# Online Appendix for

# *At the Intersection*

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# Appendix A: Data Loss Description

This appendix shows the number of observations lost for each decision made in the data cleaning process.

Table A1: Data loss when dropping certain cases for men

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Variable | CT | MD | IL | NC |
| Starting N | 857,923 | 2,854,963 | 25,400,365 | 20,214,202 |
| Males only | 311,389 | 1,032,395 | 8,909,385 | 7,293,627 |
| No Hispanics | 71,832 | 172,797 | 2,180,729 | 1,195,504 |
| No “other” races | 32,613 | 125,766 | 567,751 | 424,446 |
| Agency restrictions | - | - | 1,641,148 | 548,000 |
| Other missing variables | 2,162 | 275,847 | 460,744 | 5,671,621 |
| Final N |  439,927 |  1,248,158 | 11,640,608 | 5,081,004 |

Table A2: Data loss when dropping certain cases for women

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Variable | CT | MD | IL | NC |
| Starting N | 857,923 | 2,854,963 | 25,400,365 | 20,214,202 |
| Females only | 546,534 | 1,822,568 | 16,490,980 | 12,920,575 |
| No Hispanics | 40,406 | 54,076 | 772,034 | 348,812 |
| No “other” races | 18,762 | 59,315 | 267,164 | 204,848 |
| Agency restrictions | - | - | 1,803,352 | 521,310 |
| Other missing variables |  | 173,951 | 147,805 | 3,091,637 |
| Final N |  252,221 |  745,053 | 5,919,030 | 3,127,020 |

# Appendix B: North Carolina Model Specification Excluding Stop Time of Day

North Carolina presents a distinct problem with regards to the time of day variable as compared to the other states. In North Carolina, in over half of the observations, the time of day of the stop is missing, largely because the State Highway Patrol omits this variable from its reports. As a result, to examine whether the inclusion of this variable meaningfully effects the results, we refit the models and exclude the time of day variable. By excluding the hour variable, we gain 6,286,430 observations, over two times the number of observations in main model. As table B1 shows, this does not impact the general findings. Blacks are still searched more than whites. Drivers in investigatory stops are searched more than drivers in safety stops. The interaction is still positive and significant.

Table B1. Fixed Effect Male Search Logistic Regression without Hour of Day

|  |  |
| --- | --- |
|  | NC |
| Intercept | -2.34\*\* |
|   | (0.04) |
| Black Driver | 0.60\*\* |
|   | (0.01) |
| Investigatory Stop | 0.34\*\* |
|  | (0.00) |
| Black \* Invest. Stop | 0.16\*\* |
|   | (0.01) |
| Driver Age | -0.03\*\* |
|   | (0.00) |
| Black Disparity Officer | 0.41\*\* |
|   | (0.00) |
| Agency Fixed Effects | Yes |
| Day of the Week Control | Yes |
| AIC | 3,149,000 |
| Number of Stops | 10,746,688 |
|  |   |   |  |  |

Table B2 shows the same analysis but for women, which can be compared to table C3 in the online appendix. No variables change direction or significance as a result of the data lost due to the hour variable.

Table B2. Fixed Effect Female Search Logistic Regression without Hour of Day

|  |  |
| --- | --- |
|  | NC |
| Intercept | -3.30\*\* |
|   | (0.09) |
| Black Driver | -0.03\*\* |
|   | (0.01) |
| Investigatory Stop | 0.54\*\* |
|  | (0.01) |
| Black \* Invest. Stop | 0.15\*\* |
|   | (0.01) |
| Driver Age | -0.03\*\* |
|   | (0.00) |
| Black Disparity Officer | 0.35\*\* |
|   | (0.01) |
| Agency Fixed Effects | Yes |
| Day of the Week Control | Yes |
| AIC | 846,500 |
| Number of Stops | 6,215,515 |
|  |   |   |  |  |

Table B3 replicates the contraband analysis for men without the hour variable, which can be compared to table 6 in the main text. No variables change direction or significance as a result of the data lost due to the hour variable.

