Does Race Matter for Police Use of Force? Evidence from 911 Calls

By MARK HOEKSTRA AND CARLYWILL SLOAN

ONLINE APPENDIX

(a) Priority

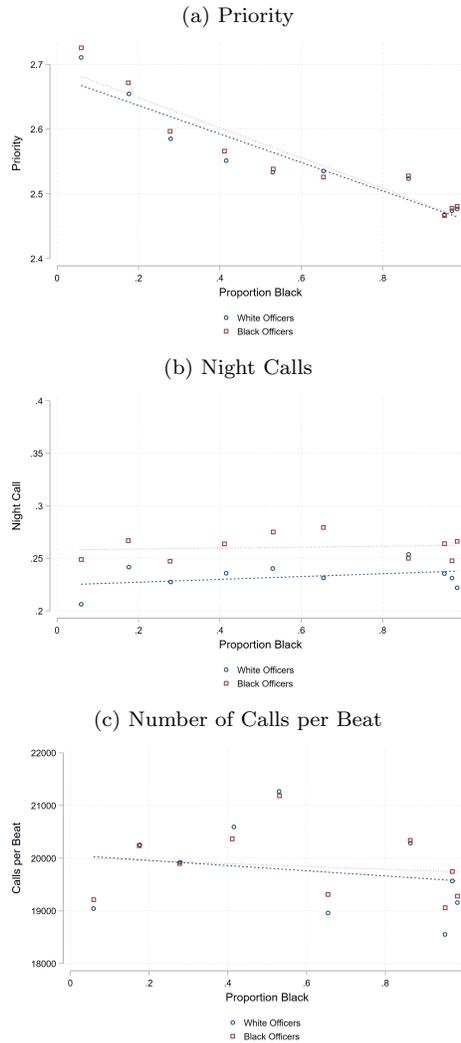### (b) Night Calls

(c) Number of Calls per Beat

FIGURE A1. CALL PRIORITY, NIGHT CALLS, AND NUMBER OF CALLS PER BEAT BY OFFICER RACE & CIVILIAN RACE

Note: In Panels (a), (b), and (c), we plot call priority, night call (whether a call was made between 10 pm and 6 am), and the number of calls per beat. Observations are grouped so that each point includes an equal number of calls. The average number of calls per beat is 19800, and 24% of calls occur between 10 pm and 6 am.
