



MARICOPA COUNTY SHERIFF'S OFFICE
Traffic Stops Analysis Report
January 2021-December 2021

The background image shows the exterior of the Maricopa County Sheriff's Office building at dusk. The building features a prominent, large, triangular structure with a perforated metal facade that glows from internal lighting. To the right, a modern glass-walled section of the building is visible, reflecting the sky. The sky is a deep blue, indicating twilight.

Supplemental Appendices

The background image shows a landscaped walkway at night. A paved path leads through a garden area with various plants and small trees. In the background, the modern glass-walled section of the Sheriff's Office building is illuminated, and the sky is dark.

CNA



This document contains the best opinion of CNA at the time of issue.

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Suggested citation:

Peterson, B., Bryson, B., Lafferty, J., & Thorkildsen, Z. (2022). Maricopa County Sheriff's Office Traffic Stops Analysis Report Supplemental Appendices: January 2021–December 2021. Phoenix, AZ: Maricopa County Sheriff's Office.

Distribution

Distribution unlimited.

June 2022

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SUPPLEMENTAL APPENDIX 1: VARIABLE DEFINITIONS, DESCRIPTIVE STATISTICS, AND MISSING VALUES SUMMARY

This appendix presents the variables used in the analysis. Table 1 provides basic descriptive statistics: count, mean, standard deviation, minimum, and maximum. It also includes the number of missing values and the percentage of missing values. The search and seizure variables contain a significant number of missing values in the dataset because the seizure data were collected only when a search took place. The missing data in these fields do not affect our analysis.

CNA also coordinated with the MCSO during the preliminary review of the data to address missing values for some variables. In addition, the MCSO and CNA identified that deputies coded 569 latitudes and longitudes to a default value indicating that they lacked connectivity during the stop. The MCSO used the coded location for these stops to identify the latitude and longitude for all entries. The analysis team identified additional missing data that the MCSO could not adjudicate or impute. Two stops lacked vehicle license plate data; we omitted these stops from all analyses because we used in-state plate status as a propensity score matching variable. Of the stops, 196 could not be aligned into a call sign category; we omitted these stops from all analyses as well. Taken together, the missing data represent approximately 1 percent of the overall data, below any standard threshold that would trigger concerns about missing data biasing the analysis or findings.

Table 1. Variable definitions, descriptive statistics, and missing values summary

Variable Name	Definition	N	Mean	Std. Dev.	Min	Max	Missing	Percent Missing
DriverRace_A	Driver race (indicator variable for Asian)	16,860	0.026	0.159	0	1	0	0
DriverRace_B	Driver race (indicator variable for Black)	16,860	0.074	0.262	0	1	0	0
DriverRace_H	Driver race (indicator variable for Hispanic)	16,860	0.228	0.420	0	1	0	0
DriverRace_I	Driver race (indicator variable for Native American)	16,860	0.011	0.104	0	1	0	0
DriverRace_W	Driver race (indicator variable for White)	16,860	0.661	0.473	0	1	0	0
DriverSex_F	Driver sex (indicator variable for female)	16,860	0.373	0.484	0	1	0	0
DriverSex_M	Driver sex (indicator variable for male)	16,860	0.627	0.484	0	1	0	0

DriverSex_U	Driver sex (indicator variable for unknown)	16,860	0.000	0.011	0	1	0	0
StopConclusion_Cite	Stop resulted in a citation	16,860	0.538	0.499	0	1	0	0
StopConclusion_No	Stop resulted in an incidental contact form	16,860	0.000	0.013	0	1	0	0
StopConclusion_Warn	Stop resulted in a warning	16,860	0.002	0.049	0	1	0	0
DvrArrest	Driver was arrested	16,860	0.054	0.226	0	1	0	0
DUIStopInd	Deputy indicated the stop length was extended due to DUI protocols	16,860	0.028	0.164	0	1	0	0
LangBarrierInd	Deputy indicated the stop length was extended due to language barrier	16,860	0.013	0.115	0	1	0	0
TechIssueInd	Deputy indicated the stop length was extended due to technical issues	16,860	0.070	0.256	0	1	0	0
TrainingStopInd	Deputy indicated the stop length was extended due to training	16,860	0.073	0.260	0	1	0	0
VehicleTowedInd	Deputy indicated the stop length was extended due to towing of the vehicle	16,860	0.020	0.139	0	1	0	0
StopClass_Crim	Stop classified as criminal	16,860	0.002	0.040	0	1	0	0
StopClass_CivTraffic	Stop classified as civil traffic	16,860	0.962	0.191	0	1	0	0
StopClass_CrimTraffic	Stop classified as criminal traffic	16,860	0.036	0.186	0	1	0	0
StopClass_Petty	Stop classified as petty	16,860	0.000	0.015	0	1	0	0
SearchDriver	Driver was searched	16,860	0.023	0.151	0	1	0	0
SearchVehicle	Vehicle was searched	16,860	0.022	0.146	0	1	0	0
SearchDriverVehicle	Driver or vehicle was searched	16,860	0.032	0.177	0	1	0	0
SearchDriverNonInc	Driver discretionary search (i.e., not incident to arrest)	16,860	0.002	0.050	0	1	0	0
SearchVehicleNonInc	Vehicle discretionary search (i.e., not incident to a tow)	16,860	0.005	0.070	0	1	0	0

SearchDriverVehicleNonInc	Driver or vehicle discretionary search	16,860	0.007	0.083	0	1	0	0
SearchDvrSeizure	Driver search resulted in seizure	42	0.119	0.328	0	1	16818	0.998
SearchVehSeizure	Vehicle search resulted in seizure	82	0.512	0.503	0	1	16778	0.995
SearchSeizure	Driver or vehicle search resulted in seizure	116	0.397	0.491	0	1	16744	0.993
StopLength	The length of the stop in minutes	16,860	17.728	27.893	1	654	0	0
NonAZPlate	The stopped vehicle had non-Arizona plates	16,858	0.104	0.305	0	1	2	0.000
DUITaskForce	Deputy was on special assignment: DUI task force	16,860	0.011	0.105	0	1	0	0.000
CallSignCat_1	Deputy was operating under a call sign for normal patrol	16,664	0.571	0.495	0	1	196	0.012
CallSignCat_2	Deputy was operating under a call sign for Lake Patrol	16,664	0.197	0.398	0	1	196	0.012
CallSignCat_3	Deputy was operating under a call sign for a supervisor	16,664	0.016	0.127	0	1	196	0.012
CallSignCat_4	Deputy was operating under a call sign for other assignments	16,664	0.008	0.089	0	1	196	0.012
CallSignCat_5	Deputy was operating under a call sign for designated traffic stop car	16,664	0.205	0.404	0	1	196	0.012
CallSignCat_6	Deputy was operating under a call sign for off-duty assignment	16,664	0.002	0.046	0	1	196	0.012

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SUPPLEMENTAL APPENDIX 2: PROPENSITY SCORE MATCHING LOGISTIC REGRESSION RESULTS

This appendix presents the results tables from the matching stage logistic regression estimation for each condition of interest. With two exceptions, the logistic regression estimates are the same for all propensity score matching analyses, including the baseline and all alternate specifications. The first exception is the stop length logistic regression results, which differ from those for the other outcomes due to the addition of arrests and searches as matching variables. The second exception is the booked arrests outcome that is compared only to other cite-and-release arrests. We therefore present the results for the stop length and booked arrest outcomes separately from the other outcomes. We used the regressions to generate the p-scores for matching purposes in all specifications.

Table 2. Logistic regression results for stop length, Hispanic drivers

Number of Observations	12,308
Chi-Squared Statistic	959.29
Probability Value	less than 0.001
Pseudo R-Squared	0.0724
Log Likelihood	-6,147.070

	Coefficient	Standard Error	z-score	Probability Value
Special assignment: DUI Task Force	0.41	0.203	2	0.046
Driver sex (male)	0.18	0.047	3.87	less than 0.001
X coordinate	-1.33	0.103	-12.93	less than 0.001
Y coordinate	-1.19	0.065	-18.39	less than 0.001
Stop time (8 am to 8 pm)	-0.25	0.048	-5.17	less than 0.001
Stop classification (civil traffic)	-0.10	0.168	-0.6	0.547
Non-Arizona plate	-0.44	0.082	-5.3	less than 0.001
Call sign category: normal patrol	-0.03	0.314	-0.09	0.926
Call sign category: Lake Division patrol	0.12	0.316	0.39	0.696
Call sign category: supervisors	-0.21	0.364	-0.59	0.556
Call sign category: designated traffic enforcement car	-0.44	0.317	-1.4	0.162
Call sign category: off-duty assignment	0.81	0.526	1.55	0.122
Driver arrested	0.03	0.175	0.15	0.884
Driver or vehicle searched	0.95	0.213	4.47	less than 0.001
Constant	-89.50	8.422	-10.63	less than 0.001

Table 3. Logistic regression results for booked arrests (comparison includes cite-and-release arrests), Hispanic drivers

Number of Observations	766
Chi-Squared Statistic	67.55
Probability Value	less than 0.001
Pseudo R-Squared	0.068
Log Likelihood	-465.132

	Coefficient	Standard Error	z-score	Probability Value
Special assignment: DUI Task Force	0.27	0.756	0.36	0.721
Driver sex (male)	0.34	0.193	1.76	0.079
X coordinate	-1.66	0.423	-3.92	less than 0.001
Y coordinate	-1.23	0.248	-4.97	less than 0.001
Stop time (8 am to 8 pm)	-0.11	0.175	-0.66	0.512
Stop classification (civil traffic)	0.65	0.162	4.02	less than 0.001
Non-Arizona plate	0.19	0.274	0.68	0.499
Call sign category: normal patrol	-0.57	0.586	-0.98	0.328
Call sign category: Lake Division patrol	-0.21	0.590	-0.35	0.725
Call sign category: supervisors	-0.98	1.000	-0.98	0.325
Call sign category: designated traffic enforcement car	-0.58	0.619	-0.94	0.347
Call sign category: off-duty assignment			(omitted)	
Constant	-83.27	29.318	-2.84	0.005

Table 4. Logistic regression results for all other outcomes, Hispanic drivers

Number of Observations	14,821
Chi-Squared Statistic	115.30
Probability Value	less than 0.001
Pseudo R-Squared	0.0688
Log Likelihood	-7,820.644

	Coefficient	Standard Error	z-score	Probability Value
Special assignment: DUI Task Force	0.52	0.179	2.9	less than 0.001
Driver sex (male)	0.21	0.041	5.18	less than 0.001
X coordinate	-1.30	0.089	-14.59	less than 0.001
Y coordinate	-1.21	0.057	-21.28	less than 0.001

Stop time (8 am to 8 pm)	-0.27	0.042	-6.4	less than 0.001
Stop classification (civil traffic)	-0.20	0.099	-2.01	0.04
Non-Arizona plate	-0.43	0.071	-6.05	less than 0.001
Call sign category: normal patrol	0.11	0.228	0.49	0.62
Call sign category: Lake Division patrol	0.33	0.231	1.44	0.15
Call sign category: supervisors	0.04	0.271	0.15	0.88
Call sign category: designated traffic enforcement car	-0.32	0.234	-1.35	0.18
Call sign category: off-duty assignment	0.82	0.456	1.79	0.07
Constant	-92.92	7.203	-12.9	less than 0.001

Table 5. Logistic regression results for stop length, Black drivers

Number of Observations	10,475
Chi-Squared Statistic	341.44
Probability Value	less than 0.001
Pseudo R-Squared	0.0521
Log Likelihood	-3,104.142

	Coefficient	Standard Error	z-score	Probability Value
Special assignment: DUI Task Force	0.39	0.317	1.24	0.22
Driver sex (male)	0.15	0.072	2.03	0.04
X coordinate	-0.94	0.151	-6.25	less than 0.001
Y coordinate	-0.90	0.097	-9.28	less than 0.001
Stop time (8 am to 8 pm)	-0.30	0.072	-4.24	less than 0.001
Stop classification (civil traffic)	-0.08	0.262	-0.32	0.75
Non-Arizona plate	0.20	0.103	1.97	0.05
Call sign category: normal patrol	-0.41	0.392	-1.04	0.30
Call sign category: Lake Division patrol	-0.39	0.397	-0.99	0.32
Call sign category: supervisors	-0.17	0.454	-0.37	0.71
Call sign category: designated traffic enforcement car	-1.12	0.401	-2.78	0.01
Call sign category: off-duty assignment	1.25	0.598	2.09	0.04
Driver arrested	0.16	0.273	0.57	0.57
Driver or vehicle searched	0.37	0.368	1.01	0.31
Constant	-70.38	12.730	-5.53	less than 0.001

Table 6. Logistic regression results for booked arrests (comparison includes cite-and-release arrests), Black drivers

Number of Observations	573
Chi-Squared Statistic	42.78

Probability Value	less than 0.001
Pseudo R-Squared	0.0883
Log Likelihood	-220.907

	Coefficient	Standard Error	z-score	Probability Value
Special assignment: DUI Task Force			(omitted)	
Driver sex (male)	0.55	0.310	1.76	0.08
X coordinate	-2.29	0.630	-3.63	less than 0.001
Y coordinate	-1.03	0.378	-2.73	0.01
Stop time (8 am to 8 pm)	-0.67	0.262	-2.54	0.01
Stop classification (civil traffic)	0.54	0.253	2.16	0.03
Non-Arizona plate	0.47	0.394	1.2	0.23
Call sign category: normal patrol	0.08	1.112	0.07	0.94
Call sign category: Lake Division patrol	0.69	1.124	0.62	0.54
Call sign category: supervisors	1.38	1.286	1.07	0.28
Call sign category: designated traffic enforcement car	0.47	1.167	0.41	0.69
Call sign category: off-duty assignment			(omitted)	
Constant	-41.43	45.213	-0.92	0.359

Table 7. Logistic regression results for all other outcomes, Black drivers

Number of Observations	12,280
Chi-Squared Statistic	402.26
Probability Value	less than 0.001
Pseudo R-Squared	0.0505
Log Likelihood	-3,779.890

	Coefficient	Standard Error	z-score	Probability Value
Special assignment: DUI Task Force	0.51	0.284	1.81	0.07
Driver sex (male)	0.17	0.065	2.55	0.01
X coordinate	-1.00	0.133	-7.5	less than 0.001
Y coordinate	-0.91	0.087	-10.46	less than 0.001
Stop time (8 am to 8 pm)	-0.31	0.064	-4.77	less than 0.001
Stop classification (civil traffic)	-0.31	0.149	-2.06	0.04
Non-Arizona plate	0.16	0.092	1.71	0.09
Call sign category: normal patrol	0.07	0.339	0.21	0.84
Call sign category: Lake Division patrol	0.09	0.345	0.25	0.80

Call sign category: supervisors	0.17	0.397	0.44	0.66
Call sign category: designated traffic enforcement car	-0.64	0.350	-1.84	0.07
Call sign category: off-duty assignment	1.52	0.552	2.75	0.01
Constant	-70.08	11.190	-6.26	less than 0.001

Table 8. Logistic regression results for stop length, minority drivers

Number of Observations	13,806
Chi-Squared Statistic	1,072.28
Probability Value	less than 0.001
Pseudo R-Squared	0.0625
Log Likelihood	-8,043.010

	Coefficient	Standard Error	z-score	Probability Value
Special assignment: DUI Task Force	0.36	0.178	2.04	0.04
Driver sex (male)	0.12	0.040	3.04	less than 0.001
X coordinate	-1.29	0.092	-14.11	less than 0.001
Y coordinate	-1.06	0.057	-18.6	less than 0.001
Stop time (8 am to 8 pm)	-0.23	0.041	-5.52	less than 0.001
Stop classification (civil traffic)	-0.04	0.144	-0.29	0.78
Non-Arizona plate	-0.17	0.066	-2.67	0.01
Call sign category: normal patrol	-0.13	0.256	-0.52	0.60
Call sign category: Lake Division patrol	-0.03	0.258	-0.11	0.91
Call sign category: supervisors	-0.27	0.298	-0.91	0.36
Call sign category: designated traffic enforcement car	-0.59	0.259	-2.27	0.02
Call sign category: off-duty assignment	0.86	0.453	1.89	0.06
Driver arrested	0.16	0.148	1.05	0.29
Driver or vehicle searched	0.70	0.196	3.58	less than 0.001
Constant	-75.38	7.230	-10.43	less than 0.001

Table 9. Logistic regression results for booked arrests (comparison includes cite-and-release arrests), minority drivers

Number of Observations	891
Chi-Squared Statistic	78.03
Probability Value	less than 0.001
Pseudo R-Squared	0.0637
Log Likelihood	-573.503

	Coefficient	Standard Error	z-score	Probability Value
Special assignment: DUI Task Force	0.36	0.647	0.55	0.58
Driver sex (male)	0.28	0.169	1.65	0.10
X coordinate	-1.92	0.388	-4.96	less than 0.001
Y coordinate	-1.04	0.228	-4.55	less than 0.001
Stop time (8 am to 8 pm)	-0.23	0.156	-1.49	0.14
Stop classification (civil traffic)	0.60	0.145	4.14	less than 0.001
Non-Arizona plate	0.26	0.238	1.1	0.27
Call sign category: normal patrol	-0.38	0.562	-0.68	0.50
Call sign category: Lake Division patrol	0.05	0.564	0.09	0.93
Call sign category: supervisors	-0.19	0.797	-0.24	0.81
Call sign category: designated traffic enforcement car	-0.27	0.586	-0.46	0.65
Call sign category: off-duty assignment			(omitted)	
Constant	-51.87	26.414	-1.96	0.05