Table B3. Fixed Effect Male Contraband Logistic Regression without Hour of Day

|  |  |
| --- | --- |
|  | NC |
| Intercept | -0.62\*\* |
|   | (0.02) |
| Black Driver | 0.18\*\* |
|   | (0.02) |
| Investigatory Stop | 0.21\*\* |
|  | (0.02) |
| Black \* Invest. Stop | -0.26\*\* |
|   | (0.02) |
| Driver Age | -0.01\*\* |
|   | (0.00) |
| Black Disparity Officer | 0.09\*\* |
|   | (0.01) |
| Agency Fixed Effects | Yes |
| Day of the Week Control | Yes |
| AIC | 271,291 |
| Number of Stops | 233,429 |
|  |   |   |  |  |

Table B4 replicates the contraband analysis for women without the hour variable, which can be compared to table C4 in the online appendix. No variables change direction or significance as a result of the data lost due to the hour variable.

Table B4. Fixed Effect Female Contraband Logistic Regression without Hour of Day

|  |  |
| --- | --- |
|  | NC |
| Intercept | -0.72\*\* |
|   | (0.06) |
| Black Driver | 0.17\*\* |
|   | (0.04) |
| Investigatory Stop | 0.38\*\* |
|  | (0.04) |
| Black \* Invest. Stop | -0.44\*\* |
|   | (0.05) |
| Driver Age | -0.01\*\* |
|   | (0.00) |
| Black Disparity Officer | 0.15\*\* |
|   | (0.03) |
| Agency Fixed Effects | Yes |
| Day of the Week Control | Yes |
| AIC | 37,984 |
| Number of Stops | 35,403 |
|  |   |   |  |  |

# Appendix C: Race-Gender Model

In this appendix we replicate our analysis on males and females at the same time. In this model we use the same variables as the main analysis[[1]](#footnote-1), except we expand our race coding to include 4 dummy variables: White men (WM, the reference group), White women (WW), Black men (BM), and Black women (BW). We interact these race-gender categories with the investigatory stop variables to investigate the search disparities between groups and across stop type. Table C1 shows the results of the logistic regression predicting whether a driver was searched. To summarize the results shortly, we find see similar patterns to our main analysis. Women tend to be searched less, and Blacks (especially men) tend to be searched more, especially in investigatory stops. We see mixed results for the effect of investigatory stops on White men. In CT and NC we see that WM are statistically more likely to be searched, in MD we see the opposite, and in IL we see no change. For safety stops we see that Black and White women are always less likely to be searched than White men (with the exception of Black women in IL where we see no difference). We also see that Black men are always more likely to be searched than their White counterparts. We see slightly more complicated results in investigatory stops. White and Black women in IL and NC are targeted more in investigatory stops than White men. We also see that Black men are targeted even more in investigatory stops than safety stops. This analysis is in line with our main findings. Black men tend to be searched more, and this is exacerbated in investigatory stops.
Table C2 reports the results for a logistic regression predicting whether contraband is found conditional on a search already having been performed, using the same race-gender categories. We find results consistent with those in the main text. Black male driver are less likely to be found with contraband, except in NC. Women are less likely to be found with contraband. In investigatory stops we see that Black men are less likely to be found with contraband as compared to safety stops, further highlighting the baseless nature of the searches targeted at the group.