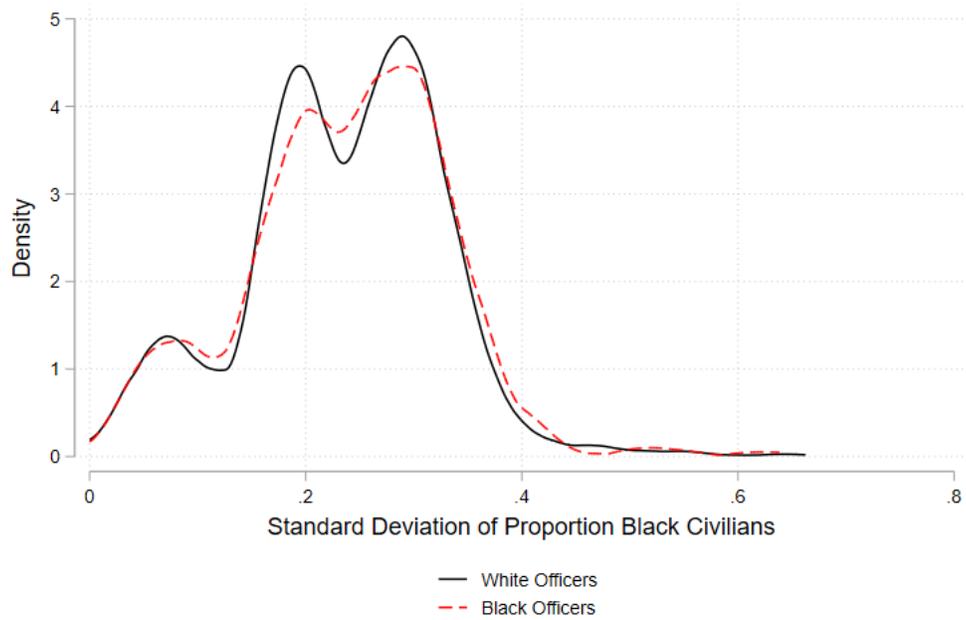
FIGURE A2. DISTRIBUTION OF STANDARD DEVIATION OF PROPORTION BLACK CIVILIANS
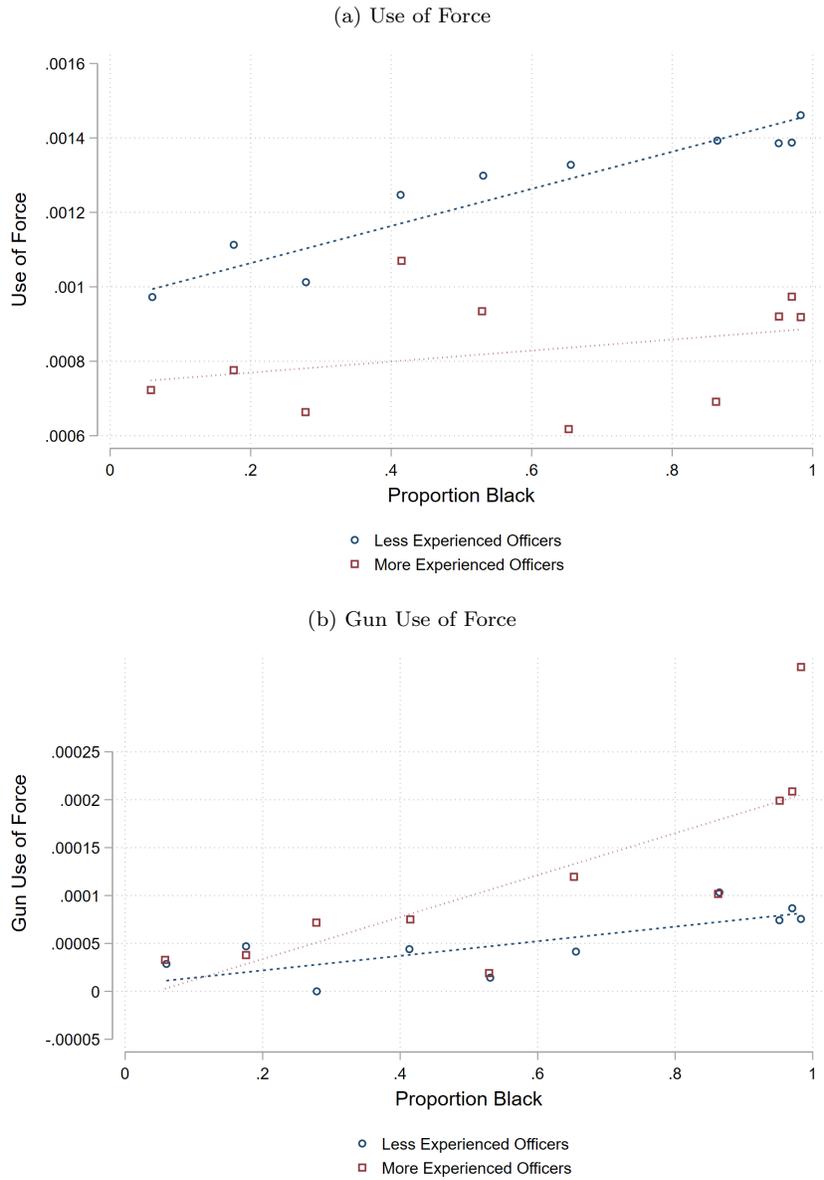
(a) Use of Force

(b) Gun Use of Force

FIGURE A3. ACTUAL USE OF FORCE BY OFFICER EXPERIENCE & CIVILIAN RACE

Note: In Panel (a) we plot use of force. In Panel (b) we plot use of force with a gun. The fitted line is a linear fit across all use of force rates. Observations are grouped so that each point includes an equal number of calls. More experienced officers have 10 or more years of experience (i.e. above the mean).

