

Racial Bias in Policing

Racial Bias in Policing

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Outline for Today

1. Summarize Papers on Racial Bias in Policing





Next week

1. Racial bias in Police Use of Force
2. Body Cameras, Pattern and Practice, and Other Police Reforms
3. Racial Bias Group Briefing Note

Quiz 3 and 4 dates

- Quiz 3: October 20
- Quiz 4 (final): December 5

I will add new material to canvas that we will cover in November, so be on the lookout for that

Briefing Note Grades Posted

- The purpose of the briefing note is to get you to think about how to communicate economic research to a non-technical audience
- I am introducing you to the language and information that is used in economic papers
 - This will allow you to read and understand economic research papers
- Then you will need to communicate this information to the layman

Coviello and Persico (2015)



NYC Stop and Frisk

Abstract: We introduce a model to explore the identification of two distinct sources of bias in the New York Police Department's [former] stop-and-frisk program: the police officer making the stop decisions and the police chief allocating personnel across precincts. We analyze 10 years of data from the stop-and-frisk program in light of this theoretical framework. We find that white pedestrians are slightly less likely than African American pedestrians to be arrested conditional on being stopped. We interpret this finding as evidence that the officers making the stops are on average not biased against African Americans relative to whites, because the latter are stopped despite being a less productive stop for a police officer. We find suggestive evidence of police bias in the decision to frisk. Further research is needed.

Summary Statistics

Table 1. Descriptive Statistics (%)

	Mean	SD
Arrest made	5.8	23
African American	84	37
Recorded crime:		
Possession of a weapon	27	44
Robbery	17	37
Criminal trespass	12	32
Grand larceny auto	9.1	29
Burglary	8.9	28
Grand larceny	4.3	20
Assault	4	20
Illegal possession of substances	3.6	19
Possession of marijuana	3.3	18
Illegal sales of substances	2.9	17
Petit larceny	2.5	16
Mischief	1.2	11
Graffiti	1.1	10
Other	4.3	20

Note. The crime categories represent 95 percent of the crimes recorded in the sample. Years 2003–5 have missing values for the recorded crimes. $N = 2,947,865$ observations and 2,496,267 recorded crimes.

- Summary statistical table of 2,947,865 stop and frisk events in NYC
- 5.8% of stops lead to arrests
- African Americans make up 84% of people stopped

L: police pressure (stops/pop)

R: Hit rate (arrests/stops)

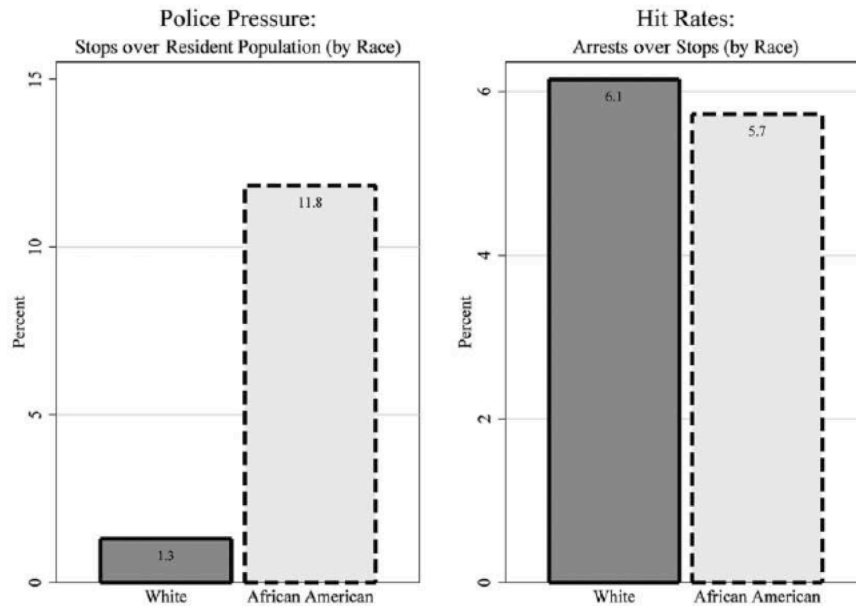


Figure 1. Average annual police pressure and hit rates in New York City, 2003–12

Left figure:

African Americans were disproportionately more likely to have been stopped, compared to their population.

