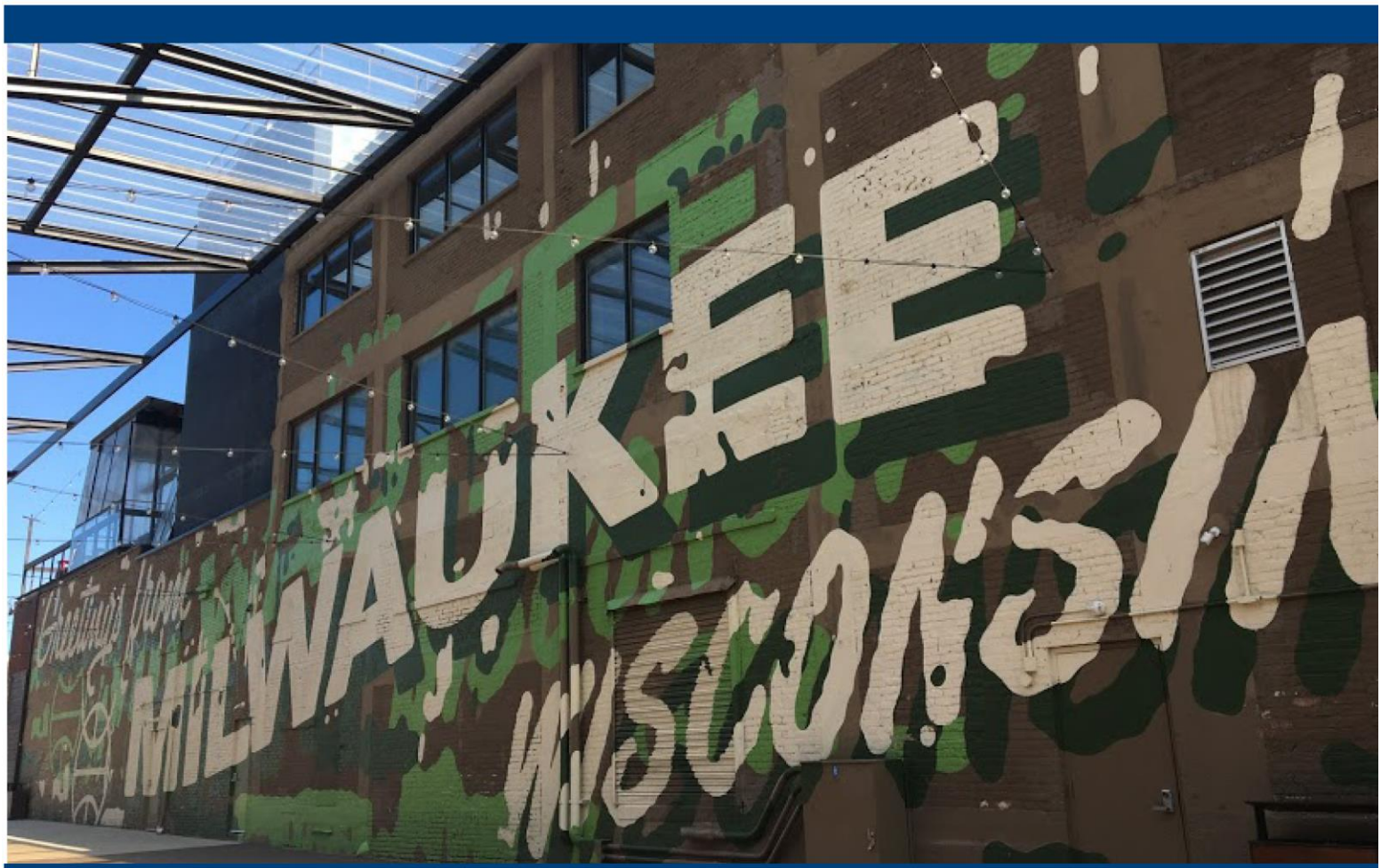
CITY OF MILWAUKEE SETTLEMENT AGREEMENT

Analysis of 2019 Traffic Stops, Field Interviews, No-action Encounters, and Frisks

SEPTEMBER 2020



PREPARED BY

CRIME AND JUSTICE INSTITUTE

A Division of Community Resources for Justice

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INTRODUCTION

This report provides a detailed explanation of the process and findings of the data analysis required by the Settlement Agreement among the parties to *Charles Collins, et al. v. City of Milwaukee, et al.*[1] The full report required by the Settlement Agreement (SA V.A.9)[2] provides determinations of compliance for each stipulation detailed in the Agreement. A summary of the detailed findings offered in this report is presented in the Compliance chapter of the Second Annual Report.[3]

The Settlement Agreement (SA V.A.5-8) stipulates specific data sources, regression protocols, and hit rate analyses required to measure the Milwaukee Police Department's (MPD) compliance with the Fourteenth Amendment of the U.S. Constitution and Title VI of the Civil Rights Act of 1964 in conducting traffic stops, field interviews, no-action encounters and frisks. The intent of the analysis in this report is to determine the impact of a person's race or ethnicity on the likelihood of a police encounter while controlling for crime and population characteristics of each of the police districts.