(a) Use of Force
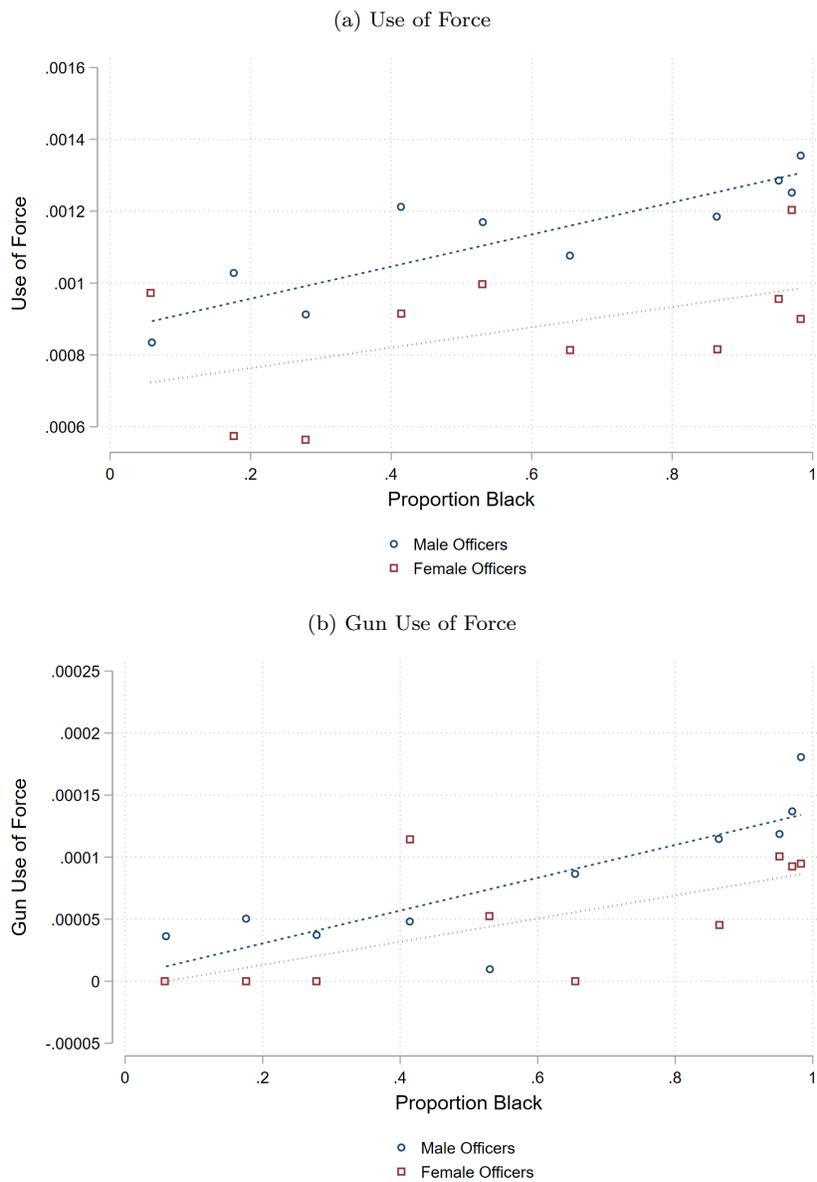
(b) Gun Use of Force

FIGURE A4. ACTUAL USE OF FORCE BY OFFICER GENDER & CIVILIAN RACE

Note: In Panel (a) we plot use of force. In Panel (b) we plot use of force with a gun. The fitted line is a linear fit across all use of force rates. Observations are grouped so that each point includes an equal number of calls.