African Americans were stopped and frisked about 9x as often.

L: police pressure (stops/pop)

R: Hit rate (arrests/stops)

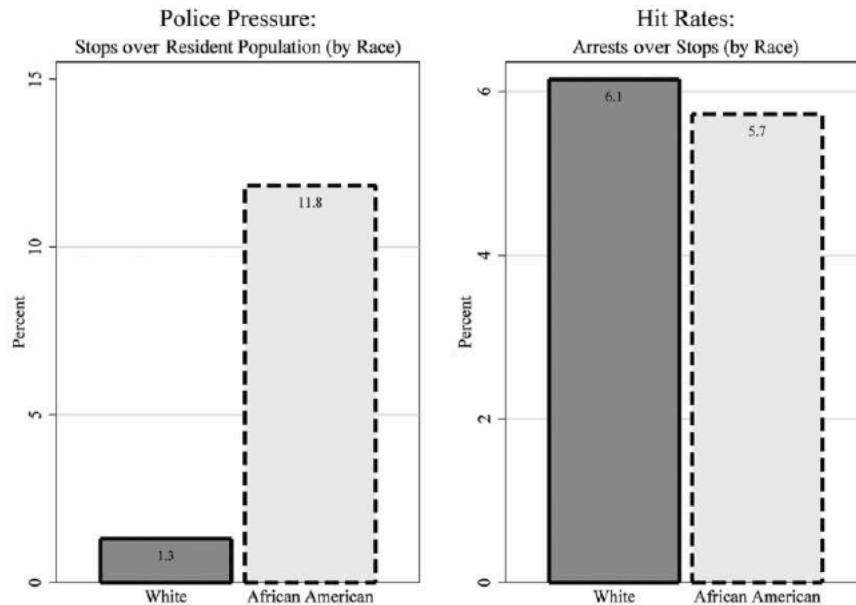


Figure 1. Average annual police pressure and hit rates in New York City, 2003–12

Right figure:

Hit rate = how often a stop leads to an arrest

Hit rates are similar between white and African American citizens

The hit rate for whites is a bit higher, suggesting that the average white person stopped and frisked may be slightly more likely to be arrested

L: police pressure (stops/pop)

R: Hit rate (arrests/stops)

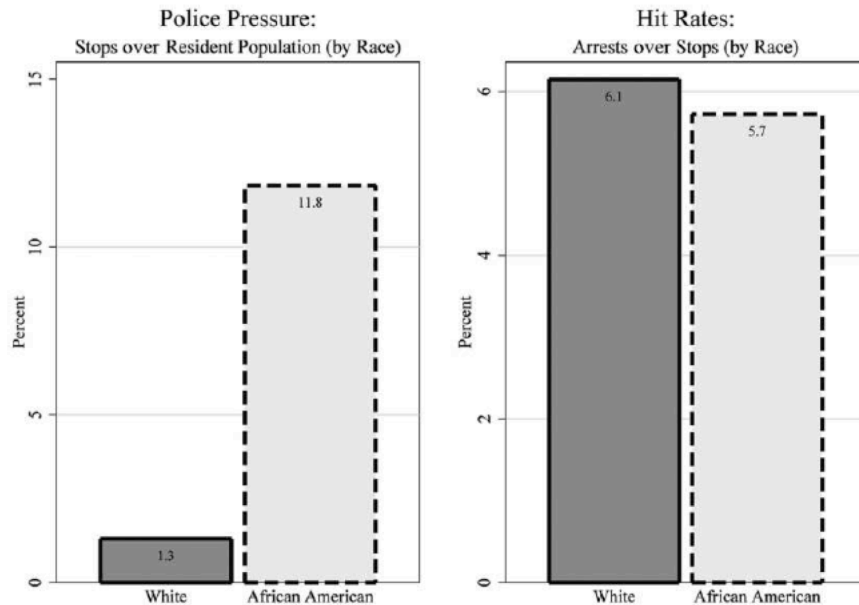


Figure 1. Average annual police pressure and hit rates in New York City, 2003–12

Regardless, this is **not** suggestive of statistical discrimination, where African Americans are searched because they are more likely to have done something that requires arrest

If this were the case, then the hit rates for African Americans would be higher

Instead, these results are suggestive of taste-based discrimination, where officers are choosing to search African Americans for reasons of personal preference (animus) and not due to the average criminality by race

What Correlates with Relative Police Pressure?