Table 10. Logistic regression results for all other outcomes, minority drivers

Number of Observations	16,663
Chi-Squared Statistic	1,307.73
Probability Value	less than 0.001
Pseudo R-Squared	0.0614
Log Likelihood	-9,987.824

	Coefficient	Standard Error	z-score	Probability Value
Special assignment: DUI Task Force	0.50	0.158	3.19	less than 0.001
Driver sex (male)	0.16	0.036	4.42	less than 0.001
X coordinate	-1.30	0.081	-16.14	less than 0.001
Y coordinate	-1.10	0.051	-21.68	less than 0.001
Stop time (8 am to 8 pm)	-0.24	0.037	-6.57	less than 0.001
Stop classification (civil traffic)	-0.22	0.086	-2.52	0.01
Non-Arizona plate	-0.19	0.058	-3.36	less than 0.001
Call sign category: normal patrol	0.12	0.193	0.64	0.52
Call sign category: Lake Division patrol	0.28	0.196	1.44	0.15
Call sign category: supervisors	0.00	0.232	0.02	0.99
Call sign category: designated traffic enforcement car	-0.34	0.198	-1.73	0.08
Call sign category: off-duty assignment	0.94	0.401	2.34	0.02
Constant	-80.06	6.285	-12.74	less than 0.001

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SUPPLEMENTAL APPENDIX 3: PROPENSITY SCORE MATCHING BASELINE ANALYSIS TABLES OF RESULTS

This appendix includes the complete tables of the propensity score matching statistical testing results for all baseline (nearest neighbor) propensity score matching analysis. These tables include the estimations of differences in the outcome variable for the unmatched sample, and then for the matched sample using the average treatment on the treated (ATT), average treatment on the untreated (ATU), and average treatment effect (ATE). We used the Abadie and Imbens (2006) standard error calculation methodology to estimate standard errors for ATU and ATE. For radius matching, we used the nearest 10 matches to calculate the Abadie and Imbens standard errors. As noted in the main body of the report, the critical t-statistic for all analyses is 1.96.¹

Stop length

Table 11. Stop length baseline analysis results, Hispanic drivers

Variable	Sample	Hispanic Drivers	White Drivers	Difference	Standard Error	t-statistic
Stop Length	Unmatched	14.94	12.93	2.01	0.276	7.29
	ATT	14.94	13.94	1.00	0.487	2.06
	ATU	12.93	13.92	0.99	0.264	3.74
	ATE			0.99	0.276	3.59

Table 12. Stop length baseline analysis results, Black drivers

Variable	Sample	Black Drivers	White Drivers	Difference	Standard Error	t-statistic
Stop Length	Unmatched	14.15	12.93	1.22	0.401	3.05
	ATT	14.15	13.59	0.56	0.524	1.07
	ATU	12.93	13.16	0.23	0.403	0.57
	ATE			0.26	0.394	0.66

¹ We present the t-statistic values in the Supplemental Appendices without converting to the absolute value; therefore, the sign may not match those presented in the main report.

Table 13. Stop length baseline analysis results, minority drivers

Variable	Sample	Minority Drivers	White Drivers	Difference	Standard Error	t-statistic
Stop Length	Unmatched	14.56	12.93	1.63	0.235	6.94
	ATT	14.56	14.31	0.25	0.530	0.47
	ATU	12.93	13.48	0.55	0.274	2.02
	ATE			0.46	0.304	1.51

Citations

Table 14. Citations baseline analysis results, Hispanic drivers

Variable	Sample	Hispanic Drivers	White Drivers	Difference	Standard Error	t-statistic
Stop Conclusion	Unmatched	0.52	0.56	-0.03	0.009	-3.72
	ATT	0.52	0.50	0.03	0.013	1.98
	ATU	0.56	0.58	0.03	0.013	2.01
	ATE			0.03	0.012	2.24

Table 15. Citations baseline analysis results, Black drivers

Variable	Sample	Black Drivers	White Drivers	Difference	Standard Error	t-statistic
Stop Conclusion	Unmatched	0.42	0.56	-0.14	0.015	-9.45
	ATT	0.42	0.47	-0.06	0.020	-2.82
	ATU	0.56	0.48	-0.07	0.022	-3.32
	ATE			-0.07	0.021	-3.43

Table 16. Citations baseline analysis results, minority drivers

Variable	Sample	Minority Drivers	White Drivers	Difference	Standard Error	t-statistic
Stop Conclusion	Unmatched	0.50	0.56	-0.06	0.008	-6.93
	ATT	0.50	0.49	0.01	0.011	1.31
	ATU	0.56	0.56	0.01	0.011	0.68
	ATE			0.01	0.010	1.02

Searches

Table 17. Searches baseline analysis results, Hispanic drivers

Variable	Sample	Hispanic Drivers	White Drivers	Difference	Standard Error	t-statistic
Search	Unmatched	0.01	0.00	0.01	0.002	5.85
	ATT	0.01	0.01	0.01	0.003	2.68
	ATU	0.00	0.01	0.01	0.002	2.80
	ATE			0.01	0.002	3.12

Table 18. Searches baseline analysis results, Black drivers

Variable	Sample	Black Drivers	White Drivers	Difference	Standard Error	t-statistic
Search	Unmatched	0.01	0.00	0.01	0.002	2.97
	ATT	0.01	0.01	0.00	0.004	0.3
	ATU	0.00	0.01	0.01	0.005	1.27
	ATE			0.01	0.004	1.24

Table 19. Searches baseline analysis results, minority drivers

Variable	Sample	Minority Drivers	White Drivers	Difference	Standard Error	t-statistic
Search	Unmatched	0.01	0.00	0.01	0.001	5.5
	ATT	0.01	0.00	0.01	0.002	3.59
	ATU	0.00	0.01	0.00	0.002	1.68
	ATE			0.00	0.002	2.64

Arrests

Table 20. Arrests baseline analysis results, Hispanic drivers

Variable	Sample	Hispanic Drivers	White Drivers	Difference	Standard Error	t-statistic
Arrest	Unmatched	0.07	0.04	0.03	0.004	6.65
	ATT	0.07	0.06	0.02	0.007	2.43
	ATU	0.04	0.06	0.01	0.006	1.88
	ATE			0.01	0.006	2.27

Table 21. Arrests baseline analysis results, Black drivers

Variable	Sample	Black Drivers	White Drivers	Difference	Standard Error	t-statistic
Arrest	Unmatched	0.07	0.04	0.03	0.006	4
	ATT	0.07	0.06	0.01	0.011	1.27
	ATU	0.04	0.06	0.01	0.009	1.23
	ATE			0.01	0.009	1.31

Table 22. Arrests baseline analysis results, minority drivers

Variable	Sample	Minority Drivers	White Drivers	Difference	Standard Error	t-statistic
Arrest	Unmatched	0.07	0.04	0.03	0.004	7.11
	ATT	0.07	0.06	0.01	0.006	2.53
	ATU	0.04	0.06	0.01	0.006	2.58
	ATE			0.01	0.005	2.94

Booked arrests (comparison includes all stops)

Table 23. Booked arrests (comparison includes all stops) baseline analysis results, Hispanic drivers

Variable	Sample	Hispanic Drivers	White Drivers	Difference	Standard Error	t-statistic
Arrest	Unmatched	0.01	0.01	0.01	0.002	4.26
	ATT	0.01	0.01	0.01	0.003	1.99
	ATU	0.01	0.01	0.00	0.002	2.12
	ATE			0.00	0.002	2.31

Table 24. Booked arrests (comparison includes all stops) baseline analysis results, Black drivers

Variable	Sample	Black Drivers	White Drivers	Difference	Standard Error	t-statistic
Arrest	Unmatched	0.01	0.01	0.01	0.002	3.21
	ATT	0.01	0.01	0.00	0.004	0.66
	ATU	0.01	0.01	0.01	0.005	1.04
	ATE			0.01	0.005	1.05

Table 25. Booked arrests (comparison includes all stops) baseline analysis results, minority drivers

Variable	Sample	Minority Drivers	White Drivers	Difference	Standard Error	t-statistic
Arrest	Unmatched	0.01	0.01	0.01	0.001	4.42
	ATT	0.01	0.01	0.00	0.002	1.99
	ATU	0.01	0.01	0.01	0.003	2.61
	ATE			0.01	0.003	2.73

Booked arrests (comparison includes cite-and-release arrests)

Table 26. Booked arrests (comparison includes cite-and-release arrests) baseline analysis results, Hispanic drivers

Variable	Sample	Hispanic Drivers	White Drivers	Difference	Standard Error	t-statistic
Arrest	Unmatched	0.18	0.13	0.05	0.027	1.78
	ATT	0.18	0.19	-0.01	0.037	0.25
	ATU	0.13	0.15	0.02	0.035	0.43
	ATE			0.01	0.032	0.20

Table 27. Booked arrests (comparison includes cite-and-release arrests) baseline analysis results, Black drivers

Variable	Sample	Black Drivers	White Drivers	Difference	Standard Error	t-statistic
Arrest	Unmatched	0.20	0.13	0.06	0.041	1.57
	ATT	0.20	0.19	0.01	0.063	0.18
	ATU	0.13	0.25	0.12	0.055	2.13
	ATE			0.10	0.051	1.98

Table 28. Booked arrests (comparison includes cite-and-release arrests) baseline analysis results, minority drivers

Variable	Sample	Minority Drivers	White Drivers	Difference	Standard Error	t-statistic
Arrest	Unmatched	0.18	0.13	0.04	0.024	1.82
	ATT	0.18	0.15	0.03	0.035	0.79
	ATU	0.13	0.16	0.03	0.031	1.07

ATE	0.03	0.028	1.08
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Non-warrant arrests

Table 29. Non-warrant arrests baseline analysis results, Hispanic drivers

Variable	Sample	Hispanic Drivers	White Drivers	Difference	Standard Error	t-statistic
Arrest	Unmatched	0.05	0.03	0.02	0.003	5.43
	ATT	0.05	0.04	0.01	0.006	2.43
	ATU	0.03	0.04	0.01	0.005	1.55
	ATE			0.01	0.005	2.01

Table 30. Non-warrant arrests baseline analysis results, Black drivers

Variable	Sample	Black Drivers	White Drivers	Difference	Standard Error	t-statistic
Arrest	Unmatched	0.04	0.03	0.01	0.005	2.32
	ATT	0.04	0.04	0.00	0.008	0.47
	ATU	0.03	0.03	0.00	0.007	0.33
	ATE			0.00	0.006	0.37

Table 31. Non-warrant arrests baseline analysis results, minority drivers

Variable	Sample	Minority Drivers	White Drivers	Difference	Standard Error	t-statistic
Arrest	Unmatched	0.05	0.03	0.02	0.003	5.67
	ATT	0.05	0.04	0.01	0.005	2.26
	ATU	0.03	0.04	0.01	0.005	1.55
	ATE			0.01	0.004	2.07

SUPPLEMENTAL APPENDIX 4: PROPENSITY SCORE MATCHING RESULTS FOR STOP LENGTH WHEN INCLUDING EXTENDED STOP INDICATOR VARIABLES

In this appendix, we present the detailed results tables for each of the alternate specifications regarding the inclusion of the extended stop indicators in the stop length analysis.

Controlling for extended stop indicators

Here we present the results from the second stage regression, in which the extended stop indicators are entered as control variables.

Table 32. Stop lengths results, controlling for extended stop indicators, Hispanic drivers

Number of Observations	14,821
F(20 variables, 18,162 Degrees of Freedom)	61.26
Probability Value	less than 0.001
R-Squared	0.60
Root Mean Square Error	18.65

	Coefficient	Standard Error	z-score	Probability Value
Driver Hispanic	0.20	0.401	0.49	0.624
Special assignment: DUI Task Force	-2.95	1.061	-2.78	0.005
Driver sex (male)	1.07	0.252	4.23	less than 0.001
X coordinate	3.76	0.665	5.66	less than 0.001
Y coordinate	-0.51	0.464	-1.09	0.274
Stop time (8 am to 8 pm)	-0.90	0.322	-2.8	0.005
Stop classification (civil traffic)	11.13	3.202	3.48	0.001
Non-Arizona plate	2.10	0.522	4.02	less than 0.001
Call sign category 1	-17.24	2.955	-5.83	less than 0.001
Call sign category 2	-18.24	2.976	-6.13	less than 0.001
Call sign category 3	-16.16	2.988	-5.41	less than 0.001
Call sign category 5	-17.39	2.941	-5.91	less than 0.001
Call sign category 6	-24.33	4.272	-5.69	less than 0.001
Driver arrested	27.68	2.914	9.5	less than 0.001

Driver or vehicle searched	67.89	5.620	12.08	less than 0.001
Extended stop indicator: DUI stop	34.90	3.179	10.98	less than 0.001
Extended stop indicator: Language barrier	10.67	1.556	6.85	less than 0.001
Extended stop indicator: Technical issue	5.12	0.474	10.8	less than 0.001
Extended stop indicator: Training stop	6.60	0.701	9.4	less than 0.001
Extended stop indicator: Vehicle towed	36.93	4.976	7.42	less than 0.001
Constant	-164.77	65.816	-2.5	0.012

Table 33. Stop lengths results, controlling for extended stop indicators, Black drivers

Number of Observations	12,280
F(20 variables, 14,893 Degrees of Freedom)	103.01
Probability Value	less than 0.001
R-Squared	0.61
Root Mean Square Error	13.94

	Coefficient	Standard Error	z-score	Probability Value
Driver Black	-0.53	0.685	-0.78	0.438
Special assignment: DUI Task Force	-5.94	1.349	-4.4	less than 0.001
Driver sex (male)	-0.55	0.214	-2.57	0.010
X coordinate	2.45	0.589	4.15	less than 0.001
Y coordinate	-0.61	0.357	-1.71	0.087
Stop time (8 am to 8 pm)	-0.87	0.323	-2.71	0.01
Stop classification (civil traffic)	6.73	2.856	2.35	0.02
Non-Arizona plate	3.32	0.525	6.33	less than 0.001
Call sign category 1	3.80	3.428	1.11	0.267
Call sign category 2	3.18	3.419	0.93	0.352
Call sign category 3	9.63	3.463	2.78	0.005
Call sign category 5	2.70	3.457	0.78	0.435
Call sign category 6	2.38	3.513	0.68	0.498
Driver arrested	19.12	2.095	9.13	less than 0.001
Driver or vehicle searched	45.17	4.391	10.29	less than 0.001
Extended stop indicator: DUI stop	59.06	5.137	11.5	less than 0.001
Extended stop indicator: Language barrier	6.73	1.112	6.05	less than 0.001
Extended stop indicator: Technical issue	6.07	0.423	14.34	less than 0.001
Extended stop indicator: Training stop	8.75	1.092	8.01	less than 0.001
Extended stop indicator: Vehicle towed	27.63	6.132	4.51	less than 0.001
Constant	-147.66	45.996	-3.21	less than 0.001

Table 34. Stop lengths results, controlling for extended stop indicators, minority drivers

Number of Observations	16,663
F(20 variables, 20,255 Degrees of Freedom)	106.14
Probability Value	less than 0.001
R-Squared	0.64
Root Mean Square Error	15.98

	Coefficient	Standard Error	z-score	Probability Value
Driver Minority	0.25	0.282	0.87	0.383
Special assignment: DUI Task Force	-2.92	0.751	-3.89	less than 0.001
Driver sex (male)	0.13	0.217	0.6	0.545
X coordinate	2.52	0.493	5.12	less than 0.001
Y coordinate	-0.91	0.352	-2.59	0.01
Stop time (8 am to 8 pm)	-0.36	0.264	-1.38	0.168
Stop classification (civil traffic)	13.00	2.551	5.1	less than 0.001
Non-Arizona plate	2.98	0.366	8.14	less than 0.001
Call sign category 1	-6.03	1.937	-3.11	0.002
Call sign category 2	-7.23	1.967	-3.68	less than 0.001
Call sign category 3	-3.77	2.093	-1.8	0.071
Call sign category 5	-5.65	1.943	-2.91	0.004
Call sign category 6	-12.63	3.290	-3.84	less than 0.001
Driver arrested	25.77	2.397	10.75	less than 0.001
Driver or vehicle searched	52.86	4.401	12.01	less than 0.001
Extended stop indicator: DUI stop	34.78	2.787	12.48	less than 0.001
Extended stop indicator: Language barrier	9.20	1.478	6.22	less than 0.001
Extended stop indicator: Technical issue	5.15	0.405	12.72	less than 0.001
Extended stop indicator: Training stop	7.23	0.681	10.62	less than 0.001
Extended stop indicator: Vehicle towed	46.62	4.891	9.53	less than 0.001
Constant	-181.43	48.262	-3.76	less than 0.001

Extended stop indicators as matching variables

Note that, as explained in the report, we omitted the extended stop variable for language barrier from this analysis. Including this variable, which has a plausibly causal relationship with the race of the driver, would be inappropriate.