(a) Use of Force by Experience

(b) Use of Force by Gender

FIGURE A5. **Second City** ACTUAL USE OF FORCE BY OFFICER GENDER, EXPERIENCE & CIVILIAN RACE

Note: In Panels (a) and (b) we plot use of force. The fitted line is a linear fit across all use of force rates. Observations are grouped so that each point includes an equal number of calls. More experienced officers have 8 or more years of experience (i.e. above the mean).
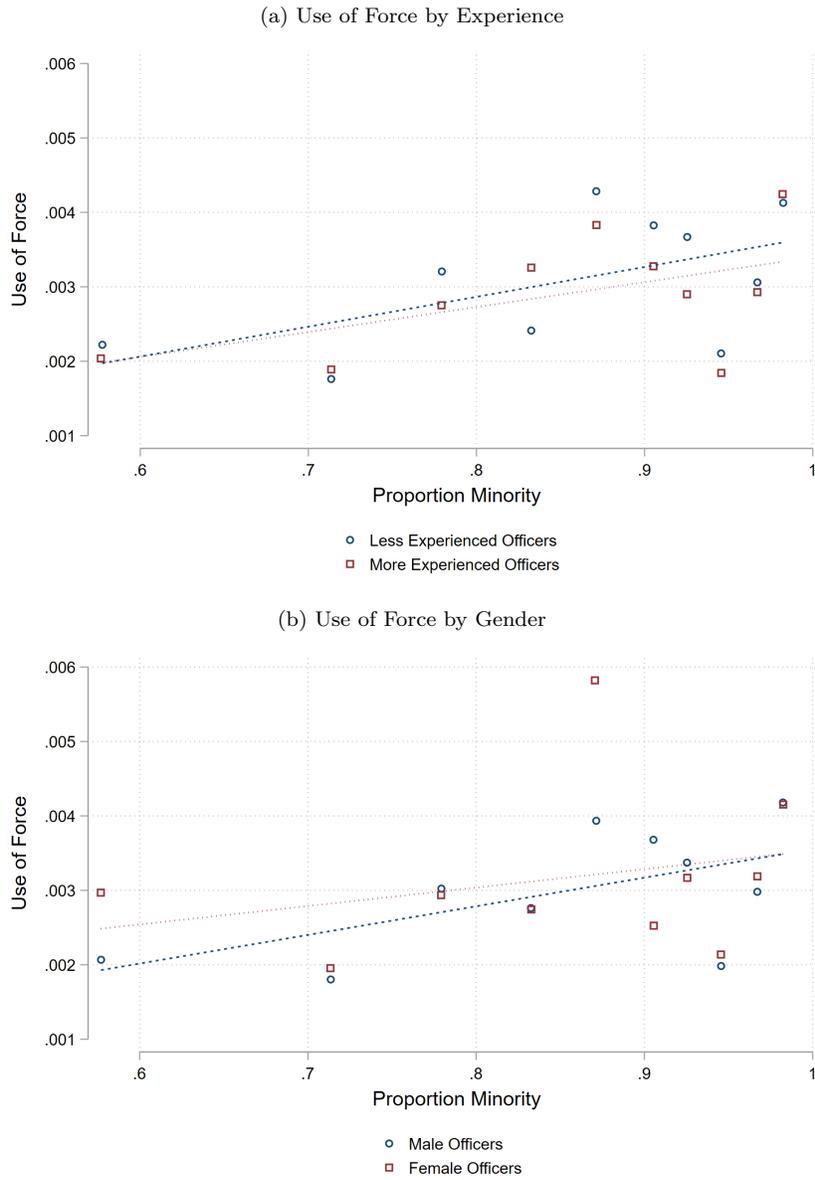
(a) Column 1 Table 3
βWhite Officer

(b) Column 2 Table 3
βWhite Officer

(c) Column 3 Table 3
βWhite Officer*Prp Black Civilian

(d) Column 4 Table 3
βWhite Officer*Prp Black Civilian

(e) Column 5 Table 3
βWhite Officer*Prp Black Civilian

(f) Column 6 Table 3
βWhite Officer*Prp Black Civilian
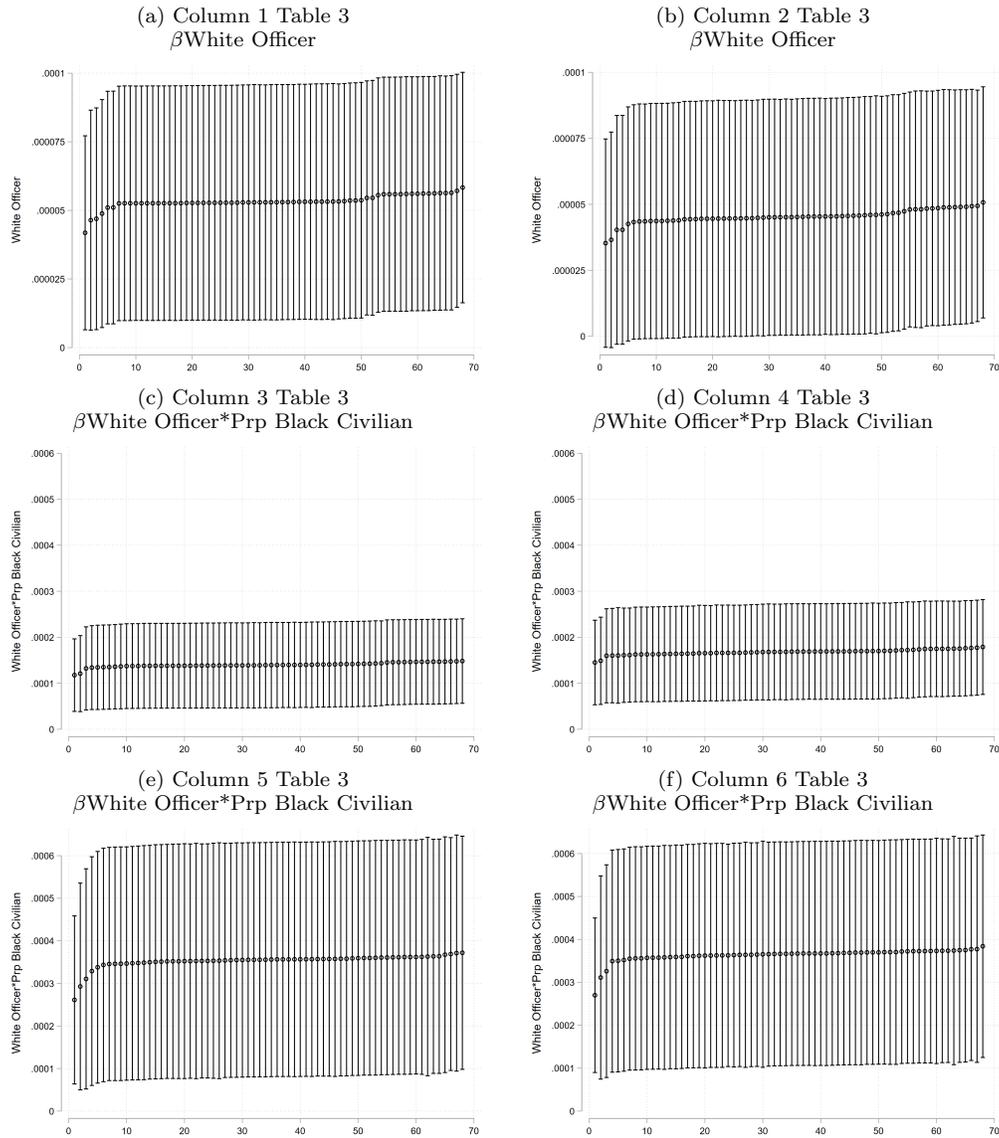
FIGURE A6. DROPPING OFFICERS WHO HAVE USED FORCE WITH A GUN