Table 2. Correlates of Relative Police Pressure in New York City

	(1)	(2)	(3)
% African American	-.222** (.073)	-.057 (.055)	-.066 (.049)
Income		.365** (.119)	.307** (.115)
Constant	23.118** (3.857)	-2.910 (6.473)	-10.874 (24.535)
Average relative police pressure			17
% African Americans in average precinct			26.78
Adjusted R^2	.083	.266	.467
Precinct controls	No	No	Yes
Year fixed effects	No	Yes	Yes

Note. Estimates are from ordinary least squares regressions on 75 precincts. The dependent variable is (relative) police pressure (arrests of African Americans/African American population)/(arrests of whites/white population). Column 3 includes the variable for the margin of Mayor Michael Bloomberg's victory. Missing years are computed using moving averages for the variables for the fraction of African Americans, income, age, fraction of females, fraction of college degrees, serious crime, graffiti, social capital, and African American commanding officers. Regressions with year fixed effects (nine dummies) control for possible time trends in the dependent variable and precinct-specific characteristics. Standard errors, in parentheses, are clustered at the precinct level. $N = 750$ observations.

** Significant at the 1% level.

This table shows how stop and frisk activity is allocated by the 75 precincts.

Outcome variable = relative police pressure

This is calculated as:

If > 1 , more arrests per capita for African Americans.

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Column (1) shows that precincts with a higher % African American residents have per capita arrest rates that are lower for African Americans relative to whites.

(Could suggest, e.g., that in whiter precincts, African Americans are relatively more likely to get stopped.)

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Adding precinct resident income estimates (column 2) makes this relationship between % African American and relative pressure disappear.

Instead, we see a strong positive relationship between income and relative pressure.

Interpretation: precincts where the residents are on-average richer have more relative police pressure on African Americans.

(So, you can think of this as police being more likely to stop and frisk African Americans in wealthier – often whiter – neighborhoods.)

How arrest rates, conditional on stop, vary by race?

Table 3. Arrests Made

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
African American	-.420** (.037)	-.437** (.037)	-.437 (.469)	.379** (.046)	.355** (.046)	.355+ (.207)	.340+ (.204)
Constant	6.140** (.034)						
Mean outcome							5.79
% African American							84
P-value				.001	.001	.001	.001
Year fixed effects	No	Yes	Yes	No	Yes	Yes	Yes
Precinct fixed effects	No	No	No	Yes	Yes	Yes	Yes
Year × precinct fixed effects	No	No	No	No	No	No	Yes

Note. Estimates are from ordinary least squares regressions. The dependent variable is the probability of being arrested conditional on being stopped in New York City (in %). Regressions with year fixed effects (nine dummies) and precinct fixed effects on 76 precincts (75 dummies) control for a possible time trend in the dependent variable and precinct-specific characteristics, respectively. Standard errors, in parentheses, are clustered at the precinct level in columns 3, 5, and 7. The P-value is for the joint test of all the precinct fixed effects equal to 0. $N = 2,947,865$.

+ Significant at the 10% level.

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Outcome variable = arrests made conditional being stopped (i.e. arrests divided by stops, arrest rate given that a stop occurred) Key independent variable = African American The idea here is to see how being African American associates with arrest rates.

Columns (1) to (3) do not include precinct fixed effects.

Columns (4) to (7) do include precinct fixed effects.

How arrest rates, conditional on stop, vary by race?

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	(1)	(2)	(3)	(4)	(5)	(6)	(7)
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Precinct fixed effects means controlling for average differences between precincts in the outcome variable

In this case, controlling for average differences by precinct in arrest made

Columns (1) to (3) do not include precinct fixed effects

Columns (4) to (7) do include precinct fixed effects

How arrest rates, conditional on stop, vary by race?