Table 35. Stop lengths results, including extended stop indicators as matching variables, Hispanic drivers

Number of Observations	14,821
Chi-Squared Statistic	1371.60

Probability Value	less than 0.001
Pseudo R-Squared	0.08
Log Likelihood	-7712.49

	Coefficient	Standard Error	z-score	Probability Value
Special assignment: DUI Task Force	0.54	0.179	3.03	0.002
Driver sex (male)	0.19	0.042	4.61	less than 0.001
X coordinate	-1.31	0.090	-14.46	less than 0.001
Y coordinate	-1.22	0.058	-21.15	less than 0.001
Stop time (8 am to 8 pm)	-0.23	0.042	-5.50	less than 0.001
Stop classification (civil traffic)	-0.25	0.134	-1.86	0.063
Non-Arizona plate	-0.43	0.071	-5.98	less than 0.001
Call sign category 1	0.14	0.232	0.61	0.544
Call sign category 2	0.36	0.235	1.52	0.128
Call sign category 3	0.03	0.275	0.10	0.921
Call sign category 5	-0.27	0.238	-1.12	0.262
Call sign category 6	0.78	0.463	1.69	0.091
Driver arrested	-0.30	0.135	-2.22	0.027
Driver or vehicle searched	0.88	0.161	5.48	less than 0.001
Extended stop indicator: DUI stop	0.17	0.128	1.33	0.182
Extended stop indicator: Technical issue	0.28	0.073	3.86	less than 0.001
Extended stop indicator: Training stop	-0.06	0.076	-0.84	0.401
Extended stop indicator: Vehicle towed	0.96	0.175	5.49	less than 0.001
Constant	-93.57	7.308	-12.80	less than 0.001

Variable	Sample	Hispanic Drivers	White Drivers	Difference	Standard Error	t-statistic
Stop Length	Unmatched	22.77	15.74	7.02	0.519	13.55
	ATT	22.77	20.97	1.79	1.092	1.64
	ATU	15.74	17.06	1.32	0.420	3.15
	ATE			1.44	0.504	2.86

Table 36. Stop lengths results, including extended stop indicators as matching variables, Black drivers

Number of Observations	12,280
Chi-Squared Statistic	420.16
Probability Value	less than 0.001

Pseudo R-Squared	0.05
Log Likelihood	-3770.94

	Coefficient	Standard Error	z-score	Probability Value
Special assignment: DUI Task Force	0.53	0.284	1.86	0.063
Driver sex (male)	0.15	0.065	2.35	0.019
X coordinate	-1.02	0.134	-7.62	less than 0.001
Y coordinate	-0.90	0.087	-10.32	less than 0.001
Stop time (8 am to 8 pm)	-0.29	0.065	-4.55	less than 0.001
Stop classification (civil traffic)	-0.17	0.207	-0.81	0.415
Non-Arizona plate	0.17	0.092	1.83	0.067
Call sign category 1	0.15	0.342	0.45	0.654
Call sign category 2	0.17	0.348	0.49	0.621
Call sign category 3	0.26	0.400	0.66	0.51
Call sign category 5	-0.54	0.354	-1.52	0.129
Call sign category 6	1.56	0.556	2.81	0.005
Driver arrested	0.10	0.217	0.48	0.629
Driver or vehicle searched	0.66	0.265	2.48	0.013
Extended stop indicator: DUI stop	0.15	0.208	0.7	0.484
Extended stop indicator: Technical issue	0.00	0.119	-0.02	0.985
Extended stop indicator: Training stop	0.13	0.110	1.18	0.239
Extended stop indicator: Vehicle towed	-0.30	0.309	-0.96	0.339
Constant	-68.69	11.263	-6.1	less than 0.001

Variable	Sample	Black Drivers	White Drivers	Difference	Standard Error	t-statistic
Stop Length	Unmatched	19.77	15.74	4.02	0.725	5.55
	ATT	19.77	18.28	1.48	1.162	1.28
	ATU	15.74	16.69	0.95	0.709	1.34
	ATE			1.00	0.703	1.43

Table 37. Stop lengths results, including extended stop indicators as matching variables, minority drivers

Number of Observations	16,663
Chi-Squared Statistic	1496.21
Probability Value	less than 0.001
Pseudo R-Squared	0.07

Log Likelihood

-9893.58

	Coefficient	Standard Error	z-score	Probability Value
Special assignment: DUI Task Force	0.51	0.159	3.21	0.001
Driver sex (male)	0.14	0.036	3.8	less than 0.001
X coordinate	-1.29	0.081	-15.94	less than 0.001
Y coordinate	-1.10	0.051	-21.55	less than 0.001
Stop time (8 am to 8 pm)	-0.21	0.037	-5.82	less than 0.001
Stop classification (civil traffic)	-0.19	0.118	-1.61	0.107
Non-Arizona plate	-0.19	0.058	-3.29	0.001
Call sign category 1	0.14	0.196	0.71	0.480
Call sign category 2	0.29	0.198	1.44	0.149
Call sign category 3	-0.02	0.235	-0.07	0.946
Call sign category 5	-0.32	0.201	-1.57	0.115
Call sign category 6	0.92	0.404	2.28	0.022
Driver arrested	-0.14	0.118	-1.19	0.234
Driver or vehicle searched	0.78	0.146	5.31	less than 0.001
Extended stop indicator: DUI stop	0.12	0.116	1.07	0.285
Extended stop indicator: Technical issue	0.21	0.065	3.16	0.002
Extended stop indicator: Training stop	-0.07	0.066	-1.12	0.262
Extended stop indicator: Vehicle towed	0.77	0.164	4.72	less than 0.001
Constant	-80.72	6.362	-12.69	less than 0.001

Variable	Sample	Minority Drivers	White Drivers	Difference	Standard Error	t-statistic
Stop Length	Unmatched	21.58	15.74	5.84	0.454	12.86
	ATT	21.58	20.91	0.67	0.865	0.77
	ATU	15.74	16.81	1.07	0.370	2.89
	ATE			0.93	0.464	2.01

Analysis of stops with and without extended stop indicators

Table 38. Stop lengths results, observations limited to extended stops, Hispanic drivers

Number of Observations	2,513
Chi-Squared Statistic	249.40
Probability Value	less than 0.001
Pseudo R-Squared	0.08

Log Likelihood

-1537.62

	Coefficient	Standard Error	z-score	Probability Value
Special assignment: DUI Task Force	1.08	0.427	2.54	0.011
Driver sex (male)	0.21	0.093	2.26	0.024
X coordinate	-1.37	0.192	-7.14	less than 0.001
Y coordinate	-1.15	0.131	-8.83	less than 0.001
Stop time (8 am to 8 pm)	-0.23	0.092	-2.5	0.013
Stop classification (civil traffic)	-0.34	0.233	-1.46	0.144
Non-Arizona plate	-0.39	0.144	-2.69	0.01
Call sign category 1	0.50	0.341	1.46	0.145
Call sign category 2	1.07	0.353	3.05	0.002
Call sign category 3	0.56	0.425	1.32	0.187
Call sign category 5	0.54	0.375	1.45	0.147
Call sign category 6	-0.10	1.306	-0.07	0.941
Driver arrested	-0.78	0.209	-3.72	less than 0.001
Driver or vehicle searched	1.48	0.182	8.18	less than 0.001
Constant	-84.11	14.941	-5.63	less than 0.001

Variable	Sample	Hispanic Drivers	White Drivers	Difference	Standard Error	t-statistic
Stop Length	Unmatched	46.21	32.73	13.48	2.317	5.82
	ATT	46.21	48.99	-2.78	4.347	0.64
	ATU	32.73	36.21	3.48	2.556	1.36
	ATE			1.13	2.744	0.41

Table 39. Stop lengths results, observations limited to non-extended stops, Hispanic drivers

Number of Observations	12,308
Chi-Squared Statistic	959.29
Probability Value	less than 0.001
Pseudo R-Squared	0.07
Log Likelihood	-6147.07

	Coefficient	Standard Error	z-score	Probability Value
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Special assignment: DUI Task Force	0.41	0.203	2	0.046
Driver sex (male)	0.18	0.047	3.87	less than 0.001
X coordinate	-1.33	0.103	-12.93	less than 0.001
Y coordinate	-1.19	0.065	-18.39	less than 0.001
Stop time (8 am to 8 pm)	-0.25	0.048	-5.17	less than 0.001
Stop classification (civil traffic)	-0.10	0.168	-0.6	0.547
Non-Arizona plate	-0.44	0.082	-5.3	less than 0.001
Call sign category 1	-0.03	0.314	-0.09	0.926
Call sign category 2	0.12	0.316	0.39	0.696
Call sign category 3	-0.21	0.364	-0.59	0.556
Call sign category 5	-0.44	0.317	-1.4	0.162
Call sign category 6	0.81	0.526	1.55	0.122
Driver arrested	0.03	0.175	0.15	0.884
Driver or vehicle searched	0.95	0.213	4.47	less than 0.001
Constant	-89.50	8.422	-10.63	less than 0.001

Variable	Sample	Hispanic Drivers	White Drivers	Difference	Standard Error	t-statistic
Stop Length	Unmatched	14.94	12.93	2.01	0.276	7.29
	ATT	14.94	13.94	1.00	0.487	2.06
	ATU	12.93	13.92	0.99	0.264	3.74
	ATE			0.99	0.276	3.59

Table 40. Stop lengths results, observations limited to extended stops, Black drivers

Number of Observations	1,803
Chi-Squared Statistic	70.28
Probability Value	less than 0.001
Pseudo R-Squared	0.05
Log Likelihood	-660.77

	Coefficient	Standard Error	z-score	Probability Value
Special assignment: DUI Task Force	1.20	0.682	1.76	0.079
Driver sex (male)	0.19	0.155	1.23	0.220
X coordinate	-1.34	0.301	-4.45	less than 0.001
Y coordinate	-0.96	0.210	-4.56	less than 0.001
Stop time (8 am to 8 pm)	-0.23	0.149	-1.55	0.122
Stop classification (civil traffic)	-0.31	0.347	-0.9	0.368

Non-Arizona plate	0.01	0.214	0.04	0.972
Call sign category 1	1.21	0.739	1.64	0.100
Call sign category 2	1.23	0.757	1.63	0.103
Call sign category 3	0.79	0.876	0.91	0.37
Call sign category 5	0.60	0.804	0.75	0.455
Call sign category 6	(omitted)			
Driver arrested	0.11	0.373	0.29	0.772
Driver or vehicle searched	0.63	0.345	1.83	0.07
Constant	-65.15	24.467	-2.66	0.008

Variable	Sample	Black Drivers	White Drivers	Difference	Standard Error	t-statistic
Stop Length	Unmatched	43.49	32.57	10.92	3.648	2.99
	ATT	43.49	41.34	2.15	5.464	0.39
	ATU	32.57	31.36	-1.21	3.445	0.35
	ATE			-0.77	3.401	0.23

Table 41. Stop lengths results, observations limited to non-extended stops, Black drivers

Number of Observations	10,475
Chi-Squared Statistic	341.44
Probability Value	less than 0.001
Pseudo R-Squared	0.05
Log Likelihood	-3104.14

	Coefficient	Standard Error	z-score	Probability Value
Special assignment: DUI Task Force	0.39	0.317	1.24	0.217
Driver sex (male)	0.15	0.072	2.03	0.042
X coordinate	-0.94	0.151	-6.25	less than 0.001
Y coordinate	-0.90	0.097	-9.28	less than 0.001
Stop time (8 am to 8 pm)	-0.30	0.072	-4.24	less than 0.001
Stop classification (civil traffic)	-0.08	0.262	-0.32	0.752
Non-Arizona plate	0.20	0.103	1.97	0.049
Call sign category 1	-0.41	0.392	-1.04	0.299
Call sign category 2	-0.39	0.397	-0.99	0.324
Call sign category 3	-0.17	0.454	-0.37	0.708
Call sign category 5	-1.12	0.401	-2.78	0.005
Call sign category 6	1.25	0.598	2.09	0.037

Driver arrested	0.16	0.273	0.57	0.567
Driver or vehicle searched	0.37	0.368	1.01	0.311
Constant	-70.38	12.730	-5.53	less than 0.001

Variable	Sample	Black Drivers	White Drivers	Difference	Standard Error	t-statistic
Stop Length	Unmatched	14.15	12.93	1.22	0.401	3.05
	ATT	14.15	13.59	0.56	0.524	1.07
	ATU	12.93	13.16	0.23	0.403	0.57
	ATE			0.26	0.394	0.66

Table 42. Stop lengths results, observations limited to extended stops, minority drivers

Number of Observations	2,857
Chi-Squared Statistic	278.62
Probability Value	less than 0.001
Pseudo R-Squared	0.07
Log Likelihood	-1826.77

	Coefficient	Standard Error	z-score	Probability Value
Special assignment: DUI Task Force	1.14	0.396	2.88	0.004
Driver sex (male)	0.18	0.084	2.15	0.032
X coordinate	-1.48	0.181	-8.2	less than 0.001
Y coordinate	-1.17	0.122	-9.6	less than 0.001
Stop time (8 am to 8 pm)	-0.20	0.083	-2.38	0.017
Stop classification (civil traffic)	-0.35	0.217	-1.62	0.106
Non-Arizona plate	-0.24	0.126	-1.89	0.059
Call sign category 1	0.60	0.307	1.97	0.049
Call sign category 2	1.05	0.319	3.29	0.001
Call sign category 3	0.46	0.390	1.17	0.243
Call sign category 5	0.47	0.341	1.39	0.165
Call sign category 6	-0.33	1.301	-0.25	0.8
Driver arrested	-0.68	0.195	-3.5	less than 0.001
Driver or vehicle searched	1.41	0.171	8.24	less than 0.001
Constant	-81.93	13.648	-6	less than 0.001

Variable	Sample	Minority Drivers	White Drivers	Difference	Standard Error	t-statistic
Stop Length	Unmatched	45.16	32.73	12.43	2.118	5.87
	ATT	45.16	44.97	0.19	3.544	0.05
	ATU	32.73	31.46	-1.27	2.003	0.63
	ATE			-0.61	2.378	0.26

Table 43. Stop lengths results, observations limited to non-extended stops, minority drivers

Number of Observations	13,806
Chi-Squared Statistic	1072.28
Probability Value	less than 0.001
Pseudo R-Squared	0.06
Log Likelihood	-8043.01

	Coefficient	Standard Error	z-score	Probability Value
Special assignment: DUI Task Force	0.36	0.178	2.04	0.042
Driver sex (male)	0.12	0.040	3.04	0.002
X coordinate	-1.29	0.092	-14.11	less than 0.001
Y coordinate	-1.06	0.057	-18.6	less than 0.001
Stop time (8 am to 8 pm)	-0.23	0.041	-5.52	less than 0.001
Stop classification (civil traffic)	-0.04	0.144	-0.29	0.775
Non-Arizona plate	-0.17	0.066	-2.67	0.008
Call sign category 1	-0.13	0.256	-0.52	0.601
Call sign category 2	-0.03	0.258	-0.11	0.912
Call sign category 3	-0.27	0.298	-0.91	0.363
Call sign category 5	-0.59	0.259	-2.27	0.024
Call sign category 6	0.86	0.453	1.89	0.058
Driver arrested	0.16	0.148	1.05	0.293
Driver or vehicle searched	0.70	0.196	3.58	less than 0.001
Constant	-75.38	7.230	-10.43	less than 0.001

Variable	Sample	Minority Drivers	White Drivers	Difference	Standard Error	t-statistic
Stop Length	Unmatched	14.56	12.93	1.63	0.235	6.94
	ATT	14.56	14.31	0.25	0.530	0.47

ATU	12.93	13.48	0.55	0.274	2.02
ATE			0.46	0.304	1.51

SUPPLEMENTAL APPENDIX 5: PROPENSITY SCORE MATCHING ALTERNATE SPECIFICATIONS TABLES OF RESULTS

This appendix includes the matching estimation step logistic regression results and the complete tables of the propensity score matching statistical testing results for all the alternate specification (nearest five neighbors and radius, and no replacement models) propensity score matching analysis. Within the alternate specifications, we also note the degree to which observations had to be dropped from the analysis because of insufficient matching observations. Observations had to be dropped largely for radius matching techniques and techniques, in which observations chosen as a match are not replaced into the matching pool.