Table C1. Logistic Regression Predicting Search with Race-Gender Categories

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | CT | MD | IL | NC |
| Intercept | -2.30\*\* | -1.27\*\* | -2.97\*\* | -2.09\*\* |
|   | (0.11) | (0.06) | (0.04) | (0.04) |
| White-Female | -0.49\*\* | -0.57\*\* | -0.63\*\* | -0.79\*\* |
|  | (0.03) | (0.02) | (0.01) | (0.01) |
| Black-Male | 0.45\*\* | 0.31\*\* | 1.00\*\* | 0.61\*\* |
|  | (0.03) | (0.01) | (0.00) | (0.01) |
| Black-Female | -0.20\*\* | -0.72\*\* | -0.01 | -0.87\*\* |
|  | (0.05) | (0.02) | (0.01) | (0.00) |
| Investigatory Stop | 0.75\*\* | -0.22\*\* | 0.00 | 0.10\*\* |
|  | (0.02) | (0.01) | (0.01) | (0.01) |
| WF \* Invest. Stop | -0.09\*\* | 0.00 | 0.12\*\* | 0.15\*\* |
|   | (0.04) | (0.03) | (0.01) | (0.01) |
| BM \* Invest. Stop | -0.06 | 0.29\*\* | 0.12\*\* | 0.13\*\* |
|  | (0.04) | (0.02) | (0.01) | (0.01) |
| BF \* Invest. Stop | -0.34\*\* | 0.32\*\* | 0.30\*\* | 0.23\*\* |
|  | (0.07) | (0.03) | (0.01) | (0.01) |
| Driver Age | -0.03\*\* | -0.04\*\* | -0.02\*\* | -0.03\*\* |
|   | (0.00) | (0.00) | (0.00) | (0.00) |
| Out of State Driver | 0.42\*\* | 0.00 |  |  |
|   | (0.05) | (0.01) |  |  |
| High Disparity Officer | 0.89\*\* | 0.63\*\* |  | 0.39\*\* |
|   | (0.04) | (0.01) |  | (0.00) |
| Vehicle Age |   |  | 0.04\*\* |  |
|   |   |  | (0.00) |  |
| Agency Fixed Effects | Yes | Yes | Yes | Yes |
| Day of the Week Control | Yes | Yes | Yes | Yes |
| Hour of the Day Control  | Yes | Yes | Yes | Yes |
| AIC | 112,300 | 527,642 | 3,217,719 | 3,616,353 |
| Number of Stops | 478,318  | 1,993,211  | 12,375,256 | 8,644,420 |

Note: \* p<.05. White male drivers are the reference category for the race-gender dummy variables.

Table C2. Logistic Regression Predicting Contraband with Race-Gender Categories

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | CT | MD | IL | NC |
| Intercept | -0.55\*\* | -0.27\*\* | 0.20 | -0.24\*\* |
|   | (0.27) | (0.06) | (0.14) | (0.04) |
| White-Female | -0.16\* | -0.03 | -0.04\*\* | -0.11\*\* |
|  | (0.10) | (0.04) | (0.01) | (0.02) |
| Black-Male | -0.12 | -0.07\*\* | -0.10\*\* | 0.14\*\* |
|  | (0.09) | (0.02) | (0.01) | (0.01) |
| Black-Female | -0.79\*\* | -0.16\*\* | -0.26\*\* | -0.00 |
|  | (0.21) | (0.04) | (0.01) | (0.02) |
| Investigatory Stop | 0.15\*\* | 0.01 | -0.08\*\* | 0.13\*\* |
|  | (0.06) | (0.02) | (0.01) | (0.01) |
| WF \* Invest. Stop | -0.04 | -0.06 | -0.07\*\* | 0.09\*\* |
|   | (0.12) | (0.06) | (0.02) | (0.02) |
| BM \* Invest. Stop | -0.17 | -0.07 | -0.16\*\* | -0.19\*\* |
|  | (0.10) | (0.04) | (0.02) | (0.01) |
| BF \* Invest. Stop | -0.17 | -0.12\* | 0.31\*\* | -0.16\*\* |
|  | (0.25) | (0.06) | (0.03) | (0.02) |
| Driver Age | -0.04\*\* | -0.02\*\* | -0.02\*\* | -0.01\*\* |
|   | (0.00) | (0.00) | (0.00) | (0.00) |
| Out of State Driver | -0.28\*\* | 0.12\*\* |  |  |
|   | (0.09) | (0.02) |  |  |
| High Disparity Officer | -0.08 | 0.00 |  | 0.02\*\* |
|   | (0.08) | (0.03) |  | (0.00) |
| Vehicle Age |   |   | 0.02\*\* |  |
|   |   |   | (0.00) |  |
| Agency Fixed Effects | Yes | Yes | Yes | Yes |
| Day of the Week Control | Yes | Yes | Yes | Yes |
| Hour of the Day Control  | Yes | Yes | Yes | Yes |
| AIC | 14,192 | 79,541 | 549,169 | 538,776 |
| Number of Stops | 17,482 | 66,216  | 486,244 | 446,140 |