Note: Figures represent the distribution of coefficients from dropping one officer that uses force with a gun for each of the columns in Table 3. Ninety-five percent confidence intervals are shown. Figures (a) and (b) show the coefficient on *White Officer*, and Figures (c), (d), (e), and (f) show the coefficient on *White Officer*Proportion Black Civilian*. Each coefficient represents a separate regression where one officer is dropped.

TABLE A1—SUMMARY STATISTICS – USE OF FORCE COUNTS

	(1) All	(2) < 25 % Black Neighborhoods	(3) Middle Neighborhoods	(4) > 75 % Black Neighborhoods
Officer Types				
All Officers	1341	232	500	609
Black Officers	366	60	140	166
White Officers	975	172	360	443

Note: This table reports the count of use of force for each category. There are 1341 total uses of force committed by 600 different officers.

TABLE A2—SUMMARY STATISTICS – USE OF FORCE PER CALL

	(1) All	(2) < 25 % Black Neighborhoods	(3) Middle Neighborhoods	(4) > 75 % Black Neighborhoods
Officer Types				
All Officers	0.00109	0.000893	0.00105	0.00122
Black Officers	0.000780	0.000652	0.000796	0.000825
White Officers	0.00128	0.00103	0.00121	0.00149

Note: This table reports use of force per call for each category.

TABLE A3—SUMMARY STATISTICS – GUN USE OF FORCE COUNTS

	(1) All	(2) < 25 % Black Neighborhoods	(3) Middle Neighborhoods	(4) > 75 % Black Neighborhoods
Officer Types				
All Officers	94	11	20	63
Black Officers	20	3	8	9
White Officers	74	8	12	54

Note: This table reports the count of gun use of force for each category. There are 94 incidents of gun use of force committed by 68 different officers.

Table A4—Summary Statistics – Gun Use of Force per Call

	(1) All	(2) < 25 % Black Neighborhoods	(3) Middle Neighborhoods	(4) > 75 % Black Neighborhoods
Officer Types				
All Officers	0.0000762	0.0000424	0.0000422	0.000126
Black Officers	0.0000426	0.0000326	0.0000455	0.0000447
White Officers	0.0000969	0.0000477	0.0000402	0.000181

Note: This table reports gun use of force per call for each category.