Nearest neighbor matching, with replacement

Matching results

Table 44. Matching results for nearest neighbor matching, with replacement, Hispanic drivers, stop length

Observation	Matched	Not Matched	Total
White	9,486	0	9,486
Hispanic	2,822	0	2,822
Total	12,308	0	12,308

Table 45. Matching results, nearest neighbor matching, with replacement, Black drivers, stop length

Observation	Matched	Not Matched	Total
White	9,486	0	9,486
Black	989	0	989
Total	10,475	0	10,475

Table 46. Matching results for nearest neighbor matching, with replacement, minority drivers, stop length

Observation	Matched	Not Matched	Total
White	9,486	0	9,486
Minority	4,320	0	4,320
Total	13,806	0	13,806

Table 47. Matching results for nearest neighbor matching, with replacement, Hispanic drivers, booked arrests (comparison includes cite-and-release arrests)

Observation	Matched	Not Matched	Total
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White	493	0	493
Hispanic	273	0	273
Total	766	0	766

Table 48. Matching results, nearest neighbor matching, with replacement, Black drivers, booked arrests (comparison includes cite-and-release arrests)

Observation	Matched	Not Matched	Total
White	487	0	487
Black	86	0	86
Total	573	0	573

Table 49. Matching results for nearest neighbor matching, with replacement, minority drivers, booked arrests (comparison includes cite-and-release arrests)

Observation	Matched	Not Matched	Total
White	493	0	493
Minority	398	0	398
Total	891	0	891

Table 50. Matching results for nearest neighbor matching, with replacement, Hispanic drivers, all other outcomes

Observation	Matched	Not Matched	Total
White	11,057	0	11,057
Hispanic	3,764	0	3,764
Total	14,821	0	14,821

Table 51. Matching results, nearest neighbor matching, with replacement, Black drivers, all other outcomes

Observation	Matched	Not Matched	Total
White	11,057	0	11,057
Black	1,223	0	1,223
Total	12,280	0	12,280

Table 52. Matching results for nearest neighbor matching, with replacement, minority drivers, all other outcomes

Observation	Matched	Not Matched	Total
White	11,057	0	11,057
Minority	5,606	0	5,606

Total	16,663	0	16,663
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Stop length

Table 53. Stop length results, nearest neighbor matching with replacement, Hispanic drivers

Variable	Sample	Hispanic Drivers	White Drivers	Difference	Standard Error	t-statistic
Stop Length	Unmatched	14.94	12.93	2.01	0.276	7.29
	ATT	14.94	13.94	1.00	0.487	2.06
	ATU	12.93	13.92	0.99	0.264	3.74
	ATE			0.99	0.276	3.59

Table 54. Stop length results, nearest neighbor matching with replacement, Black drivers

Variable	Sample	Black Drivers	White Drivers	Difference	Standard Error	t-statistic
Stop Length	Unmatched	14.15	12.93	1.22	0.401	3.05
	ATT	14.15	13.59	0.56	0.524	1.07
	ATU	12.93	13.16	0.23	0.403	0.57
	ATE			0.26	0.394	0.66

Table 55. Stop length results, nearest neighbor matching with replacement, minority drivers

Variable	Sample	Minority Drivers	White Drivers	Difference	Standard Error	t-statistic
Stop Length	Unmatched	14.56	12.93	1.63	0.235	6.94
	ATT	14.56	14.31	0.25	0.530	0.47
	ATU	12.93	13.48	0.55	0.274	2.02
	ATE			0.46	0.304	1.51

Citations

Table 56. Citations results, nearest neighbor matching with replacement, Hispanic drivers

Variable	Sample	Hispanic Drivers	White Drivers	Difference	Standard Error	t-statistic
Stop Conclusion	Unmatched	0.52	0.56	-0.03	0.009	-3.72
	ATT	0.52	0.50	0.03	0.013	1.98
	ATU	0.56	0.58	0.03	0.013	2.01

ATE	0.03	0.012	2.24
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Table 57. Citations results, nearest neighbor matching with replacement, Black drivers

Variable	Sample	Black Drivers	White Drivers	Difference	Standard Error	t-statistic
Stop Conclusion	Unmatched	0.42	0.56	-0.14	0.015	-9.45
	ATT	0.42	0.47	-0.06	0.020	-2.82
	ATU	0.56	0.48	-0.07	0.022	-3.32
	ATE			-0.07	0.021	-3.43

Table 58. Citations results, nearest neighbor matching with replacement, minority drivers

Variable	Sample	Minority Drivers	White Drivers	Difference	Standard Error	t-statistic
Stop Conclusion	Unmatched	0.50	0.56	-0.06	0.008	-6.93
	ATT	0.50	0.49	0.01	0.011	1.31
	ATU	0.56	0.56	0.01	0.011	0.68
	ATE			0.01	0.010	1.02

Searches

Table 59. Searches results, nearest neighbor matching with replacement, Hispanic drivers

Variable	Sample	Hispanic Drivers	White Drivers	Difference	Standard Error	t-statistic
Search	Unmatched	0.01	0.00	0.01	0.002	5.85
	ATT	0.01	0.01	0.01	0.003	2.68
	ATU	0.00	0.01	0.01	0.002	2.80
	ATE			0.01	0.002	3.12

Table 60. Searches results, nearest neighbor matching with replacement, Black drivers

Variable	Sample	Black Drivers	White Drivers	Difference	Standard Error	t-statistic
Search	Unmatched	0.01	0.00	0.01	0.002	2.97
	ATT	0.01	0.01	0.00	0.004	0.3
	ATU	0.00	0.01	0.01	0.005	1.27
	ATE			0.01	0.004	1.24

Table 61. Searches results, nearest neighbor matching with replacement, minority drivers

Variable	Sample	Minority Drivers	White Drivers	Difference	Standard Error	t-statistic
Search	Unmatched	0.01	0.00	0.01	0.001	5.5
	ATT	0.01	0.00	0.01	0.002	3.59
	ATU	0.00	0.01	0.00	0.002	1.68
	ATE			0.00	0.002	2.64

Arrests

Table 62. Arrests results, nearest neighbor matching with replacement, Hispanic drivers

Variable	Sample	Hispanic Drivers	White Drivers	Difference	Standard Error	t-statistic
Arrest	Unmatched	0.07	0.04	0.03	0.004	6.65
	ATT	0.07	0.06	0.02	0.007	2.43
	ATU	0.04	0.06	0.01	0.006	1.88
	ATE			0.01	0.006	2.27

Table 63. Arrests results, nearest neighbor matching with replacement, Black drivers

Variable	Sample	Black Drivers	White Drivers	Difference	Standard Error	t-statistic
Arrest	Unmatched	0.07	0.04	0.03	0.006	4
	ATT	0.07	0.06	0.01	0.011	1.27
	ATU	0.04	0.06	0.01	0.009	1.23
	ATE			0.01	0.009	1.31

Table 64. Arrests results, nearest neighbor matching with replacement, minority drivers

Variable	Sample	Minority Drivers	White Drivers	Difference	Standard Error	t-statistic
Arrest	Unmatched	0.07	0.04	0.03	0.004	7.11
	ATT	0.07	0.06	0.01	0.006	2.53
	ATU	0.04	0.06	0.01	0.006	2.58
	ATE			0.01	0.005	2.94

Booked arrests (comparison includes all stops)

Table 65. Booked arrests (comparison includes all stops) results, nearest neighbor matching with replacement, Hispanic drivers

Variable	Sample	Hispanic Drivers	White Drivers	Difference	Standard Error	t-statistic
Arrest	Unmatched	0.01	0.01	0.01	0.002	4.26
	ATT	0.01	0.01	0.01	0.003	1.99
	ATU	0.01	0.01	0.00	0.002	2.12
	ATE			0.00	0.002	2.31

Table 66. Booked arrests (comparison includes all stops) results, nearest neighbor matching with replacement, Black drivers

Variable	Sample	Black Drivers	White Drivers	Difference	Standard Error	t-statistic
Arrest	Unmatched	0.01	0.01	0.01	0.002	3.21
	ATT	0.01	0.01	0.00	0.004	0.66
	ATU	0.01	0.01	0.01	0.005	1.04
	ATE			0.01	0.005	1.05

Table 67. Booked arrests (comparison includes all stops) results, nearest neighbor matching with replacement, minority drivers

Variable	Sample	Minority Drivers	White Drivers	Difference	Standard Error	t-statistic
Arrest	Unmatched	0.01	0.01	0.01	0.001	4.42
	ATT	0.01	0.01	0.00	0.002	1.99
	ATU	0.01	0.01	0.01	0.003	2.61
	ATE			0.01	0.003	2.73

Booked arrests (comparison includes cite-and-release arrests)

Table 68. Booked arrests (comparison includes cite-and-release arrests) results, nearest neighbor matching with replacement, Hispanic drivers

Variable	Sample	Hispanic Drivers	White Drivers	Difference	Standard Error	t-statistic
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Arrest	Unmatched	0.18	0.13	0.05	0.027	1.78
	ATT	0.18	0.19	-0.01	0.037	0.25
	ATU	0.13	0.15	0.02	0.035	0.43
	ATE			0.01	0.032	0.20

Table 69. Booked arrests (comparison includes cite-and-release arrests) results, nearest neighbor matching with replacement, Black drivers

Variable	Sample	Black Drivers	White Drivers	Difference	Standard Error	t-statistic
Arrest	Unmatched	0.20	0.13	0.06	0.041	1.57
	ATT	0.20	0.19	0.01	0.063	0.18
	ATU	0.13	0.25	0.12	0.055	2.13
	ATE			0.10	0.051	1.98

Table 70. Booked arrests (comparison includes cite-and-release arrests) results, nearest neighbor matching with replacement, minority drivers

Variable	Sample	Minority Drivers	White Drivers	Difference	Standard Error	t-statistic
Arrest	Unmatched	0.18	0.13	0.04	0.024	1.82
	ATT	0.18	0.15	0.03	0.035	0.79
	ATU	0.13	0.16	0.03	0.031	1.07
	ATE			0.03	0.028	1.08

Non-warrant arrests

Table 71. Non-warrant arrests results, nearest neighbor matching with replacement, Hispanic drivers

Variable	Sample	Hispanic Drivers	White Drivers	Difference	Standard Error	t-statistic
Arrest	Unmatched	0.05	0.03	0.02	0.003	5.43
	ATT	0.05	0.04	0.01	0.006	2.43
	ATU	0.03	0.04	0.01	0.005	1.55
	ATE			0.01	0.005	2.01

Table 72. Non-warrant arrests results, nearest neighbor matching with replacement, Black drivers

Variable	Sample	Black Drivers	White Drivers	Difference	Standard Error	t-statistic
Arrest	Unmatched	0.04	0.03	0.01	0.005	2.32
	ATT	0.04	0.04	0.00	0.008	0.47
	ATU	0.03	0.03	0.00	0.007	0.33
	ATE			0.00	0.006	0.37

Table 73. Non-warrant arrests results, nearest neighbor matching with replacement, minority drivers

Variable	Sample	Minority Drivers	White Drivers	Difference	Standard Error	t-statistic
Arrest	Unmatched	0.05	0.03	0.02	0.003	5.67
	ATT	0.05	0.04	0.01	0.005	2.26
	ATU	0.03	0.04	0.01	0.005	1.55
	ATE			0.01	0.004	2.07

Nearest five neighbors matching, with replacement

Matching results

Table 74. Matching results for nearest five neighbor matching, with replacement, Hispanic drivers, stop length

Observation	Matched	Not Matched	Total
White	9,486	0	9,486
Hispanic	2,822	0	2,822
Total	12,308	0	12,308

Table 75. Matching results for nearest five neighbor matching, with replacement, Black drivers, stop length

Observation	Matched	Not Matched	Total
White	9,486	0	9,486
Black	989	0	989
Total	10,475	0	10,475

Table 76. Matching results for nearest five neighbor matching, with replacement, minority drivers, stop length

Observation	Matched	Not Matched	Total
White	9,486	0	9,486
Minority	4,320	0	4,320
Total	13,806	0	13,806

Table 77. Matching results for nearest five neighbor matching, with replacement, Hispanic drivers, booked arrests (comparison includes cite-and-release arrests)

Observation	Matched	Not Matched	Total
White	493	0	493
Hispanic	273	0	273
Total	766	0	766

Table 78. Matching results, nearest five neighbor matching, with replacement, Black drivers, booked arrests (comparison includes cite-and-release arrests)

Observation	Matched	Not Matched	Total
White	487	0	487
Black	86	0	86
Total	573	0	573

Table 79. Matching results for nearest five neighbor matching, with replacement, minority drivers, booked arrests (comparison includes cite-and-release arrests)

Observation	Matched	Not Matched	Total
White	493	0	493
Minority	398	0	398
Total	891	0	891

Table 80. Matching results for nearest five neighbor matching, with replacement, Hispanic drivers, all other outcomes

Observation	Matched	Not Matched	Total
White	11,057	0	11,057
Hispanic	3,764	0	3,764
Total	14,821	0	14,821

Table 81. Matching results for nearest five neighbor matching, with replacement, Black drivers, all other outcomes

Observation	Matched	Not Matched	Total
White	11,057	0	11,057
Black	1,223	0	1,223
Total	12,280	0	12,280

Table 82. Matching results for nearest five neighbor matching, with replacement, minority drivers, all other outcomes

Observation	Matched	Not Matched	Total
White	11,057	0	11,057
Minority	5,606	0	5,606
Total	16,663	0	16,663

Stop length

Table 83. Stop length results, nearest five neighbor matching with replacement, Hispanic drivers

Variable	Sample	Hispanic Drivers	White Drivers	Difference	Standard Error	t-statistic
Stop Length	Unmatched	14.94	12.93	2.01	0.276	7.29
	ATT	14.94	13.83	1.11	0.421	2.64
	ATU	12.93	13.82	0.89	0.232	3.83
	ATE			0.94	0.254	3.72

Table 84. Stop length results, nearest five neighbor matching with replacement, Black drivers

Variable	Sample	Black Drivers	White Drivers	Difference	Standard Error	t-statistic
Stop Length	Unmatched	14.15	12.93	1.22	0.401	3.05
	ATT	14.15	14.03	0.12	0.499	0.25
	ATU	12.93	12.82	-0.10	0.287	-0.36
	ATE			-0.08	0.296	-0.28

Table 85. Stop length results, nearest five neighbor matching with replacement, minority drivers

Variable	Sample	Minority Drivers	White Drivers	Difference	Standard Error	t-statistic
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Stop Length	Unmatched	14.56	12.93	1.63	0.235	6.94
	ATT	14.56	14.03	0.53	0.355	1.48
	ATU	12.93	13.53	0.60	0.193	3.13
	ATE			0.58	0.229	2.53

Citations

Table 86. Citations results, nearest five neighbor matching with replacement, Hispanic drivers

Variable	Sample	Hispanic Drivers	White Drivers	Difference	Standard Error	t-statistic
Stop Conclusion	Unmatched	0.52	0.56	-0.03	0.009	-3.72
	ATT	0.52	0.49	0.03	0.011	3.15
	ATU	0.56	0.59	0.03	0.011	3.13
	ATE			0.03	0.010	3.34

Table 87. Citations results, nearest five neighbor matching with replacement, Black drivers

Variable	Sample	Black Drivers	White Drivers	Difference	Standard Error	t-statistic
Stop Conclusion	Unmatched	0.42	0.56	-0.14	0.015	-9.45
	ATT	0.42	0.48	-0.06	0.017	-3.64
	ATU	0.56	0.47	-0.08	0.019	-4.48
	ATE			-0.08	0.018	-4.53

Table 88. Citations results, nearest five neighbor matching with replacement, minority drivers

Variable	Sample	Minority Drivers	White Drivers	Difference	Standard Error	t-statistic
Stop Conclusion	Unmatched	0.50	0.56	-0.06	0.008	-6.93
	ATT	0.50	0.49	0.01	0.009	1.11
	ATU	0.56	0.57	0.01	0.009	1.2
	ATE			0.01	0.009	1.25

Searches

Table 89. Searches results, nearest five neighbor matching with replacement, Hispanic drivers

Variable	Sample	Hispanic Drivers	White Drivers	Difference	Standard Error	t-statistic
Search	Unmatched	0.01	0.00	0.01	0.002	5.85
	ATT	0.01	0.01	0.01	0.002	2.58
	ATU	0.00	0.01	0.01	0.002	2.87
	ATE			0.01	0.002	2.95

Table 90. Searches results, nearest five neighbor matching with replacement, Black drivers

Variable	Sample	Black Drivers	White Drivers	Difference	Standard Error	t-statistic
Search	Unmatched	0.01	0.00	0.01	0.002	2.97
	ATT	0.01	0.01	0.00	0.003	1.06
	ATU	0.00	0.01	0.01	0.004	1.84
	ATE			0.01	0.004	1.8

Table 91. Searches results, nearest five neighbor matching with replacement, minority drivers

Variable	Sample	Minority Drivers	White Drivers	Difference	Standard Error	t-statistic
Search	Unmatched	0.01	0.00	0.01	0.001	5.5
	ATT	0.01	0.01	0.01	0.002	3.45
	ATU	0.00	0.01	0.00	0.002	2.91
	ATE			0.01	0.002	3.32

Arrests

Table 92. Arrests results, nearest five neighbor matching with replacement, Hispanic drivers

Variable	Sample	Hispanic Drivers	White Drivers	Difference	Standard Error	t-statistic
Arrest	Unmatched	0.07	0.04	0.03	0.004	6.65
	ATT	0.07	0.06	0.02	0.005	2.86
	ATU	0.04	0.06	0.02	0.005	3.78

ATE	0.02	0.005	3.75
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Table 93. Arrests results, nearest five neighbor matching with replacement, Black drivers

Variable	Sample	Black Drivers	White Drivers	Difference	Standard Error	t-statistic
Arrest	Unmatched	0.07	0.04	0.03	0.006	4
	ATT	0.07	0.06	0.01	0.009	0.75
	ATU	0.04	0.05	0.01	0.008	1.13
	ATE			0.01	0.008	1.13

Table 94. Arrests results, nearest five neighbor matching with replacement, minority drivers

Variable	Sample	Minority Drivers	White Drivers	Difference	Standard Error	t-statistic
Arrest	Unmatched	0.07	0.04	0.03	0.004	7.11
	ATT	0.07	0.06	0.01	0.005	2.2
	ATU	0.04	0.06	0.01	0.004	3.43
	ATE			0.01	0.004	3.21

Booked arrests (comparison includes all stops)

Table 95. Booked arrests (comparison includes all stops) results, nearest five neighbor matching with replacement, Hispanic drivers

Variable	Sample	Hispanic Drivers	White Drivers	Difference	Standard Error	t-statistic
Arrest	Unmatched	0.01	0.01	0.01	0.002	4.26
	ATT	0.01	0.01	0.00	0.002	1.6
	ATU	0.01	0.01	0.00	0.002	2.29
	ATE			0.00	0.002	2.23