Without precinct fixed effects (col. 1 to 3), the data shows that African Americans are less likely to be arrested (conditional on stop)

With precinct fixed effects (col. 4 to 7), African Americans more likely to be arrested (conditional on stop)

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How arrest rates, conditional on stop, vary by race?

Interpretation: With precinct fixed effects, the idea is that within the same precinct, an African-American person is more likely to be arrested than a white person.

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Note. Estimates are from ordinary least squares regressions. The dependent variable is the probability of being arrested conditional on being stopped in New York City (in %). Regressions with year fixed effects (nine dummies) and precinct fixed effects on 76 precincts (75 dummies) control for a possible time trend in the dependent variable and precinct-specific characteristics, respectively. Standard errors, in parentheses, are clustered at the precinct level in columns 3, 5, and 7. The P-value is for the joint test of all the precinct fixed effects equal to 0. $N = 2,947,865$.

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P-value				.001	.001	.001	.001
Year fixed effects	No	Yes	Yes	No	Yes	Yes	Yes
Precinct fixed effects	No	No	No	Yes	Yes	Yes	Yes
Year × precinct fixed effects	No	No	No	No	No	No	Yes

Note. Estimates are from ordinary least squares regressions. The dependent variable is the probability of being arrested conditional on being stopped in New York City (in %). Regressions with year fixed effects (nine dummies) and precinct fixed effects on 76 precincts (75 dummies) control for a possible time trend in the dependent variable and precinct-specific characteristics, respectively. Standard errors, in parentheses, are clustered at the precinct level in columns 3, 5, and 7. The P-value is for the joint test of all the precinct fixed effects equal to 0. $N = 2,947,865$.

+ Significant at the 10% level.

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Without the precinct fixed effects, we are comparing white and African American pedestrians both within the same precinct and between different precincts

If African Americans tend to more often be in precincts where they are often stopped and frisked, but not arrested, then that explain the negative estimates in columns (1) to (3)

Frisks, for pedestrians suspected of weapons possession

Table B5. Frisks, for Pedestrians Suspected of Weapons Possession

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
African American	4.900** (.164)	4.937** (.164)	4.938** (1.265)	2.972** (.184)	2.996** (.184)	2.996+ (1.643)	2.900+ (1.526)
Constant	83.058** (.158)						
Mean outcome (%)	87.64						
% African American	93.5						
P-value				.001	.001	.001	.001
Year fixed effects	No	Yes	Yes	No	Yes	Yes	Yes
Precinct fixed effects	No	No	No	Yes	Yes	Yes	Yes
Year × precincts fixed effects	No	No	No	No	No	No	Yes

Note. Estimates are from ordinary least squares regressions. The dependent variable is the probability of being frisked in the sub-sample of stops on suspicion of weapons possession in New York City (in %). Regressions with year fixed effects (nine dummies) and precinct fixed effects for 76 precincts (75 dummies) control for a possible time trend in the dependent variable and precinct-specific characteristics, respectively. Standard errors, in parentheses, are clustered at the precinct level in columns 3, 6, and 7. The *P*-value is for the joint test of all the precinct fixed effects equal to 0.

+ Significant at the 10% level.

** Significant at the 1% level.

In all case (with and without precinct fixed effects) there is strong or at least weak evidence that African Americans are more likely to be frisked compared to whites

Summary of Results

- African Americans were about 9x more likely to be stopped and frisked
- About 53.7% (39.3%) of stops of African Americans (whites) develop into frisks
- After controlling for precinct-level fixed effects (average differences between precincts, so comparing white vs. African American in the same precinct), they find that white pedestrians are slightly less likely than African American pedestrians to be arrested conditional on being stopped
- Two interpretations of this point
 - white pedestrians are slightly less likely than African American pedestrians in the same precinct to be arrested conditional on being stopped
 - Interpretation 1) Suggestive in this case of no bias against African Americans, because whites are being stopped despite being slightly less productive stops for police officers (slightly lower arrest rate). Officers slightly “over stop” white pedestrians
 - Interpretation 2) Another interpretation could be that officers are biased in their decisions to arrest, and are more likely to arrest African Americans
 - It’s difficult to determine to what extent it’s 1) or 2) or a combination of both