TABLE A5—CORRELATION BETWEEN CALL CHARACTERISTICS AND OFFICER RACE – DIFFERENCE-IN-DIFFERENCES

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
			Proportion Less than		Time Between Call and	Call from Home		
	Per Capita Income	Proportion Unemployed	HS Degree	Call Priority	Dispatch	Beat	X Coord	Y Coord
Panel A: Unconditional								
White Officer	-48.77	0.000730	0.00285	-0.0166	-0.108	-0.00937	-4432.3	-110145.4
	(1093.7)	(0.00301)	(0.00653)	(0.0210)	(0.257)	(0.0152)	(77914.0)	(216365.7)
Proportion Black Civilians	-27054.5	0.208	0.164	-0.259	1.295	-0.0444	729947.8	6407353.2
	(905.9)	(0.00331)	(0.00517)	(0.0190)	(0.171)	(0.0196)	(77664.9)	(237506.0)
White Officer*Pr Black Civilians	143.8	-0.00157	-0.00300	0.0149	0.169	0.00464	26100.9	99702.0
	(1166.3)	(0.00423)	(0.00669)	(0.0255)	(0.293)	(0.0232)	(99192.1)	(301462.5)
Observations	1233139	1233139	1233139	1233139	1233139	1233139	1233139	1233139
Outcome Mean	23281.7	0.139	0.185	2.839	6.490	0.180	87304866.5	202240062.9
Panel B: Beat FE								
White Officer	83.30	0.000355	0.000234	-0.0129	-0.0190	-0.0146	-943.6	-110145.4
	(179.2)	(0.000932)	(0.000825)	(0.0196)	(0.218)	(0.0139)	(12017.7)	(216365.7)
Proportion Black Civilians	-43489.6	0.201	0.241	-0.242	-0.746	-0.0206	629642.3	6407353.2
	(499.2)	(0.00303)	(0.00209)	(0.0163)	(0.333)	(0.0163)	(31621.4)	(237506.0)
White Officer*Pr Black Civilians	-145.6	-0.000700	0.000295	0.0129	0.146	0.0125	-2870.8	99702.0
	(249.8)	(0.00157)	(0.00122)	(0.0240)	(0.260)	(0.0212)	(19387.6)	(301462.5)
Observations	1233139	1233139	1233139	1233139	1233139	1233139	1233139	1233139
Outcome Mean	23281.7	0.139	0.185	2.839	6.490	0.180	87304866.5	202240062.9
Panel C: Beat-year-week-shift FE								
White Officer	117.5	0.0000904	-0.000514	-0.0241	-0.0371	-0.0104	2437.1	136.2
	(129.1)	(0.000580)	(0.000550)	(0.0155)	(0.317)	(0.0121)	(3146.7)	(3805.0)
Proportion Black Civilians	-43641.4	0.212	0.221	-0.221	-0.588	0.0153	323661.7	233644.6
	(484.6)	(0.00256)	(0.00190)	(0.0129)	(0.337)	(0.0126)	(13131.3)	(14934.7)
White Officer*Pr Black Civilians	-204.9	-0.000111	0.000998	0.0225	-0.122	0.00775	-2141.0	854.2
	(193.1)	(0.00101)	(0.000865)	(0.0186)	(0.359)	(0.0188)	(4973.0)	(6043.5)
Observations	1233139	1233139	1233139	1233139	1233139	1233139	1233139	1233139
Outcome Mean	23281.7	0.139	0.185	2.839	6.490	0.180	87304866.5	202240062.9

Note: This table reports the coefficient on *White Officer*, *Propotion Black Civilians*, and *White Officer*Proportion Black Civilians* from separate regressions of call characteristics on a binary variable representing officer race, civilian race, and the interaction. Panel B includes beat fixed effects, and Panel C includes beat-year-week-shift fixed effects. Standard errors are clustered at the officer level. Priority, latitude, and longitude have been altered (multiplied by a random number) to protect our city's identity.

TABLE A6—ROBUSTNESS TO DEFINING USE OF FORCE AT INDIVIDUAL OFFICER LEVEL: THE EFFECT OF OFFICER RACE AND DIFFERENT-RACE OFFICERS

	Officer Race				Difference-in-Differences Different Race Officer	
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Use of Force						
White Officer	0.000479	0.000421	0.000262	0.000131		
	(0.0000797)	(0.0000794)	(0.000122)	(0.000130)		
Proportion Black Civilians					-0.000114	-0.000379
					(0.000234)	(0.000327)
White Officer*Pr Black Civilians			0.000367	0.000486	0.000545	0.000622
			(0.000169)	(0.000188)	(0.000274)	(0.000278)
Observations	1233139	1233139	1233139	1233139	1233139	1233139
Outcome Mean	0.00105	0.00105	0.00105	0.00105	0.00105	0.00105
Panel B: Gun Use of Force						
White Officer	0.0000554	0.0000469	-0.0000240	-0.0000469		
	(0.0000226)	(0.0000236)	(0.0000237)	(0.0000244)		
Proportion Black Civilians					-0.000169	-0.000124
					(0.000106)	(0.0000821)
White Officer*Pr Black Civilians			0.000134	0.000158	0.000362	0.000370
			(0.0000481)	(0.0000533)	(0.000146)	(0.000137)
Observations	1233139	1233139	1233139	1233139	1233139	1233139
Outcome Mean	0.0000706	0.0000706	0.0000706	0.0000706	0.0000706	0.0000706
Beat FE	Y	–	Y	–	Y	–
Beat-year-week-shift FE	–	Y	–	Y	–	Y
Call controls	–	Y	–	Y	–	Y
Officer FE	–	–	–	–	Y	Y