Table 96. Booked arrests (comparison includes all stops) results, nearest five neighbor matching with replacement, Black drivers

Variable	Sample	Black Drivers	White Drivers	Difference	Standard Error	t-statistic
	Unmatched	0.01	0.01	0.01	0.002	3.21

Arrest	ATT	0.01	0.01	0.00	0.004	0.9
	ATU	0.01	0.01	0.01	0.005	1.72
	ATE			0.01	0.005	1.7

Table 97. Booked arrests (comparison includes all stops) results, nearest five neighbor matching with replacement, minority drivers

Variable	Sample	Minority Drivers	White Drivers	Difference	Standard Error	t-statistic
Arrest	Unmatched	0.01	0.01	0.01	0.001	4.42
	ATT	0.01	0.01	0.00	0.002	2.11
	ATU	0.01	0.01	0.01	0.002	2.88
	ATE			0.01	0.002	2.8

Booked arrests (comparison includes cite-and-release arrests)

Table 98. Booked arrests (comparison includes cite-and-release arrests) results, nearest five neighbor matching with replacement, Hispanic drivers

Variable	Sample	Hispanic Drivers	White Drivers	Difference	Standard Error	t-statistic
Arrest	Unmatched	0.18	0.13	0.05	0.027	1.78
	ATT	0.18	0.16	0.02	0.032	0.56
	ATU	0.13	0.17	0.04	0.031	1.12
	ATE			0.03	0.030	0.99

Table 99. Booked arrests (comparison includes cite-and-release arrests) results, nearest five neighbor matching with replacement, Black drivers

Variable	Sample	Black Drivers	White Drivers	Difference	Standard Error	t-statistic
Arrest	Unmatched	0.20	0.13	0.06	0.041	1.57
	ATT	0.20	0.20	0.00	0.052	-0.06
	ATU	0.13	0.18	0.05	0.058	0.88
	ATE			0.04	0.055	0.79

Table 100. Booked arrests (comparison includes cite-and-release arrests) results, nearest five neighbor matching with replacement, minority drivers

Variable	Sample	Minority Drivers	White Drivers	Difference	Standard Error	t-statistic
Arrest	Unmatched	0.18	0.13	0.04	0.024	1.82
	ATT	0.18	0.17	0.00	0.031	0.04
	ATU	0.13	0.14	0.01	0.024	0.37
	ATE			0.01	0.026	0.21

Non-warrant arrests

Table 101. Non-warrant arrests results, nearest five neighbor matching with replacement, Hispanic drivers

Variable	Sample	Hispanic Drivers	White Drivers	Difference	Standard Error	t-statistic
Arrest	Unmatched	0.05	0.03	0.02	0.003	5.43
	ATT	0.05	0.04	0.01	0.005	2.45
	ATU	0.03	0.04	0.01	0.004	2.93
	ATE			0.01	0.004	2.97

Table 102. Non-warrant arrests results, nearest five neighbor matching with replacement, Black drivers

Variable	Sample	Black Drivers	White Drivers	Difference	Standard Error	t-statistic
Arrest	Unmatched	0.04	0.03	0.01	0.005	2.32
	ATT	0.04	0.04	0.00	0.007	0.15
	ATU	0.03	0.03	0.00	0.006	-0.42
	ATE			0.00	0.005	-0.36

Table 103. Non-warrant arrests results, nearest five neighbor matching with replacement, minority drivers

Variable	Sample	Minority Drivers	White Drivers	Difference	Standard Error	t-statistic
Arrest	Unmatched	0.05	0.03	0.02	0.003	5.67
	ATT	0.05	0.04	0.01	0.004	1.96
	ATU	0.03	0.04	0.01	0.003	2.01
	ATE			0.01	0.003	2.15

Radius matching, radius of 0.001, with replacement

Matching results

Table 104. Matching results for radius of 0.001 matching, with replacement, Hispanic drivers, stop length

Observation	Matched	Not Matched	Total
White	9,385	101	9,486
Hispanic	2,791	31	2,822
Total	12,176	132	12,308

Table 105. Matching results for radius of 0.001 matching, with replacement, Black drivers, stop length

Observation	Matched	Not Matched	Total
White	9,272	214	9,486
Black	981	8	989
Total	10,253	222	10,475

Table 106. Matching results for radius of 0.001 matching, with replacement, minority drivers, stop length

Observation	Matched	Not Matched	Total
White	9,450	36	9,486
Minority	4,293	27	4,320
Total	13,743	63	13,806

Table 107. Matching results for radius of 0.001 matching, with replacement, Hispanic drivers, booked arrests (comparison includes cite-and-release arrests)

Observation	Matched	Not Matched	Total
White	337	156	493
Hispanic	206	67	273
Total	543	223	766

Table 108. Matching results, radius of 0.001 matching, with replacement, Black drivers, booked arrests (comparison includes cite-and-release arrests)

Observation	Matched	Not Matched	Total
White	178	309	487
Black	67	19	86
Total	245	328	573

Table 109. Matching results for radius of 0.001 matching, with replacement, minority drivers, booked arrests (comparison includes cite-and-release arrests)

Observation	Matched	Not Matched	Total
White	358	135	493
Minority	287	111	398
Total	645	246	891

Table 110. Matching results for radius of 0.001 matching, with replacement, Hispanic drivers, all other outcomes

Observation	Matched	Not Matched	Total
White	10,970	87	11,057
Hispanic	3,739	25	3,764
Total	14,709	112	14,821

Table 111. Matching results for radius of 0.001 matching, with replacement, Black drivers, all other outcomes

Observation	Matched	Not Matched	Total
White	10,882	175	11,057
Black	1,221	2	1,223
Total	12,103	177	12,280

Table 112. Matching results for radius of 0.001 matching, with replacement, minority drivers, all other outcomes

Observation	Matched	Not Matched	Total
White	11,010	47	11,057
Minority	5,581	25	5,606
Total	16,591	72	16,663

Stop length

Table 113. Stop length results, radius 0.001 matching with replacement, Hispanic drivers

Variable	Sample	Hispanic Drivers	White Drivers	Difference	Standard Error	t-statistic
Stop Length	Unmatched	14.94	12.93	2.01	0.276	7.29
	ATT	14.82	13.79	1.03	0.570	1.81
	ATU	12.90	13.85	0.95	0.272	3.51

ATE	0.97	0.294	3.3
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Table 114. Stop length results, radius 0.001 matching with replacement, Black drivers

Variable	Sample	Black Drivers	White Drivers	Difference	Standard Error	t-statistic
Stop Length	Unmatched	14.15	12.93	1.22	0.401	3.05
	ATT	14.10	13.60	0.50	0.554	0.91
	ATU	12.89	13.10	0.21	0.365	0.57
	ATE			0.24	0.358	0.66

Table 115. Stop length results, radius 0.001 matching with replacement, minority drivers

Variable	Sample	Minority Drivers	White Drivers	Difference	Standard Error	t-statistic
Stop Length	Unmatched	14.56	12.93	1.63	0.235	6.94
	ATT	14.47	14.14	0.33	0.555	0.60
	ATU	12.90	13.48	0.57	0.242	2.36
	ATE			0.50	0.292	1.70

Citations

Table 116. Citations results, radius 0.001 matching with replacement, Hispanic drivers

Variable	Sample	Hispanic Drivers	White Drivers	Difference	Standard Error	t-statistic
Stop Conclusion	Unmatched	0.52	0.56	-0.03	0.009	-3.72
	ATT	0.52	0.50	0.03	0.014	1.86
	ATU	0.56	0.58	0.03	0.013	1.96
	ATE			0.03	0.012	2.17

Table 117. Citations results, radius 0.001 matching with replacement, Black drivers

Variable	Sample	Black Drivers	White Drivers	Difference	Standard Error	t-statistic
Stop Conclusion	Unmatched	0.42	0.56	-0.14	0.015	-9.45
	ATT	0.42	0.47	-0.06	0.021	-2.67
	ATU	0.56	0.49	-0.07	0.024	-3

ATE	-0.07	0.023	-3.12
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Table 118. Citations results, radius 0.001 matching with replacement, minority drivers

Variable	Sample	Minority Drivers	White Drivers	Difference	Standard Error	t-statistic
Stop Conclusion	Unmatched	0.50	0.56	-0.06	0.008	-6.93
	ATT	0.50	0.49	0.01	0.012	1.27
	ATU	0.56	0.56	0.01	0.011	0.75
	ATE			0.01	0.010	1.07

Searches

Table 119. Searches results, radius 0.001 matching with replacement, Hispanic drivers

Variable	Sample	Hispanic Drivers	White Drivers	Difference	Standard Error	t-statistic
Search	Unmatched	0.01	0.00	0.01	0.002	5.85
	ATT	0.01	0.01	0.01	0.003	2.78
	ATU	0.00	0.01	0.01	0.002	2.65
	ATE			0.01	0.002	2.97

Table 120. Searches results, radius 0.001 matching with replacement, Black drivers

Variable	Sample	Black Drivers	White Drivers	Difference	Standard Error	t-statistic
Search	Unmatched	0.01	0.00	0.01	0.002	2.97
	ATT	0.01	0.01	0.00	0.004	0.27
	ATU	0.00	0.01	0.01	0.005	1.22
	ATE			0.01	0.005	1.18

Table 121. Searches results, radius 0.001 matching with replacement, minority drivers

Variable	Sample	Minority Drivers	White Drivers	Difference	Standard Error	t-statistic
Search	Unmatched	0.01	0.00	0.01	0.001	5.5
	ATT	0.01	0.00	0.01	0.002	3.78
	ATU	0.00	0.01	0.00	0.002	1.68
	ATE			0.00	0.002	2.7

Arrests

Table 122. Arrests results, radius 0.001 matching with replacement, Hispanic drivers

Variable	Sample	Hispanic Drivers	White Drivers	Difference	Standard Error	t-statistic
Arrest	Unmatched	0.07	0.04	0.03	0.004	6.65
	ATT	0.07	0.06	0.02	0.007	2.42
	ATU	0.05	0.06	0.01	0.006	2.01
	ATE			0.01	0.005	2.39

Table 123. Arrests results, radius 0.001 matching with replacement, Black drivers

Variable	Sample	Black Drivers	White Drivers	Difference	Standard Error	t-statistic
Arrest	Unmatched	0.07	0.04	0.03	0.006	4
	ATT	0.07	0.06	0.01	0.011	1.28
	ATU	0.04	0.06	0.01	0.010	1.1
	ATE			0.01	0.009	1.18

Table 124. Arrests results, radius 0.001 matching with replacement, minority drivers

Variable	Sample	Minority Drivers	White Drivers	Difference	Standard Error	t-statistic
Arrest	Unmatched	0.07	0.04	0.03	0.004	7.11
	ATT	0.07	0.06	0.01	0.006	2.53
	ATU	0.04	0.06	0.01	0.005	2.78
	ATE			0.01	0.005	3.06

Booked arrests (comparison includes all stops)

Table 125. Booked arrests (comparison includes all stops) results, radius 0.001 matching with replacement, Hispanic drivers

Variable	Sample	Hispanic Drivers	White Drivers	Difference	Standard Error	t-statistic
Arrest	Unmatched	0.01	0.01	0.01	0.002	4.26
	ATT	0.01	0.01	0.01	0.003	1.93
	ATU	0.01	0.01	0.00	0.003	1.87

ATE	0.00	0.002	2.08
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Table 126. Booked arrests (comparison includes all stops) results, radius 0.001 matching with replacement, Black drivers

Variable	Sample	Black Drivers	White Drivers	Difference	Standard Error	t-statistic
Arrest	Unmatched	0.01	0.01	0.01	0.002	3.21
	ATT	0.01	0.01	0.00	0.005	0.59
	ATU	0.01	0.01	0.01	0.005	1.15
	ATE			0.01	0.005	1.15

Table 127. Booked arrests (comparison includes all stops) results, radius 0.001 matching with replacement, minority drivers

Variable	Sample	Minority Drivers	White Drivers	Difference	Standard Error	t-statistic
Arrest	Unmatched	0.01	0.01	0.01	0.001	4.42
	ATT	0.01	0.01	0.00	0.002	1.92
	ATU	0.01	0.01	0.01	0.003	3.14
	ATE			0.01	0.002	3.09

Booked arrests (comparison includes cite-and-release arrests)

Table 128. Booked arrests (comparison includes cite-and-release arrests) results, radius 0.001 matching with replacement, Hispanic drivers

Variable	Sample	Hispanic Drivers	White Drivers	Difference	Standard Error	t-statistic
Arrest	Unmatched	0.18	0.13	0.05	0.027	1.78
	ATT	0.18	0.14	0.04	0.046	0.79
	ATU	0.12	0.16	0.04	0.050	0.75
	ATE			0.04	0.044	0.84

Table 129. Booked arrests (comparison includes cite-and-release arrests) results, radius 0.001 matching with replacement, Black drivers

Variable	Sample	Black Drivers	White Drivers	Difference	Standard Error	t-statistic
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Arrest	Unmatched	0.20	0.13	0.06	0.041	1.57
	ATT	0.18	0.18	0.00	0.080	0
	ATU	0.14	0.25	0.11	0.094	1.2
	ATE			0.08	0.083	0.99

Table 130. Booked arrests (comparison includes cite-and-release arrests) results, radius 0.001 matching with replacement, minority drivers

Variable	Sample	Minority Drivers	White Drivers	Difference	Standard Error	t-statistic
Arrest	Unmatched	0.18	0.13	0.04	0.024	1.82
	ATT	0.18	0.12	0.06	0.043	1.49
	ATU	0.13	0.20	0.07	0.041	1.62
	ATE			0.07	0.038	1.74

Non-warrant arrests

Table 131. Non-warrant arrests results, radius 0.001 matching with replacement, Hispanic drivers

Variable	Sample	Hispanic Drivers	White Drivers	Difference	Standard Error	t-statistic
Arrest	Unmatched	0.05	0.03	0.02	0.003	5.43
	ATT	0.05	0.04	0.01	0.006	2.51
	ATU	0.03	0.04	0.01	0.005	1.65
	ATE			0.01	0.004	2.13

Table 132. Non-warrant arrests results, radius 0.001 matching with replacement, Black drivers

Variable	Sample	Black Drivers	White Drivers	Difference	Standard Error	t-statistic
Arrest	Unmatched	0.04	0.03	0.01	0.005	2.32
	ATT	0.04	0.04	0.00	0.008	0.46
	ATU	0.03	0.03	0.00	0.007	0.25
	ATE			0.00	0.007	0.29

Table 133. Non-warrant arrests results, radius 0.001 matching with replacement, minority drivers

Variable	Sample	Minority Drivers	White Drivers	Difference	Standard Error	t-statistic
Arrest	Unmatched	0.05	0.03	0.02	0.003	5.67
	ATT	0.05	0.04	0.01	0.005	2.26
	ATU	0.03	0.04	0.01	0.004	1.78
	ATE			0.01	0.004	2.23

Radius matching, radius of 0.01, with replacement

Matching results

Table 134. Matching results for radius of 0.01 matching, with replacement, Hispanic drivers, stop length

Observation	Matched	Not Matched	Total
White	9,485	1	9,486
Hispanic	2,818	4	2,822
Total	12,303	5	12,308

Table 135. Matching results for radius of 0.01 matching, with replacement, Black drivers, stop length

Observation	Matched	Not Matched	Total
White	9,482	4	9,486
Black	988	1	989
Total	10,470	5	10,475

Table 136. Matching results for radius of 0.01 matching, with replacement, minority drivers, stop length

Observation	Matched	Not Matched	Total
White	9,486	0	9,486
Minority	4,318	2	4,320
Total	13,804	2	13,806

Table 137. Matching results for radius of 0.01 matching, with replacement, Hispanic drivers, booked arrests (comparison includes cite-and-release arrests)

Observation	Matched	Not Matched	Total
White	491	2	493
Hispanic	271	2	273

Total	762	4	766
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Table 138. Matching results, radius of 0.01 matching, with replacement, Black drivers, booked arrests (comparison includes cite-and-release arrests)

Observation	Matched	Not Matched	Total
White	472	15	487
Black	84	2	86
Total	556	17	573

Table 139. Matching results for radius of 0.01 matching, with replacement, minority drivers, booked arrests (comparison includes cite-and-release arrests)

Observation	Matched	Not Matched	Total
White	493	0	493
Minority	394	4	398
Total	887	4	891

Table 140. Matching results for radius of 0.01 matching, with replacement, Hispanic drivers, all other outcomes

Observation	Matched	Not Matched	Total
White	11,057	0	11,057
Hispanic	3,764	0	3,764
Total	14,821	0	14,821

Table 141. Matching results for radius of 0.01 matching, with replacement, Black drivers, all other outcomes

Observation	Matched	Not Matched	Total
White	11,051	6	11,057
Black	1,223	0	1,223
Total	12,274	6	12,280

Table 142. Matching results for radius of 0.01 matching, with replacement, minority drivers, all other outcomes

Observation	Matched	Not Matched	Total
White	11,057	0	11,057
Minority	5,606	0	5,606
Total	16,663	6	16,663

Stop length

Table 143. Stop length results, radius 0.01 matching with replacement, Hispanic drivers

Variable	Sample	Hispanic Drivers	White Drivers	Difference	Standard Error	t-statistic
Stop Length	Unmatched	14.94	12.93	2.01	0.276	7.29
	ATT	14.83	13.77	1.06	0.477	2.22
	ATU	12.92	13.89	0.97	0.269	3.62
	ATE			0.99	0.279	3.56