Note: \* p<.05. White male drivers are the reference category for the race-gender dummy variables.

# Appendix D: Predicting Searches and Contraband without Agency Fixed Effects.

In this appendix we replicate our analysis without agency stop thresholds. Table D1 shows the results of the logistic regression predicting whether a driver was searched, identical to our main analysis except only we do not impose an agency stop threshold. In order to make this possible it was necessary to drop agency fixed effects. Table D2 does the same for our contraband analysis. By dropping the agency stop thresholds we have a larger N in our IL and NC analysis. The results from this robustness check are similar to the findings in the main paper. We see that Blacks tend to be searched more, and tend to be found with contraband less, and that this relationship is highly gendered.

Table D1. Logistic Regression Predicting being Searched

|  |  |  |  |
| --- | --- | --- | --- |
|  | Male Drivers |  | Female Drivers |
|  | (1) | (2) | (3) | (4) |  | (5) | (6) | (7) | (8) |
|  | CT | MD | IL | NC |  | CT | MD | IL | NC |
| Intercept | -2.72\* | -1.50\* | -2.58\* | -1.82\* |  | -3.90\* | -1.94\* | -3.30\* | -2.43\* |
|   | (0.05) | (0.02) | (0.00) | (0.00) |  | (0.09) | (0.04) | (0.01) | (0.02) |
| Black Driver | 1.05\* | 0.27\* | 0.91\* | 0.54\* |  | 1.10\* | -0.25\* | 0.48\* | -0.15\* |
|   | (0.03) | (0.01) | (0.00) | (0.00) |  | (0.05) | (0.02) | (0.00) | (0.01) |
| Investigatory Stop | 0.55\* | -0.22\* | 0.01 | 0.40\* |  | 0.49\* | -0.17\* | 0.10\* | 0.55\* |
|  | (0.02) | (0.01) | (0.01) | (0.01) |  | (0.04) | (0.02) | (0.01) | (0.01) |
| Black \* Invest. Stop | -0.17\* | 0.33\* | 0.12\* | 0.12\* |  | -0.37\* | 0.33\* | 0.25\* | 0.07\* |
|   | (0.04) | (0.02) | (0.01) | (0.01) |  | (0.07) | (0.03) | (0.01) | (0.01) |
| Driver Age | -0.02\* | -0.04\* | -0.02\* | -0.03\* |  | -0.02\* | -0.04\* | -0.02\* | -0.03\* |
|   | (0.00) | (0.00) | (0.00) | (0.00) |  | (0.00) | (0.00) | (0.00) | (0.00) |
| Out of State Driver | -0.17\* | -0.05\* |  |  |  | 0.21\* | 0.06\* |  |  |
|   | (0.03) | (0.01) |  |  |  | (0.05) | (0.02) |  |  |
| High Disparity Officer | 0.48\* | 0.55\* |  | 0.46\* |  | -0.10\* | 0.49\* |  | 0.38\* |
|   | (0.03) | (0.02) |  | (0.00) |  | (0.09) | (0.03) |  | (0.01) |
| Vehicle Age |   |  | 0.04\*\* |  |  |   |  | 0.02\* |  |
|   |   |  | (0.00) |  |  |   |  | (0.00) |  |
| Day of the Week Control | Yes | Yes | Yes | Yes |  | Yes | Yes | Yes | Yes |
| Hour of the Day Control  | Yes | Yes | Yes | Yes |  | Yes | Yes | Yes | Yes |
| AIC | 101,143 | 403,454 | 4,461,885 | 2,739,344 |  | 171,189 | 134,951 | ,1548,150 | 792,951 |
| Number of Stops |  439,927 |  1,248,158 | 13,392,931 | 5,566,915 |  | 252,221 | 745,053 | 7,735,190 | 3,639,312 |