Note: We define use of force at the individual officer level rather than at the call level as in the main results. This table shows the effect of officer race (columns 1-4) and different-race officers (columns 5-6) on the use of force (panel a) and gun use of force (panel b). Even columns add controls for the time between call and dispatch, latitude, longitude, per capita income, unemployment, and proportion with less than a high school degree, as well as fixed effects for the day of the week, the priority of the call, call description, call taker, officer gender, officer years of experience, and officer home beat, as proxied by the beat to which the officer responded to the most calls. In columns 5 and 6, individual officer fixed effects subsume $White\ Officer$. Standard errors clustered at the officer level are reported in parentheses.

Table A7—Alternative Specifications

Panel A: Use of Force

White Officer*Pr Black Civilians	0.000536 (0.000270)			
Black Officer*Pr White Civilians		0.000594 (0.000285)		
Black Officer*Pr Black Civilians			-0.000536 (0.000270)	
White Officer*Pr White Civilians				-0.000594 (0.000285)
Observations	1233139	1233139	1233139	1233139
Outcome Mean	0.00106	0.00106	0.00106	0.00106

Panel B: Gun Use of Force

White Officer*Pr Black Civilians	0.000357 (0.000140)			
Black Officer*Pr White Civilians		0.000356 (0.000147)		
Black Officer*Pr Black Civilians			-0.000357 (0.000140)	
White Officer*Pr White Civilians				-0.000356 (0.000147)
Observations	1233139	1233139	1233139	1233139
Outcome Mean	0.0000710	0.0000710	0.0000710	0.0000710

Note: This table reports the coefficient for each possible interaction term. Controls for civilian race are also included but not reported. Every specification includes beat and officer fixed effects (the specification for column 5 in Table 3). Each column represents a separate regression. Standard errors are clustered at the officer level. Standard errors in parentheses.

TABLE A8—**Second City** SUMMARY STATISTICS

	(1) Entire Sample	(2) Minority Officers	(3) White Officers
Outcomes			
Use of Force	0.000940	0.000932	0.000990
Call Characteristics			
Proportion Minority Civilian	0.848	0.852	0.830
	(0.126)	(0.124)	(0.132)
Proportion Hispanic Civilian	0.812	0.816	0.787
	(0.148)	(0.146)	(0.156)
Proportion Black Civilian	0.0365	0.0354	0.0428
	(0.0360)	(0.0351)	(0.0403)
Per Capita Income	19169.1	19123.0	19437.3
	(9616.3)	(9605.9)	(9672.3)
Proportion Unemployed	0.0836	0.0837	0.0830
	(0.0623)	(0.0625)	(0.0611)
Proportion Less than HS Degree	0.251	0.253	0.234
	(0.172)	(0.173)	(0.162)
Years of Experience	8.500	8.736	7.123
	(6.784)	(6.964)	(5.422)
Minority Officer	0.853	1	0
Hispanic Officer	0.825	0.967	0
Black Officer	0.0282	0.0331	0
Female Officer	0.0863	0.0867	0.0837
Longitude	-211.3	-211.3	-211.3
	(0.185)	(0.186)	(0.181)
Latitude	31.13	31.13	31.15
	(0.0588)	(0.0579)	(0.0613)
Hour Dispatched	13.09	13.12	12.88
	(7.068)	(6.975)	(7.581)
Priority	5.575	5.573	5.587
	(1.913)	(1.909)	(1.933)
Multi-Agency Call	0.888	0.887	0.893
Observations	938562	803494	135068
Number of Calls	414633	353801	60832

Note: This table reports mean, standard deviation, and number of observations for each variable. Use of force is measured at the call level and takes on a value of one if the call ended in a use of force. Priority, latitude and longitude have been altered (multiplied by a random number) to protect the identity of our city. Multi-Agency takes on a value of one if other agencies (e.g. Fire Department) were dispatched to a call. Standard deviations in parentheses.