Table 144. Stop length results, radius 0.01 matching with replacement, Black drivers

Variable	Sample	Black Drivers	White Drivers	Difference	Standard Error	t-statistic
Stop Length	Unmatched	14.15	12.93	1.22	0.401	3.05
	ATT	14.14	13.59	0.55	0.551	1
	ATU	12.93	13.16	0.23	0.358	0.64
	ATE			0.26	0.351	0.74

Table 145. Stop length results, radius 0.01 matching with replacement, minority drivers

Variable	Sample	Minority Drivers	White Drivers	Difference	Standard Error	t-statistic
Stop Length	Unmatched	14.56	12.93	1.63	0.235	6.94
	ATT	14.54	14.25	0.28	0.552	0.52
	ATU	12.93	13.48	0.55	0.224	2.47
	ATE			0.47	0.280	1.68

Citations

Table 146. Citations results, radius 0.01 matching with replacement, Hispanic drivers

Variable	Sample	Hispanic Drivers	White Drivers	Difference	Standard Error	t-statistic
Stop Conclusion	Unmatched	0.52	0.56	-0.03	0.009	-3.72
	ATT	0.52	0.50	0.03	0.013	1.93
	ATU	0.56	0.58	0.03	0.013	2.07
	ATE			0.03	0.011	2.28

Table 147. Citations results, radius 0.01 matching with replacement, Black drivers

Variable	Sample	Black Drivers	White Drivers	Difference	Standard Error	t-statistic
Stop Conclusion	Unmatched	0.42	0.56	-0.14	0.015	-9.45
	ATT	0.42	0.47	-0.06	0.020	-2.82
	ATU	0.56	0.48	-0.07	0.022	-3.44
	ATE			-0.07	0.020	-3.56

Table 148. Citations results, radius 0.01 matching with replacement, minority drivers

Variable	Sample	Minority Drivers	White Drivers	Difference	Standard Error	t-statistic
Stop Conclusion	Unmatched	0.50	0.56	-0.06	0.008	-6.93
	ATT	0.50	0.49	0.01	0.012	1.26
	ATU	0.56	0.56	0.01	0.011	0.68
	ATE			0.01	0.010	1.01

Searches

Table 149. Searches results, radius 0.01 matching with replacement, Hispanic drivers

Variable	Sample	Hispanic Drivers	White Drivers	Difference	Standard Error	t-statistic
Search	Unmatched	0.01	0.00	0.01	0.002	5.85
	ATT	0.01	0.01	0.01	0.003	2.9
	ATU	0.00	0.01	0.01	0.002	2.65
	ATE			0.01	0.002	3

Table 150. Searches results, radius 0.01 matching with replacement, Black drivers

Variable	Sample	Black Drivers	White Drivers	Difference	Standard Error	t-statistic
Search	Unmatched	0.01	0.00	0.01	0.002	2.97
	ATT	0.01	0.01	0.00	0.004	0.27
	ATU	0.00	0.01	0.01	0.005	1.22
	ATE			0.01	0.004	1.19

Table 151. Searches results, radius 0.01 matching with replacement, minority drivers

Variable	Sample	Minority Drivers	White Drivers	Difference	Standard Error	t-statistic
Search	Unmatched	0.01	0.00	0.01	0.001	5.5
	ATT	0.01	0.00	0.01	0.002	3.79
	ATU	0.00	0.01	0.00	0.002	1.68
	ATE			0.00	0.002	2.7

Arrests

Table 152. Arrests results, radius 0.01 matching with replacement, Hispanic drivers

Variable	Sample	Hispanic Drivers	White Drivers	Difference	Standard Error	t-statistic
Arrest	Unmatched	0.07	0.04	0.03	0.004	6.65
	ATT	0.07	0.06	0.02	0.007	2.46
	ATU	0.04	0.06	0.01	0.006	2.1
	ATE			0.01	0.005	2.47

Table 153. Arrests results, radius 0.01 matching with replacement, Black drivers

Variable	Sample	Black Drivers	White Drivers	Difference	Standard Error	t-statistic
Arrest	Unmatched	0.07	0.04	0.03	0.006	4
	ATT	0.07	0.06	0.01	0.010	1.29
	ATU	0.04	0.06	0.01	0.009	1.2
	ATE			0.01	0.009	1.28

Table 154. Arrests results, radius 0.01 matching with replacement, minority drivers

Variable	Sample	Minority Drivers	White Drivers	Difference	Standard Error	t-statistic
Arrest	Unmatched	0.07	0.04	0.03	0.004	7.11
	ATT	0.07	0.06	0.01	0.006	2.53
	ATU	0.04	0.06	0.01	0.005	2.8
	ATE			0.01	0.005	3.08

Booked arrests (comparison includes all stops)

Table 155. Booked arrests (comparison includes all stops) results, radius of 0.01 matching with replacement, Hispanic drivers

Variable	Sample	Hispanic Drivers	White Drivers	Difference	Standard Error	t-statistic
Arrest	Unmatched	0.01	0.01	0.01	0.002	4.26
	ATT	0.01	0.01	0.01	0.003	1.95
	ATU	0.01	0.01	0.00	0.003	1.87
	ATE			0.00	0.002	2.09

Table 156. Booked arrests (comparison includes all stops) results, radius of 0.01 matching with replacement, Black drivers

Variable	Sample	Black Drivers	White Drivers	Difference	Standard Error	t-statistic
Arrest	Unmatched	0.01	0.01	0.01	0.002	3.21
	ATT	0.01	0.01	0.00	0.005	0.6
	ATU	0.01	0.01	0.01	0.005	1.19
	ATE			0.01	0.004	1.18

Table 157. Booked arrests (comparison includes all stops) results, radius of 0.01 matching with replacement, minority drivers

Variable	Sample	Minority Drivers	White Drivers	Difference	Standard Error	t-statistic
Arrest	Unmatched	0.01	0.01	0.01	0.001	4.42
	ATT	0.01	0.01	0.00	0.002	1.92
	ATU	0.01	0.01	0.01	0.003	3.17
	ATE			0.01	0.002	3.11

Booked arrests (comparison includes cite-and-release arrests)

Table 158. Booked arrests (comparison includes cite-and-release arrests) results, radius of 0.01 matching with replacement, Hispanic drivers

Variable	Sample	Hispanic Drivers	White Drivers	Difference	Standard Error	t-statistic
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Drivers						
Arrest	Unmatched	0.18	0.13	0.05	0.027	1.78
	ATT	0.18	0.18	0.00	0.038	0.05
	ATU	0.13	0.15	0.02	0.036	0.48
	ATE			0.01	0.033	0.32

Table 159. Booked arrests (comparison includes cite-and-release arrests) results, radius of 0.01 matching with replacement, Black drivers

Variable	Sample	Black Drivers	White Drivers	Difference	Standard Error	t-statistic
Arrest	Unmatched	0.20	0.13	0.06	0.041	1.57
	ATT	0.18	0.19	-0.01	0.071	0.17
	ATU	0.14	0.26	0.12	0.071	1.7
	ATE			0.10	0.065	1.54

Table 160. Booked arrests (comparison includes cite-and-release arrests) results, radius of 0.01 matching with replacement, minority drivers

Variable	Sample	Minority Drivers	White Drivers	Difference	Standard Error	t-statistic
Arrest	Unmatched	0.18	0.13	0.04	0.024	1.82
	ATT	0.17	0.14	0.03	0.036	0.91
	ATU	0.13	0.16	0.03	0.033	1
	ATE			0.03	0.030	1.1

Non-warrant arrests

Table 161. Non-warrant arrests results, radius of 0.01 matching with replacement, Hispanic drivers

Variable	Sample	Hispanic Drivers	White Drivers	Difference	Standard Error	t-statistic
Arrest	Unmatched	0.05	0.03	0.02	0.003	5.43
	ATT	0.05	0.04	0.01	0.006	2.5
	ATU	0.03	0.04	0.01	0.005	1.71
	ATE			0.01	0.004	2.17

Table 162. Non-warrant arrests results, radius of 0.01 matching with replacement, Black drivers

Variable	Sample	Black Drivers	White Drivers	Difference	Standard Error	t-statistic
Arrest	Unmatched	0.04	0.03	0.01	0.005	2.32
	ATT	0.04	0.04	0.00	0.008	0.47
	ATU	0.03	0.03	0.00	0.007	0.34
	ATE			0.00	0.006	0.37

Table 163. Non-warrant arrests results, radius of 0.01 matching with replacement, minority drivers

Variable	Sample	Minority Drivers	White Drivers	Difference	Standard Error	t-statistic
Arrest	Unmatched	0.05	0.03	0.02	0.003	5.67
	ATT	0.05	0.04	0.01	0.005	2.31
	ATU	0.03	0.04	0.01	0.004	1.8
	ATE			0.01	0.004	2.27

Nearest neighbor matching, without replacement

Matching results

Table 164. Matching results for nearest neighbor matching, without replacement, Hispanic drivers, stop length

Observation	Matched	Not Matched	Total
White	2,615	6,871	9,486
Hispanic	2,822	0	2,822
Total	5,437	6,871	12,308

Table 165. Matching results for nearest neighbor matching, without replacement, Black drivers, stop length

Observation	Matched	Not Matched	Total
White	959	8,527	9,486
Black	989	0	989
Total	1,948	8,527	10,475

Table 166. Matching results for nearest neighbor matching, without replacement, minority drivers, stop length

Observation	Matched	Not Matched	Total
White	3,969	5,517	9,486
Minority	4,320	0	4,320
Total	8,289	5,517	13,806

Table 167. Matching results for nearest neighbor matching, without replacement, Hispanic drivers, booked arrests (comparison includes cite-and-release arrests)

Observation	Matched	Not Matched	Total
White	269	224	493
Hispanic	273	0	273
Total	542	224	766

Table 168. Matching results, nearest neighbor matching, without replacement, Black drivers, booked arrests (comparison includes cite-and-release arrests)

Observation	Matched	Not Matched	Total
White	86	401	487
Black	86	0	86
Total	172	401	573

Table 169. Matching results for nearest neighbor matching, without replacement, minority drivers, booked arrests (comparison includes cite-and-release arrests)

Observation	Matched	Not Matched	Total
White	390	103	493
Minority	398	0	398
Total	788	103	891

Table 170. Matching results for nearest neighbor matching, without replacement, Hispanic drivers, all other outcomes

Observation	Matched	Not Matched	Total
White	3,444	7,613	11,057
Hispanic	3,764	0	3,764
Total	7,208	7,613	14,821

Table 171. Matching results for nearest neighbor matching, without replacement, Black drivers, all other outcomes

Observation	Matched	Not Matched	Total
White	1,181	9,876	11,057
Black	1,223	0	1,123
Total	2,404	9,876	12,280

Table 172. Matching results for nearest neighbor matching, without replacement, minority drivers, all other outcomes

Observation	Matched	Not Matched	Total
White	5,079	5,978	11,057
Minority	5,606	0	5,606
Total	10,685	5,978	16,663

Stop length

Table 173. Stop length results, nearest neighbor matching without replacement, Hispanic drivers

Variable	Sample	Hispanic Drivers	White Drivers	Difference	Standard Error	t-statistic
Stop Length	Unmatched	14.94	12.93	2.01	0.276	7.29
	ATT	14.94	14.05	0.89	0.295	3.01
	ATU	11.96	15.08	3.12	0.341	9.15
	ATE			1.96	0.310	6.32

Table 174. Stop length results, nearest neighbor matching without replacement, Black drivers

Variable	Sample	Black Drivers	White Drivers	Difference	Standard Error	t-statistic
Stop Length	Unmatched	14.15	12.93	1.22	0.401	3.05
	ATT	14.15	13.49	0.66	0.426	1.56
	ATU	10.99	14.17	3.19	0.454	7.02
	ATE			1.90	0.435	4.38

Table 175. Stop length results, nearest neighbor matching without replacement, minority drivers

Variable	Sample	Minority Drivers	White Drivers	Difference	Standard Error	t-statistic
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Stop Length	Unmatched	14.56	12.93	1.63	0.235	6.94
	ATT	14.56	13.76	0.79	0.229	3.47
	ATU	11.67	14.71	3.03	0.247	12.30
	ATE			1.87	0.233	8.03

Citations

Table 176. Citations results, nearest neighbor matching without replacement, Hispanic drivers

Variable	Sample	Hispanic Drivers	White Drivers	Difference	Standard Error	t-statistic
Stop Conclusion	Unmatched	0.52	0.56	-0.03	0.009	-3.72
	ATT	0.52	0.49	0.04	0.008	4.29
	ATU	0.74	0.52	-0.22	0.011	-19.49
	ATE			-0.08	0.009	-9.25

Table 177. Citations results, nearest neighbor matching without replacement, Black drivers

Variable	Sample	Black Drivers	White Drivers	Difference	Standard Error	t-statistic
Stop Conclusion	Unmatched	0.42	0.56	-0.14	0.015	-9.45
	ATT	0.42	0.47	-0.06	0.014	-4.07
	ATU	0.86	0.42	-0.44	0.017	-25.87
	ATE			-0.24	0.015	-16.82

Table 178. Citations results, nearest neighbor matching without replacement, minority drivers

Variable	Sample	Minority Drivers	White Drivers	Difference	Standard Error	t-statistic
Stop Conclusion	Unmatched	0.50	0.56	-0.06	0.008	-6.93
	ATT	0.50	0.49	0.01	0.007	1.04
	ATU	0.68	0.50	-0.17	0.009	-19.08
	ATE			-0.08	0.008	-10.44

Searches

Table 179. Searches results, nearest neighbor matching without replacement, Hispanic drivers

Variable	Sample	Hispanic Drivers	White Drivers	Difference	Standard Error	t-statistic
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Search	Unmatched	0.01	0.00	0.01	0.002	5.85
	ATT	0.01	0.01	0.01	0.002	3.15
	ATU	0.00	0.01	0.01	0.002	7.02
	ATE			0.01	0.002	5.07

Table 180. Searches results, nearest neighbor matching without replacement, Black drivers

Variable	Sample	Black Drivers	White Drivers	Difference	Standard Error	t-statistic
Search	Unmatched	0.01	0.00	0.01	0.002	2.97
	ATT	0.01	0.01	0.00	0.003	0.98
	ATU	0.00	0.01	0.01	0.003	3.61
	ATE			0.01	0.003	2.29

Table 181. Searches results, nearest neighbor matching without replacement, minority drivers

Variable	Sample	Minority Drivers	White Drivers	Difference	Standard Error	t-statistic
Search	Unmatched	0.01	0.00	0.01	0.001	5.5
	ATT	0.01	0.01	0.01	0.001	3.98
	ATU	0.00	0.01	0.01	0.002	7.73
	ATE			0.01	0.001	5.89

Arrests

Table 182. Arrests results, nearest neighbor matching without replacement, Hispanic drivers

Variable	Sample	Hispanic Drivers	White Drivers	Difference	Standard Error	t-statistic
Arrest	Unmatched	0.07	0.04	0.03	0.004	6.65
	ATT	0.07	0.06	0.01	0.004	3.52
	ATU	0.02	0.07	0.05	0.005	10.88
	ATE			0.03	0.004	7.59

Table 183. Arrests results, nearest neighbor matching without replacement, Black drivers

Variable	Sample	Black Drivers	White Drivers	Difference	Standard Error	t-statistic
	Unmatched	0.07	0.04	0.03	0.006	4

Arrest	ATT	0.07	0.07	0.00	0.007	0.44
	ATU	0.01	0.07	0.06	0.008	7.88
	ATE			0.03	0.007	4.36

Table 184. Arrests results, nearest neighbor matching without replacement, minority drivers

Variable	Sample	Minority Drivers	White Drivers	Difference	Standard Error	t-statistic
Arrest	Unmatched	0.07	0.04	0.03	0.004	7.11
	ATT	0.07	0.06	0.01	0.004	4.12
	ATU	0.02	0.07	0.05	0.004	12.38
	ATE			0.03	0.004	8.62

Booked arrests (comparison includes all stops)

Table 185. Booked arrests (comparison includes all stops) results, nearest neighbor matching without replacement, Hispanic drivers

Variable	Sample	Hispanic Drivers	White Drivers	Difference	Standard Error	t-statistic
Arrest	Unmatched	0.01	0.01	0.01	0.002	4.26
	ATT	0.01	0.01	0.01	0.002	3.13
	ATU	0.00	0.01	0.01	0.002	5.33
	ATE			0.01	0.002	4.38

Table 186. Booked arrests (comparison includes all stops) results, nearest neighbor matching without replacement, Black drivers

Variable	Sample	Black Drivers	White Drivers	Difference	Standard Error	t-statistic
Arrest	Unmatched	0.01	0.01	0.01	0.002	3.21
	ATT	0.01	0.01	0.00	0.003	1.04
	ATU	0.00	0.01	0.01	0.004	2.97
	ATE			0.01	0.003	2.11

Table 187. Booked arrests (comparison includes all stops) results, nearest neighbor matching without replacement, minority drivers

Variable	Sample	Minority Drivers	White Drivers	Difference	Standard Error	t-statistic
Arrest	Unmatched	0.01	0.01	0.01	0.001	4.42
	ATT	0.01	0.01	0.01	0.002	3.46
	ATU	0.00	0.01	0.01	0.002	5.76
	ATE			0.01	0.002	4.74