Summary of Results

- When analyzing frisking, they find that after controlling for precinct-level fixed effects (so, comparing white vs. African American in the same precinct), African Americans are less likely than white pedestrians to be arrested conditional on being frisked
- In this case, this is suggestive of bias against African Americans in the decision to frisk
- Police may have been “over frisking” African American pedestrians
- But the authors note that further research is needed on this point

Antonovics and Knight (2009)



Boston Police Car Searching

Abstract: This paper provides new evidence on racial profiling using information on the race of both motorists and police officers in Boston. We develop a new test for distinguishing between preference-based (taste-based) and statistical discrimination. Our test is based on the notion that if search decisions are driven purely by statistical discrimination, then they should be independent of officer race. Our results, by contrast, demonstrate that officers are more likely to search if officer race and driver race differ. We then investigate and rule out two alternative explanations for our finding

Background

- The authors use a unique data set where they match the race of the police officer (white, black, Hispanic) with the race of the driver (white, black, Hispanic)
- They observe these officer-driver pairs for every traffic stop made by officers in the Boston Police Department from about April 2001 to April 2003
- They can use this data to determine:
 1. if certain racial groups are more likely to be searched
 2. if officers of certain races are more likely to search vehicles in general
 3. if officers of certain races are more likely to search drivers of certain races

Theory

- The authors observe that black drivers are more likely to be searched after being stopped
- The authors use this data on car stops and searches by driver and officer race to test to what extent discrimination in car searches is due to preference-based discrimination (**taste-based discrimination**) or **statistical discrimination**

What is animus?

- Also called preference-based discrimination
- Discrimination that occurs due to not liking or having animus against a group
 - Think outright racism, homophobia, sexism, transphobia, ageism, etc.
- The term was coined by Gary Becker, a famous labor economist who is known for being one of the first to apply economics to study discrimination in the labor market
- Unsurprisingly, taste-based discrimination is seen as uniformly bad, both because it is inequitable, but it also creates inefficiencies (e.g., inefficiently searching cars/people)

What is statistical discrimination?

- This theory is typically attributed to Kenneth Arrow's 1973 work The Theory of Discrimination and to Edmund Phelps's 1972 paper The Statistical Theory of Racism and Sexism
- The idea is that some discrimination is based on individuals using actual or perceived information about the differences between groups – i.e. actual or perceived statistical differences between groups
- Minority status – such as race or ethnicity – is used a proxy for something else

Statistical Discrimination: Policing

- Police officers could (and likely do) statistically discriminate in interactions with citizens
- They may, for example, be more likely to assume that people of color have done something wrong, have drugs in their car, etc.
- For these “reasons”, police may be more likely to search people of color through car searches, “stop and frisk” etc.
- In this example, race is used as a proxy for assumptions about criminality

Distinction between Taste-Based and Statistical Discrimination

- Antonovics and Knight (2009) use their data on traffic stops, and to what extent there were searches of vehicles by driver and officer rate to determine to what extent the discrimination they observe (higher search rates for black drivers) is due to taste-based discrimination or statistical discrimination
- If black/Hispanic drivers, conditional on being pulled over, are more likely to be searched than white drivers, and this **does not vary by officer race**, this is likely suggestive of statistical discrimination
 - All officers are assuming that those groups are more likely to have drugs, weapons, etc.
- If black/Hispanic drivers, conditional on being pulled over, are more likely to be searched than white drivers, and this **does vary by officer race**, this is likely suggestive of taste-based discrimination
- Officers of a particular race prefer to search motorists of a particular race more often, which likely reflects taste-based discrimination, since, otherwise, we would see similar behavior by officers of other races

Distinction between Taste-Based and Statistical Discrimination

- Antonovics and Knight (2009) thus conduct two tests:
 1. Conditional on being stopped, do we see that black and/or Hispanic motorists are more likely to be searched, regardless of officer race? *If yes, there is statistical discrimination*
 2. Conditional on being stopped, do we see that black and/or Hispanic motorists are more likely to be searched by white officers? *If yes, white officers exhibit taste-based discrimination against black and/or Hispanic motorists.*