Note: \* p<.05. White drivers are the reference category for black drivers.

Table D2. Logistic Regression Predicting Finding Contraband Given a Search has Occurred

|  |  |  |  |
| --- | --- | --- | --- |
|  | Male Drivers |  | Female Drivers |
|  | (1) | (2) | (3) | (4) |  | (5) | (6) | (7) | (8) |
|  | CT | MD | IL | NC |  | CT | MD | IL | NC |
| Intercept | -0.61\* | -0.19\* | -0.25\* | -0.49\* |  | -4.30\* | 0.08 | -0.17\* | -0.54\* |
|   | (0.11) | (0.05) | (0.02) | (0.02) |  | (0.15) | (0.10) | (0.04) | (0.04) |
| Black Driver | -0.48\* | -0.09\* | -0.07\* | 0.09\* |  | -0.78\* | -0.15\* | -0.21\* | 0.06\* |
|   | (0.07) | (0.03) | (0.01) | (0.01) |  | (0.11) | (0.05) | (0.02) | (0.03) |
| Investigatory Stop | 0.29\* | -0.01 | -0.06\* | 0.11\* |  | 0.25\* | 0.04 | -0.13\* | 0.19\* |
|  | (0.05) | (0.03) | (0.01) | (0.01) |  | (0.09) | (0.05) | (0.02) | (0.02) |
| Black \* Invest. Stop | -0.06 | -0.14\* | -0.14\* | -0.19\* |  | 0.08 | -0.29\* | -0.25\* | -0.26\* |
|   | (0.10) | (0.04) | (0.01) | (0.01) |  | (0.16) | (0.07) | (0.03) | (0.03) |
| Driver Age | -0.05\* | -0.03\* | -0.02\* | -0.01\* |  | -0.01\* | -0.03\* | -0.02\* | -0.01\* |
|   | (0.00) | (0.00) | (0.00) | (0.00) |  | (0.00) | (0.00) | (0.00) | (0.00) |
| Out of State Driver | -0.78\* | 0.10\* |  |  |  | -0.95\* | 0.33\* |  |  |
|   | (0.08) | (0.03) |  |  |  | (0.16) | (0.05) |  |  |
| High Disp. Officer | 0.23\* | 0.09\* |  | 0.00 |  | -0.21 | 0.23\* |  | -0.00 |
|   | (0.08) | (0.03) |  | (0.00) |  | (0.19) | (0.06) |  | (0.02) |
| Vehicle Age |   |  | 0.02\* |  |  |   |  | 0.03\* |  |
|   |   |  | (0.00) |  |  |   |  | (0.00) |  |
| Day of the Week Control | Yes | Yes | Yes | Yes |  | Yes | Yes | Yes | Yes |
| Hour of the Day Control  | Yes | Yes | Yes | Yes |  | Yes | Yes | Yes | Yes |
| AIC | 13,568 | 64,324 | 489,581 | 508,273 |  | 9,562 | 18,011 | 121,633 | 108,841 |
| Number of Stops | 19,219  | 51,609  | 400,086 | 411,608 |  | 4,448  | 14,607  | 105,420 | 90,549 |

1. We had to raise the stop threshold for agencies in IL to 50,000 stops to account for the increased number of observations. [↑](#footnote-ref-1)