Booked arrests (comparison includes cite-and-release arrests)

Table 188. Booked arrests (comparison includes cite-and-release arrests) results, nearest neighbor matching without replacement, Hispanic drivers

Variable	Sample	Hispanic Drivers	White Drivers	Difference	Standard Error	t-statistic
Arrest	Unmatched	0.18	0.13	0.05	0.027	1.78
	ATT	0.18	0.18	0.00	0.025	0
	ATU	0.05	0.18	0.13	0.027	4.77
	ATE			0.07	0.026	2.54

Table 189. Booked arrests (comparison includes cite-and-release arrests) results, nearest neighbor matching without replacement, Black drivers

Variable	Sample	Black Drivers	White Drivers	Difference	Standard Error	t-statistic
Arrest	Unmatched	0.20	0.13	0.06	0.041	1.57
	ATT	0.20	0.14	0.06	0.038	1.54
	ATU	0.02	0.20	0.17	0.039	4.42
	ATE			0.12	0.038	3.05

Table 190. Booked arrests (comparison includes cite-and-release arrests) results, nearest neighbor matching without replacement, minority drivers

Variable	Sample	Minority Drivers	White Drivers	Difference	Standard Error	t-statistic
Arrest	Unmatched	0.18	0.13	0.04	0.024	1.82
	ATT	0.18	0.15	0.03	0.023	1.2

	ATU	0.09	0.17	0.08	0.024	3.59
	ATE			0.06	0.023	2.41

Non-warrant arrests

Table 191. Non-warrant arrests results, nearest neighbor matching without replacement, Hispanic drivers

Variable	Sample	Hispanic Drivers	White Drivers	Difference	Standard Error	t-statistic
Arrest	Unmatched	0.05	0.03	0.02	0.003	5.43
	ATT	0.05	0.04	0.01	0.004	2.53
	ATU	0.02	0.05	0.04	0.004	8.38
	ATE			0.02	0.004	5.77

Table 192. Non-warrant arrests results, nearest neighbor matching without replacement, Black drivers

Variable	Sample	Black Drivers	White Drivers	Difference	Standard Error	t-statistic
Arrest	Unmatched	0.04	0.03	0.01	0.005	2.32
	ATT	0.04	0.04	0.00	0.006	-0.41
	ATU	0.01	0.04	0.04	0.006	6.32
	ATE			0.02	0.006	3.08

Table 193. Non-warrant arrests results, nearest neighbor matching without replacement, minority drivers

Variable	Sample	Minority Drivers	White Drivers	Difference	Standard Error	t-statistic
Arrest	Unmatched	0.05	0.03	0.02	0.003	5.67
	ATT	0.05	0.04	0.01	0.003	3.14
	ATU	0.02	0.05	0.03	0.003	9.8
	ATE			0.02	0.003	6.77

SUPPLEMENTAL APPENDIX 6: PROPENSITY SCORE MATCHING COMMON SUPPORT AND BALANCE TESTING RESULTS

This appendix includes the results from the common support and balance testing for all propensity score analyses. Propensity score matching analysis requires sufficient balance and support in the data for valid estimates. This means that the distribution of the matches and the overlap of matches in the condition of interest with those in the other conditions should show support and balance. CNA ran standard post hoc tests to evaluate balance and support, namely comparisons of matching variables within and out of the condition of interest to evaluate balance and tabulation of whether observations are on or off support by condition for common support. We also include standard common support histograms for easy visual comparison.

In propensity score matching analysis, we assume common support for valid estimation. *Common support* means that all observations contain a positive probability of being in the condition of interest or not, based on the probability score (p-score) (Apel & Sweeten 2010; Heinrich, Maffioli, & Vázquez 2010; Khandker, Koolwal, & Samad 2010; Gertler et al. 2011; Austin 2011). *Balance* evaluates the effectiveness of the matching procedure in reducing observable differences between observations within and out of the condition of interest (Apel & Sweeten 2010; Heinrich, Maffioli, & Vázquez 2010; Khandker, Koolwal, & Samad 2010; Gertler et al. 2011; Austin 2011). After matching takes place, the differences between observations in the condition of interest and their matches on the observable characteristics used for matching should be minimal.

Analytical techniques such as trimming and alternate model specifications can be used when common support and balance are lacking. Since our findings meet common support and balance assumptions for all baseline analyses and most alternate specifications, we did not implement any adjustment procedures.

Note that common support findings are dependent only on the matching stage logistic regression results and therefore are the same for all outcomes using the same matching variables (stop conclusion, arrests, and searches). Note also that in some models, the DUI Task Force indicator variable or certain call sign category indicators are dropped due to perfect correlation with the outcome; they are therefore omitted in the related balance tables below.

Hispanic drivers

Common support

Common support is present for all analyses of Hispanic drivers for all analyzed outcomes.

Table 194. Common support results, Hispanic drivers, stop length

Observation	On support	Off support	Total
White	9,486	0	9,486
Hispanic	2,822	0	2,822

Total	12,308	0	12,308
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Figure 1. Common support tabulation, Hispanic drivers, stop length

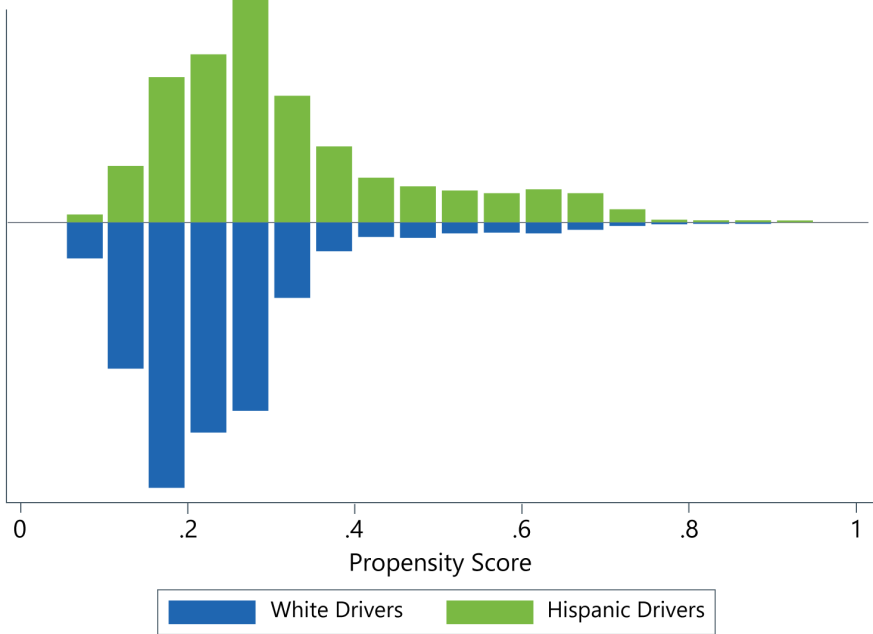


Table 195. Common support results, Hispanic drivers, booked arrests (comparison includes cite-and-release arrests)

Observation	On support	Off support	Total
White	493	0	493
Hispanic	273	0	273
Total	766	0	766

Figure 2. Common support tabulation, Hispanic drivers, booked arrests (comparison includes cite-and-release arrests)

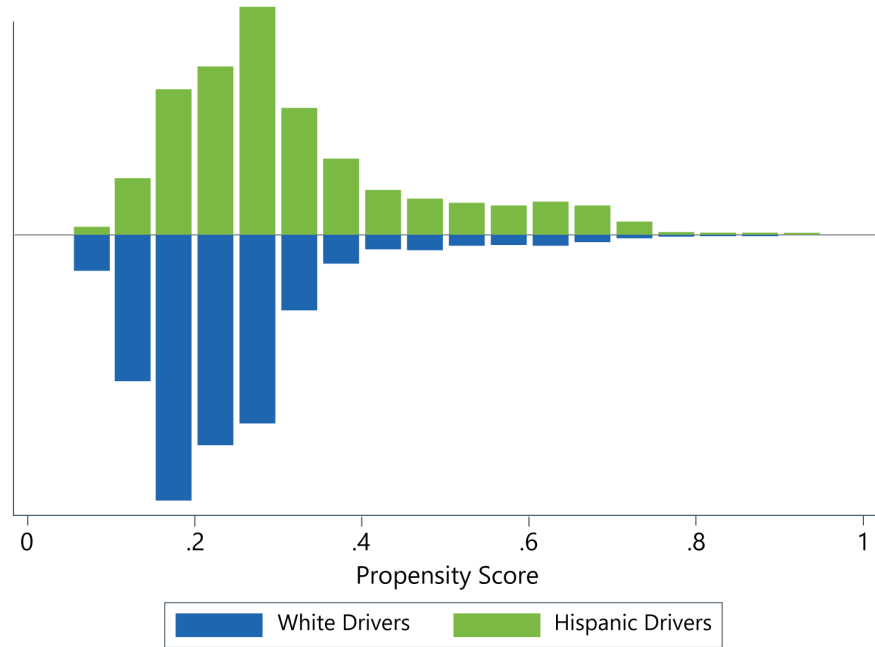
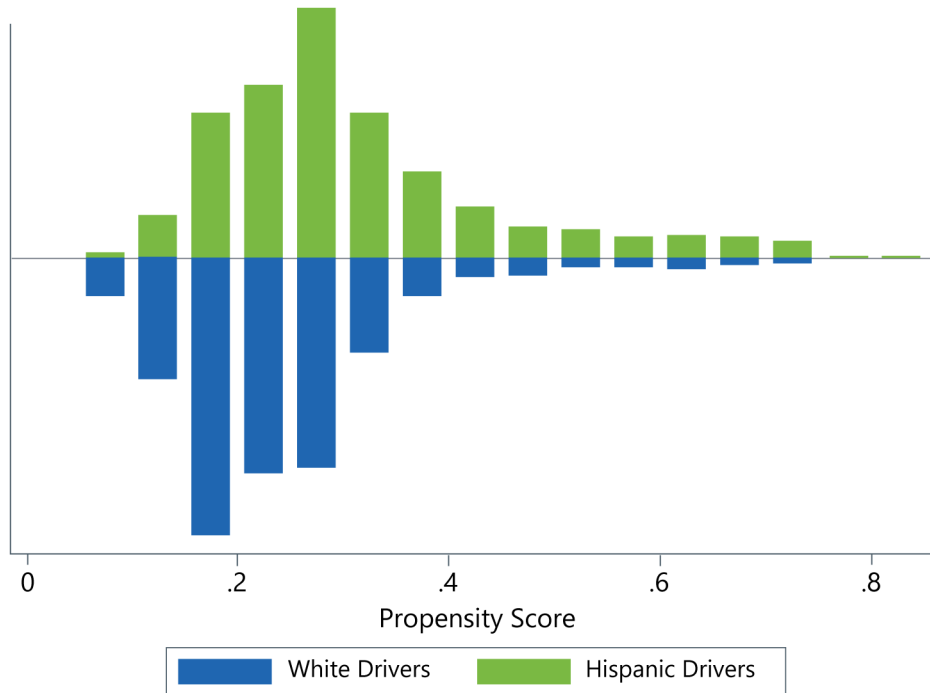


Table 196. Common support results, Hispanic drivers, all other outcomes

Observation	On support	Off support	Total
White	11,057	0	11,057
Hispanic	3,764	0	3,764
Total	14,821	0	14,821

Figure 3. Common support tabulation, Hispanic drivers, all other outcomes



Balance

Balance is achieved for the majority of the variables included in the matching stage. Achieving balance in the majority of variables is typically acceptable (Austin 2011), and, notably, the observed difference between the treatment and control group is relatively small in all cases.

Table 197. Balance testing results, Hispanic drivers, stop length

Variable	Mean		t-test	
	Hispanic Drivers	White drivers	t-statistic	Probability value
Special assignment: DUI Task Force	0.01	0.01	-0.68	0.49
Driver sex (male)	0.66	0.67	-0.79	0.43
X Coordinate	33.47	33.49	-2.44	0.02
Y Coordinate	-112.09	-112.11	1.60	0.11
Stop time (8am to 8pm)	0.58	0.55	2.50	0.01
Stop classification (civil traffic)	0.96	0.96	-0.13	0.89
Non-Arizona Plate	0.08	0.09	-0.47	0.64
Call sign category 1	0.63	0.61	1.48	0.14
Call sign category 2	0.20	0.22	-1.77	0.08
Call sign category 3	0.01	0.02	-0.87	0.39
Call sign category 5	0.15	0.15	0.00	1.00
Call sign category 6	0.00	0.00	2.00	0.05
Driver arrested	0.05	0.05	0.00	1.00

Driver or vehicle searched	0.02	0.01	1.76	0.08
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Table 198. Balance testing results, Hispanic drivers, booked arrests (comparison includes cite-and-release arrests)

Variable	Mean		t-test	
	Hispanic Drivers	White drivers	t-statistic	Probability value
Special assignment: DUI Task Force	0.01	0.02	-0.71	0.48
Driver sex (male)	0.79	0.78	0.31	0.76
X Coordinate	33.53	33.55	-0.68	0.50
Y Coordinate	-112.07	-112.06	-0.31	0.76
Stop time (8am to 8pm)	0.57	0.55	0.60	0.55
Stop classification (civil traffic)	0.56	0.61	-1.30	0.19
Non-Arizona Plate	0.10	0.06	1.61	0.11
Call sign category 1	0.44	0.47	-0.51	0.61
Call sign category 2	0.41	0.40	0.26	0.79
Call sign category 3	0.01	0.01	0.00	1.00
Call sign category 5	0.12	0.10	0.83	0.41
Call sign category 6	0.00	0.00	.	.

Table 199. Balance testing results, Hispanic drivers, all other outcomes

Variable	Mean		t-test	
	Hispanic Drivers	White drivers	t-statistic	Probability value
Special assignment: DUI Task Force	0.01	0.01	0.95	0.34
Driver sex (male)	0.67	0.68	-1.70	0.09
X Coordinate	33.48	33.49	-2.47	0.01
Y Coordinate	-112.10	-112.10	0.10	0.92
Stop time (8am to 8pm)	0.57	0.54	2.32	0.02
Stop classification (civil traffic)	0.96	0.96	-1.03	0.30
Non-Arizona Plate	0.09	0.08	0.53	0.59
Call sign category 1	0.64	0.62	1.27	0.21
Call sign category 2	0.21	0.23	-2.41	0.02
Call sign category 3	0.02	0.01	0.82	0.41
Call sign category 5	0.13	0.12	0.73	0.47
Call sign category 6	0.00	0.00	0.00	1.00

Black drivers

Common support

Common support is present for all analyses of Black drivers for all analyzed outcomes.

Table 200. Common support results, Black drivers, stop length

Observation	On support	Off support	Total
White	9,486	0	9,486
Black	989	0	989
Total	10,475	0	10,475

Figure 4. Common support tabulation, Black drivers, stop length

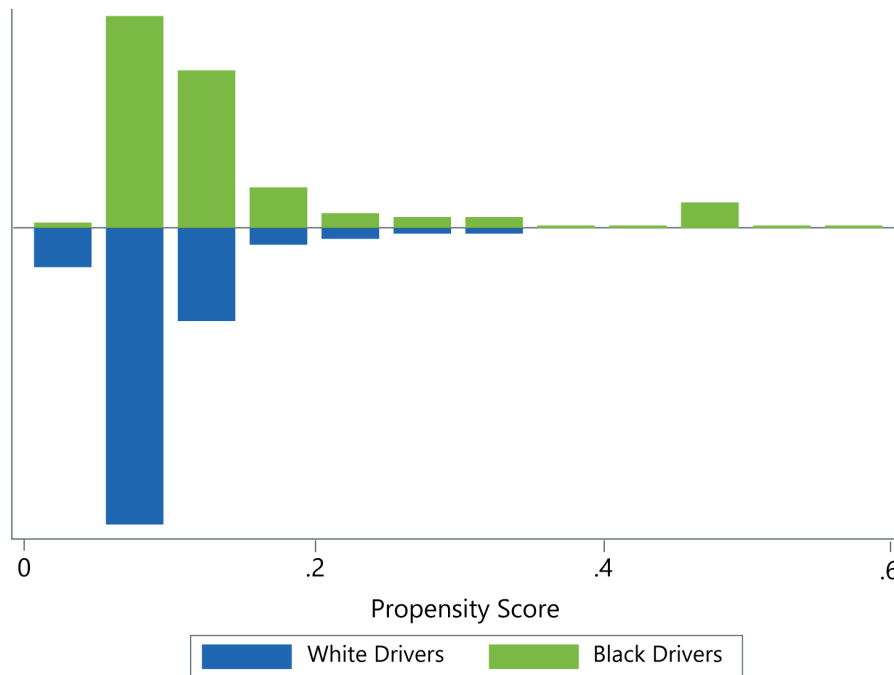


Table 201. Common support results, Black drivers, booked arrests (comparison includes cite-and-release arrests)

Observation	On support	Off support	Total
White	487	0	487
Black	86	0	86
Total	573	0	573

Figure 5. Common support tabulation, Black drivers, booked arrests (comparison includes cite-and-release arrests)