Summary Statistics

TABLE 1.—PROBABILITY OF SEARCH BY OFFICER RACE AND DRIVER RACE
(standard deviation of sample mean in parentheses)

Driver Race	Officer Race			
	White	Black	Hispanic	All
White	0.40% (0.04%) <i>n</i> = 22,471	0.62% (0.07%) <i>n</i> = 11,132	0.25% (0.09%) <i>n</i> = 3,256	0.46% (0.04%) <i>n</i> = 36,859
Black	0.97% (0.09%) <i>n</i> = 13,131	0.82% (0.09%) <i>n</i> = 9,116	0.49% (0.15%) <i>n</i> = 2,258	0.87% (0.06%) <i>n</i> = 24,505
Hispanic	0.97% (0.14%) <i>n</i> = 5,058	0.82% (0.16%) <i>n</i> = 3,164	0.38% (0.19%) <i>n</i> = 1,066	0.85% (0.10%) <i>n</i> = 9,288
All	0.65% (0.04%) <i>n</i> = 40,660	0.73% (0.06%) <i>n</i> = 23,412	0.35% (0.07%) <i>n</i> = 6,580	0.65% (0.03%) <i>n</i> = 70,652

Note: Includes only officers for whom the search variable is missing for at most 10% of all citations. Stops involving drivers from other racial groups are not included.

- 1) Black and Hispanic drivers are more likely to be searched (rates of 0.87% and 0.85% versus 0.46%), and
- 2) In this raw data, Black officers are more likely than White officers to search (0.73% to 0.65%) and White officers are more likely than Hispanic officers to search (0.65% to 0.35%)

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These trends could be affected by neighborhoods, however, where perhaps black officers work in neighborhoods where search rates happen to be higher (e.g., higher crime areas)

For this reason, it's important to add neighborhood fixed effects

These fixed effects control for neighborhoods, which will have different search rates, and police officers of different races will be allocated to different neighborhoods

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Once neighborhood fixed effects are added, the interpretation is a comparison between white, black, and Hispanic drivers pulled over at stops within the same neighborhood by white, black, or Hispanic officers working in that same neighborhood.

Results

TABLE 4.—PROBABILITY OF SEARCH AND GUILT CONDITIONAL ON SEARCH,
OFFICER RACE EXCLUDED

	Unweighted Probits		Weighted Probits	
	Search	Guilt	Search	Guilt
Black driver	0.213*** (0.059)	−0.472 (0.388)	0.387*** (0.144)	−0.622 (0.464)
Hispanic driver	0.144 (0.108)	−0.228 (0.409)	0.219 (0.163)	0.262 (0.452)
Stop at night	0.154 (0.101)	0.012 (0.329)	0.201* (0.116)	−0.487 (0.349)
Young driver (Age < 26)	0.087** (0.038)	−0.314 (0.236)	0.110 (0.129)	−0.413 (0.367)
Male driver	0.064 (0.046)	−0.188 (0.261)	0.096 (0.123)	−0.062 (0.365)
In-state driver	0.084 (0.092)		0.246 (0.194)	
In-town driver	0.028 (0.036)	−0.030 (0.335)	0.032 (0.105)	0.045 (0.402)
Accident	0.854*** (0.153)	−0.138 (0.433)	0.022 (0.188)	0.481 (0.531)
Neighborhood controls	YES	YES	YES	YES
Observations	70,652	369	70,652	369

Heteroskedasticity-robust standard errors clustered at the officer level in parentheses.

*significant at 10%; **significant at 5%; ***significant at 1%.