TABLE A9—**Second City** Correlation Between Call Characteristics and Officer Race

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Proportion Minority	Proportion Hispanic	Proportion Black	Per Capita Income	Proportion Unemployed	Proportion Less than HS Degree	Home Beat	X Coord.	Y Coord.	Time Dispatched	Call Priority	Multi Agency
Panel A: Unconditional												
White Officer	-0.0219	-0.0293	0.00734	314.3	-0.000673	-0.0189	-0.00472	-0.0202	0.0169	-0.247	0.0138	0.00569
	(0.00329)	(0.00452)	(0.00167)	(225.5)	(0.00139)	(0.00565)	(0.00521)	(0.0126)	(0.00333)	(0.381)	(0.0241)	(0.00331)
Observations	938562	938562	938562	938562	938562	938562	938562	938562	938562	938562	938562	938562
Outcome Mean	0.848	0.812	0.0365	19169.1	0.0836	0.251	0.109	-211.3	31.13	13.09	5.575	0.888
Panel B: Beat FE												
White Officer	0.000106	0.0000235	0.0000827	-23.17	0.000494	0.000408	-0.00241	0.0000242	-0.0000189	-0.205	0.0174	0.00547
	(0.000280)	(0.000313)	(0.0000556)	(14.39)	(0.000143)	(0.000268)	(0.00238)	(0.0000317)	(0.0000176)	(0.378)	(0.0228)	(0.00316)
Observations	938562	938562	938562	938562	938562	938562	938562	938562	938562	938562	938562	938562
Outcome Mean	0.848	0.812	0.0365	19169.1	0.0836	0.251	0.109	-211.3	31.13	13.09	5.575	0.888
Panel C: Beat-time FE												
White Officer	0.000129	0.0000693	0.0000593	-19.26	0.000432	0.000399	-0.00233	0.0000243	-0.0000190	-0.247	0.0138	0.00331
	(0.000228)	(0.000247)	(0.0000463)	(12.84)	(0.000139)	(0.000236)	(0.00222)	(0.0000273)	(0.0000162)	(0.381)	(0.0241)	(0.00281)
Observations	938562	938562	938562	938562	938562	938562	938562	938562	938562	938562	938562	938562
Outcome Mean	0.848	0.812	0.0365	19169.1	0.0836	0.251	0.109	-211.3	31.13	13.09	5.575	0.888

Note: This table reports the coefficient on $White\ Officer$ from separate regressions of call characteristics on a binary variable representing officer race. Panel C includes beat-year-month and beat-shift fixed effects. Standard errors are clustered at the officer level. Priority, latitude, and longitude have been altered (multiplied by a random number) to protect our city's identity.

TABLE A10—**Second City** ROBUSTNESS

	Officer and Civilian Race				Difference-in-Differences Different Race Officer		
	(1)	(2) *Logit*	(3)	(4) *Logit*	(5)	(6) *Logit*	(7)
Panel A: Use of Force							
White Officer	0.0000774	1.104	-0.000682	0.674			
	(0.0000831)	(0.0773)	(0.000313)	(0.265)			
Proportion Minority Civilian					-0.000761	0.192	-0.134
					(0.000656)	(0.0810)	(219.9)
White Officer*Pr Minority Civilians			0.000912	1.774	0.000925	1.678	0.000858
			(0.000380)	(0.789)	(0.000386)	(0.755)	(0.000399)
Observations	938562	509622	938562	509622	938562	469863	938562
Outcome Mean	0.000940	0.00551	0.000940	0.00551	0.000940	0.00597	0.000940
Beat FE	Y	Y	Y	Y	Y	Y	Y
Beat-year-month, Beat-shift FE	–	–	–	–	–	–	–
Call controls	–	–	–	–	–	–	Y
Officer FE	–	–	–	–	Y	Y	Y
Interactions	–	–	–	–	–	–	Y

Note: This table shows the effect of officer race (columns 1-4) and different-race officers (columns 5-7) on use of force. Even columns (logit specifications) report odds ratios. In columns 5, 6, and 7, individual officer fixed effects subsume $White\ Officer$. Standard errors are clustered at the officer level. Column 7 add controls for latitude, longitude, per capita income, unemployment, and proportion with less than a high school degree, as well as fixed effects for the day of the week, hour dispatched, call description, call source, multi-agency, officer years of experience, officer gender, and officer home beat, as proxied by the beat to which the officer responded to the most calls. Interactions between call characteristics and officer race as well as interactions between proportion minority civilian and officer gender and years of experiences are also added. In logit specifications, beats (columns 2, 4) and officers (column 6) with no use of force are dropped. Standard errors clustered at the officer level are reported in parentheses.