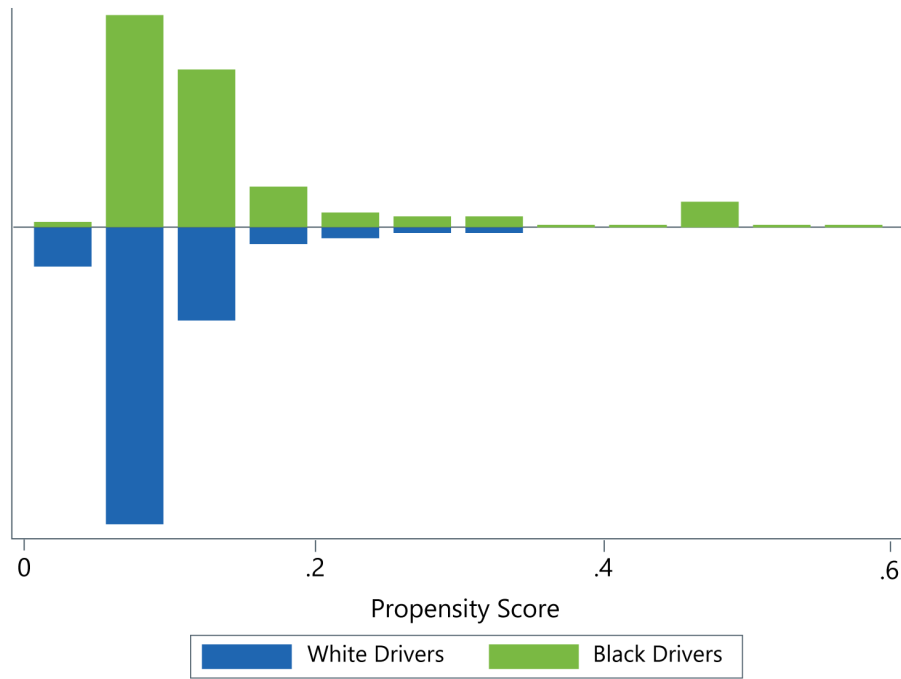
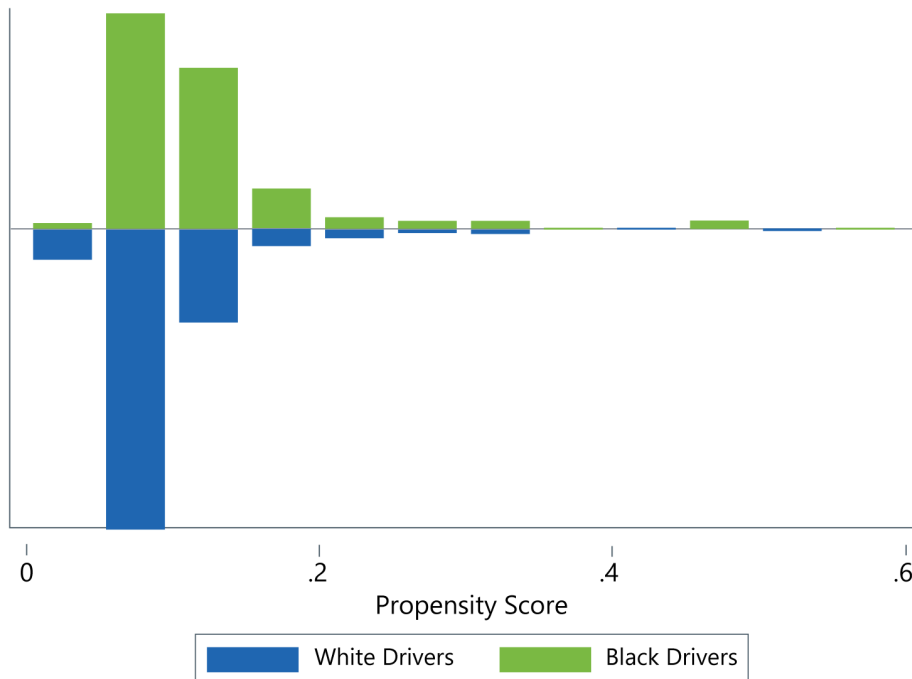


Table 202. Common support results, Black drivers, all other outcomes

Observation	On support	Off support	Total
White	11,057	0	11,057
Black	1,223	0	1,223
Total	12,280	0	12,280

Figure 6. Common support tabulation, Black drivers, all other outcomes



Balance

Balance is achieved for the majority of the variables included in the matching stage. Achieving balance in the majority of variables is typically acceptable (Austin, 2011), and, notably, the observed difference between the treatment and control group is relatively small in all cases.

Table 203. Balance testing results, Black drivers, stop length

Variable	Mean		t-test	
	Black Drivers	White drivers	t-statistic	Probability value
Special assignment: DUI Task Force	0.01	0.01	0.00	1.00
Driver sex (male)	0.65	0.67	-0.66	0.51
X Coordinate	33.49	33.51	-2.88	0.00
Y Coordinate	-112.06	-112.06	-0.21	0.84
Stop time (8am to 8pm)	0.57	0.54	1.63	0.10
Stop classification (civil traffic)	0.96	0.96	0.33	0.74
Non-Arizona Plate	0.14	0.14	0.00	1.00
Call sign category 1	0.64	0.63	0.47	0.64
Call sign category 2	0.20	0.22	-1.22	0.22
Call sign category 3	0.02	0.02	0.15	0.88
Call sign category 5	0.12	0.11	1.13	0.26
Call sign category 6	0.01	0.01	-0.23	0.82
Driver arrested	0.05	0.05	-0.83	0.41
Driver or vehicle searched	0.01	0.01	0.00	1.00

Table 204. Balance testing results, Black drivers, booked arrests (comparison includes cite-and-release arrests)

Variable	Mean		t-test	
	Black Drivers	White drivers	t-statistic	Probability value
Special assignment: DUI Task Force	0.00	0.00	.	.
Driver sex (male)	0.81	0.73	1.27	0.21
X Coordinate	33.50	33.55	-1.51	0.13
Y Coordinate	-112.05	-112.11	1.37	0.17
Stop time (8am to 8pm)	0.44	0.35	1.25	0.21
Stop classification (civil traffic)	0.53	0.58	-0.61	0.54
Non-Arizona Plate	0.12	0.13	-0.23	0.82
Call sign category 1	0.43	0.43	0.00	1.00
Call sign category 2	0.40	0.43	-0.46	0.65
Call sign category 3	0.05	0.02	0.83	0.41
Call sign category 5	0.12	0.12	0.00	1.00
Call sign category 6	0.00	0.00	.	.

Table 205. Balance testing results, Black drivers, all other outcomes

Variable	Mean		t-test	
	Black Drivers	White drivers	t-statistic	Probability value
Special assignment: DUI Task Force	0.01	0.02	-1.01	0.31
Driver sex (male)	0.66	0.68	-1.16	0.25
X Coordinate	33.48	33.50	-1.97	0.05
Y Coordinate	-112.07	-112.06	-0.65	0.52
Stop time (8am to 8pm)	0.56	0.51	2.72	0.01
Stop classification (civil traffic)	0.95	0.96	-0.19	0.85
Non-Arizona Plate	0.14	0.12	1.33	0.19
Call sign category 1	0.66	0.68	-1.12	0.26
Call sign category 2	0.19	0.17	1.05	0.30
Call sign category 3	0.02	0.03	-1.03	0.30
Call sign category 5	0.11	0.10	1.07	0.29
Call sign category 6	0.01	0.00	0.78	0.44

Minority drivers

Common support

Common support is present for all analyses of minority drivers for all outcomes.

Table 206. Common support results, minority drivers, stop length

Observation	On support	Off support	Total
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White	9,486	0	9,486
Minority	4,320	0	4,320
Total	13,806	0	13,806

Figure 7. Common support tabulation, minority drivers, stop length

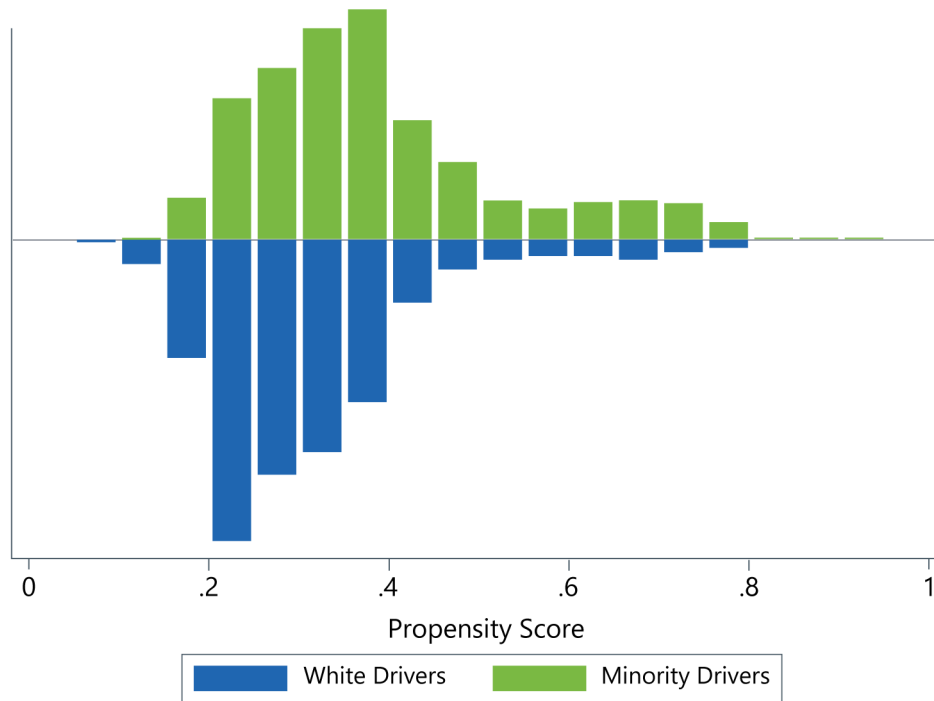


Table 207. Common support results, minority drivers, booked arrests (comparison includes cite-and-release arrests)

Observation	On support	Off support	Total
White	493	0	493
Minority	398	0	398
Total	891	0	891

Figure 8. Common support tabulation, minority drivers, booked arrests (comparison includes cite-and-release arrests)

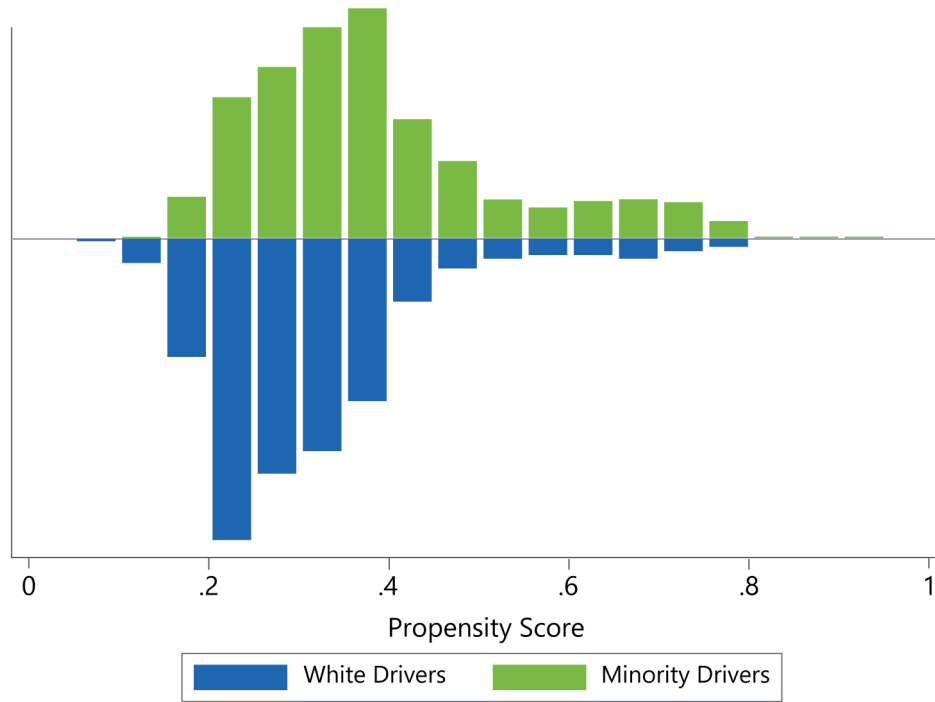
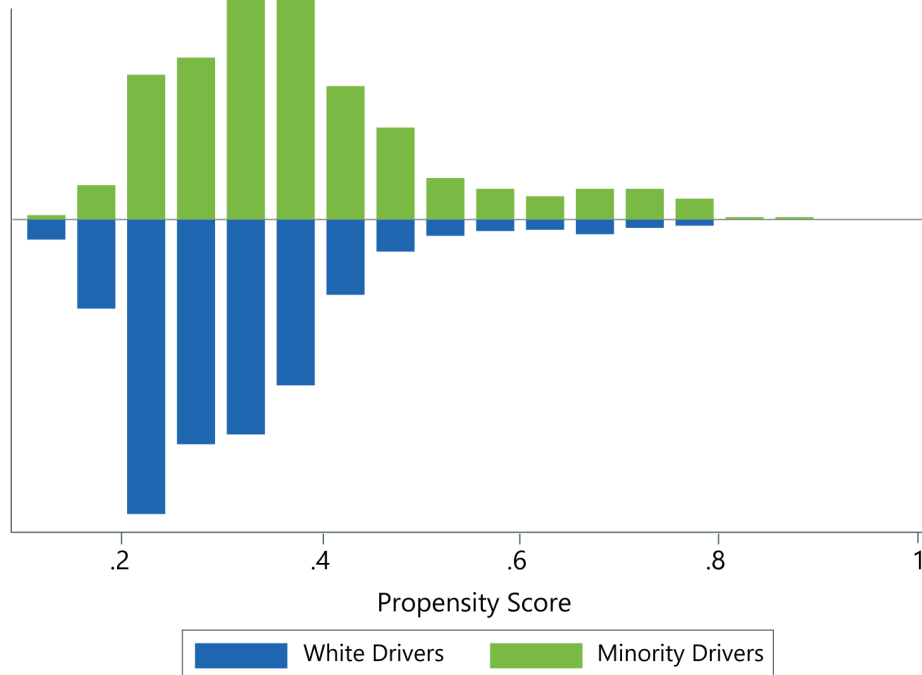


Table 208. Common support results, minority drivers, all other outcomes

Observation	On support	Off support	Total
White	11,057	0	11,057
Minority	5,606	0	5,606
Total	16,663	0	16,663

Figure 9. Common support tabulation, minority drivers, all other outcomes



Balance

Balance is achieved for the majority of the variables included in the matching stage. Achieving balance in the majority of variables is typically acceptable (Austin 2011), and, notably, the observed difference between the treatment and control group is relatively small in all cases.

Table 209. Balance testing results, minority drivers, stop length

Variable	Mean		t-test	
	Minority Drivers	White drivers	t-statistic	Probability value
Special assignment: DUI Task Force	0.01	0.02	-2.20	0.03
Driver sex (male)	0.64	0.65	-1.01	0.31
X Coordinate	33.48	33.49	-0.96	0.34
Y Coordinate	-112.07	-112.06	-1.41	0.16
Stop time (8am to 8pm)	0.59	0.55	3.98	0.00
Stop classification (civil traffic)	0.96	0.95	1.16	0.25
Non-Arizona Plate	0.10	0.10	-0.11	0.92
Call sign category 1	0.63	0.63	-0.33	0.74
Call sign category 2	0.20	0.20	-0.56	0.57
Call sign category 3	0.01	0.02	-0.61	0.54
Call sign category 5	0.14	0.14	1.27	0.20
Call sign category 6	0.00	0.00	2.42	0.02
Driver arrested	0.05	0.05	-1.58	0.12

Driver or vehicle searched	0.02	0.02	-0.97	0.33
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Table 210. Balance testing results, minority drivers, booked arrests (comparison includes cite-and-release arrests)

Variable	Mean		t-test	
	Minority Drivers	White drivers	t-statistic	Probability value
Special assignment: DUI Task Force	0.01	0.01	0.33	0.74
Driver sex (male)	0.78	0.74	1.50	0.14
X Coordinate	33.52	33.55	-1.62	0.11
Y Coordinate	-112.05	-112.08	1.38	0.17
Stop time (8am to 8pm)	0.55	0.56	-0.21	0.83
Stop classification (civil traffic)	0.55	0.54	0.07	0.94
Non-Arizona Plate	0.11	0.10	0.35	0.73
Call sign category 1	0.44	0.37	1.88	0.06
Call sign category 2	0.41	0.47	-1.72	0.09
Call sign category 3	0.02	0.02	-0.78	0.44
Call sign category 5	0.12	0.11	0.44	0.66
Call sign category 6	0.00	0.00	.	.

Table 211. Balance testing results, minority drivers, all other outcomes

Variable	Mean		t-test	
	Minority Drivers	White drivers	t-statistic	Probability value
Special assignment: DUI Task Force	0.01	0.01	0.17	0.87
Driver sex (male)	0.65	0.66	-0.56	0.58
X Coordinate	33.48	33.49	-2.15	0.03
Y Coordinate	-112.08	-112.08	-0.10	0.92
Stop time (8am to 8pm)	0.58	0.54	3.62	0.00
Stop classification (civil traffic)	0.96	0.96	-0.23	0.82
Non-Arizona Plate	0.10	0.10	0.88	0.38
Call sign category 1	0.64	0.64	0.16	0.88
Call sign category 2	0.20	0.21	-1.31	0.19
Call sign category 3	0.02	0.02	0.00	1.00
Call sign category 5	0.13	0.12	0.92	0.36
Call sign category 6	0.00	0.00	0.31	0.76



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