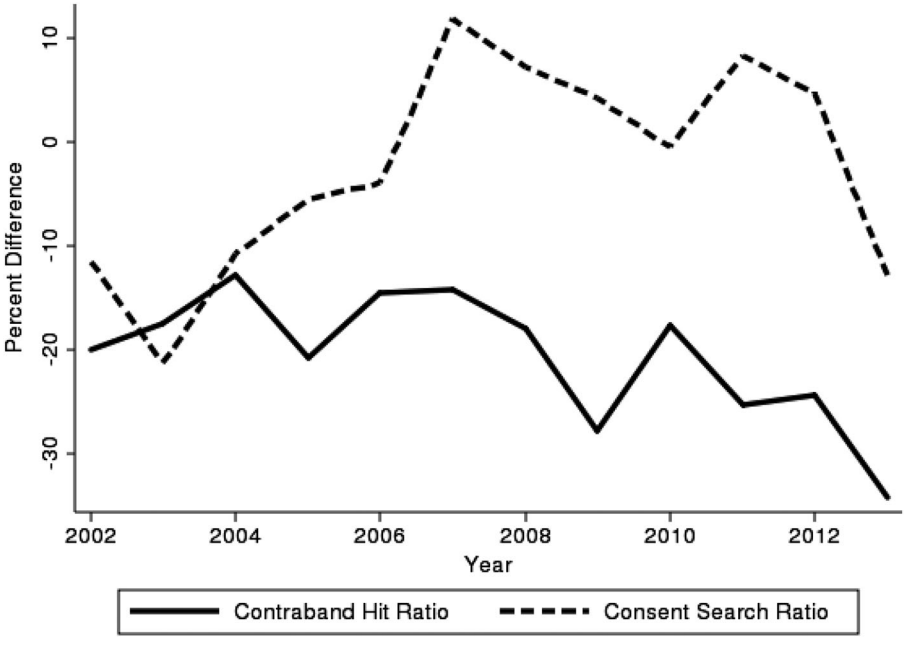

Figure A3. Percent difference in the likelihood of probable cause searches and finding contraband for black women.

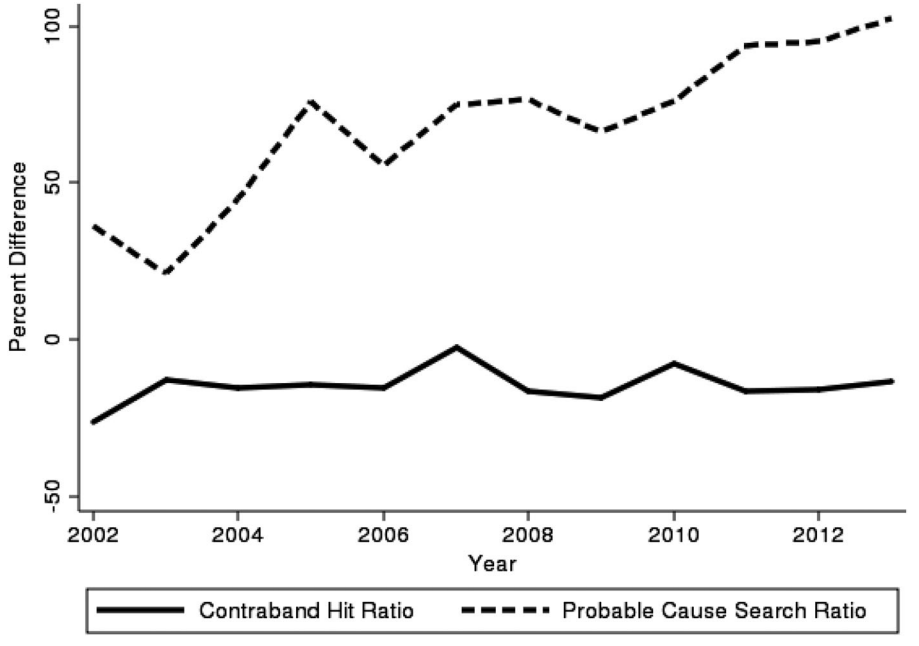

Figure A4. Percent difference in the likelihood of consent searches and finding contraband for black women.

Table A4. Predicting the occurrence of a search, citation, or arrest for women.

Variable	Search	Citation	Arrest
Demographics			
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)
Stop purpose			
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)
Officer type			
Black disparity[a]	1.12*(0.01)	0.96*(0.00)	1.16*(0.02)
White disparity[a]	0.96*(0.03)	0.95*(0.01)	1.24*(0.04)
Contraband			
Contraband Found	–	1.24*(0.02)	35.93*(0.68)
Time			
Hour of Day	Included	Included	Included
Day of Week	Included	Included	Included
Constant	0.04	2.26	0.01
N	2,906,964	2,906,964	2,906,964
R^2	0.12	0.11	0.24

Notes: Entries are odds-ratios, with standard errors in parentheses. The number of observations is smaller than the total number of male stops because the "hour of stop" variable is missing in some cases.

*$p < .05$.

[a]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%.

Table A5. Predicting the occurrence of a search, citation, or arrest for women for the top 25 agencies.

Variable	Search	Citation	Arrest
Demographics			
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)
Stop purpose			
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)
Officer type			
Black disparity[a]	1.23*(0.02)	0.91*(0.00)	1.15*(0.02)
White disparity[a]	1.13*(0.04)	1.06*(0.01)	1.36*(0.06)
Contraband			
Contraband Found	–	1.03*(0.03)	45.13*(1.20)
Time			
Hour of Day	Included	Included	Included
Day of Week	Included	Included	Included
Agency fixed effects	Included	Included	Included
N	1,905,026	1,905,026	1,905,026
Log likelihood	−154,994.72	−1,122,016.30	−106,235.63

Notes: Entries are odds-ratios, with standard errors in parentheses. Constant suppressed.
The number of observations is smaller than the total number of male stops because the "hour of stop" variable is missing in some cases.
*$p < .05$.
[a]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%.