Without looking at the race of the police officer, these results show that black drivers are more likely to be searched (significant at the 1% level)

But are NOT more likely to be guilty, suggesting that this extra searching of black drivers is inefficient. (The coefficient is actually negative, although the SE is large so its insignificant)

No clear evidence that Hispanics are more likely to be searched (coefficient is positive but SE is quite large)

Results

	PECIFICATION		
	Weighted Probits		
	(4)	(5)	(6)
Black driver	0.167 (0.126)	0.144 (0.126)	0.204 (0.142)
Hispanic driver	0.061 (0.166)	0.023 (0.174)	-0.006 (0.176)
Black officer	-0.134 (0.134)	-0.115 (0.134)	-0.085 (0.135)
Hispanic officer	-0.487* (0.279)	-0.511* (0.269)	-0.501** (0.249)
Mismatch	0.354*** (0.126)	0.355*** (0.125)	0.345*** (0.121)
Stop at night		0.207* (0.123)	0.208* (0.117)
Young driver (Age < 26)		0.101 (0.128)	0.106 (0.126)
Male driver		0.100 (0.128)	0.088 (0.122)
In-state driver		0.255 (0.182)	0.254 (0.185)
In-town driver		-0.015 (0.099)	0.025 (0.105)
Accident		0.036 (0.179)	0.018 (0.188)
Neighborhood controls	NO	NO	YES
Observations	70,652	70,652	70,652

This table adds in officer race and a mismatch variable

The coefficient on black (Hispanic) driver tells you how the search probability differs compared to white drivers. Positive = more likely to be searched than white drivers

The coefficient on black (Hispanic) officer tells you how the search probability differs compared to white officer. Positive = more likely to search than white officers

Mismatch = 1 if the driver and officer race are not the same, 0 otherwise

We also see that Hispanic officers, compared to white officers, are much less likely to search drivers, regardless of the driver's race

Results

	PECIFICATION		
	Weighted Probits		
	(4)	(5)	(6)
Black driver	0.167 (0.126)	0.144 (0.126)	0.204 (0.142)
Hispanic driver	0.061 (0.166)	0.023 (0.174)	-0.006 (0.176)
Black officer	-0.134 (0.134)	-0.115 (0.134)	-0.085 (0.135)
Hispanic officer	-0.487* (0.279)	-0.511* (0.269)	-0.501** (0.249)
Mismatch	0.354*** (0.126)	0.355*** (0.125)	0.345*** (0.121)
Stop at night		0.207* (0.123)	0.208* (0.117)
Young driver (Age < 26)		0.101 (0.128)	0.106 (0.126)
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In-state driver		0.255 (0.182)	0.254 (0.185)
In-town driver		-0.015 (0.099)	0.025 (0.105)
Accident		0.036 (0.179)	0.018 (0.188)
Neighborhood controls	NO	NO	YES
Observations	70,652	70,652	70,652

We see that the coefficient on black driver is now insignificant compared to earlier

This means that we don't have enough evidence to suggest that black drivers are searched more often when there is NOT a race mismatch between driver and officer (i.e., mismatch = 0)

When we do have a mismatch (mismatch = 1), then searches are significantly more likely

This suggests that what is driving the additional searches done against black drivers is officers of a different race

This is most likely driven by extra searches by white officers since (1) there are more white officers than Hispanic officers in Boston, by far, and (2) white officers are more likely to search

Results

PECIFICATION			
	Weighted Probits		
	(4)	(5)	(6)
Black driver	0.167 (0.126)	0.144 (0.126)	0.204 (0.142)
Hispanic driver	0.061 (0.166)	0.023 (0.174)	-0.006 (0.176)
Black officer	-0.134 (0.134)	-0.115 (0.134)	-0.085 (0.135)
Hispanic officer	-0.487* (0.279)	-0.511* (0.269)	-0.501** (0.249)
Mismatch	0.354*** (0.126)	0.355*** (0.125)	0.345*** (0.121)
Stop at night		0.207* (0.123)	0.208* (0.117)
Young driver (Age < 26)		0.101 (0.128)	0.106 (0.126)
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In-state driver		0.255 (0.182)	0.254 (0.185)
In-town driver		-0.015 (0.099)	0.025 (0.105)
Accident		0.036 (0.179)	0.018 (0.188)
Neighborhood controls	NO	NO	YES
Observations	70,652	70,652	70,652

These extra searches of black drivers by white officers suggests taste-based discrimination since if it were statistical discrimination, then officers of other races would be searching at similar rates

These extra searches, driven by taste-based discrimination, are inefficient since, as we saw earlier, black drivers are no more likely (and are perhaps less likely) to be guilty

There is no statistical reason to search black drivers more, suggesting again that these extra searches stem from taste-based discrimination