Pre-litigation analyses conducted by experts on behalf of the Plaintiffs in *Collins v. City of Milwaukee* addressed similar questions about the impact of a person's race or ethnicity on the likelihood of a traffic or pedestrian stop, and conducted hit rate analyses to understand whether traffic stop searches and contraband discovery were found to be racially disparate.[4] The pre-litigation conclusions can be used as a benchmark for the findings represented in this report. Using data from 2011-2015, the Plaintiffs' experts found that Black drivers in Milwaukee were over 500 percent more likely than White drivers to be subject to traffic stops. During a traffic stop, Black drivers were 50 percent more likely to be searched than White drivers, and those searches were 20 percent less likely to lead to discovery of drugs. Searches during traffic stops yielded very low rates of contraband discovery (less than one percent), including weapons. Pedestrian stops (called "field interviews" in the current report) revealed that Black residents are 500 percent more likely than White residents to be stopped. All of these findings took into account relevant population and crime

[1] Order and Settlement Agreement (July 23, 2018). Charles Collins, et al. v. City of Milwaukee, et al., (17-CV-00234-JPS) United States District Court Eastern District of Wisconsin Milwaukee Division.
[2] Citations to a specific paragraph of the Settlement Agreement follow the text that relies on that paragraph and appears in parentheses containing "SA" followed by the paragraph number.
[3] Crime and Justice Institute. (September 2020). City of Milwaukee Settlement Agreement: Second Annual Report.
[4] Abrams, D. (February 20th, 2018). "Report of David Abrams, Ph.D." Charles Collins, et al. v. City of Milwaukee, et al., (17-CV-00234-JPS) United States District Court Eastern Division of Wisconsin Milwaukee Division. Retrieved from American Civil Liberties Union Website: https://www.aclu.org/cases/collins-et-al-v-city-milwaukee-et-al

characteristics of police districts in Milwaukee, thus ruling out known factors, other than racial or ethnic bias, that could explain racial disparity in police encounters.

The analyses conducted for this report are based on quarterly police encounter data provided to CJI for the calendar year 2019. These data are also submitted to the Fire and Police Commission and Plaintiffs' counsel per the Settlement Agreement. CJI's Second Annual Report provides more details about the data elements, completeness, and differences between the data included in each quarterly extraction. Descriptive reports on the samples used for the analysis of individualized, objective, articulable, reasonable suspicion (IOARS) of traffic stops, field interviews, no-action encounters, and frisks were published in February and June of 2020.[5]

Four main analyses are detailed in this report on 2019 encounter data:

1. (SA V.A.5.) Regression analysis regarding traffic stops, field interviews, no-action encounters and frisks.
2. (SA V.A.6) Regression analysis regarding individualized, objective, and articulable reasonable suspicion (IOARS).
3. (SA V.A.7a) Hit rate analysis of frisks and contraband discovery.
4. (SA V.A.7b) Hit rate analysis at the police district level to test for the possibility that traffic stops, field interviews, no-action encounters, or frisks may be higher for all people in majority Black or majority Hispanic/Latino neighborhoods.

As allowed by the Settlement Agreement (SA V.A.8.d) we have augmented the required analysis with additional robustness checks and present them in this report where relevant.

The report begins with a section describing the data sources used in the analysis and how datasets were developed. This includes a detailed description of how the MPD encounter data files were merged together in order to develop a complete picture of data available for each person involved in each police encounter. The second section provides population information about the city of Milwaukee and demographic information about the seven MPD districts. Subsequent sections of this report provide a detailed discussion of findings for each of the four main analyses listed above. A summary and conclusions provided in the final section of this report are also presented in the Second Annual Report.

[5] Crime and Justice Institute. (February 2020). Semiannual Analysis of Traffic Stops, Field Interviews, No-action Encounters, and Frisks. Crime and Justice Institute. (June 2020) Semiannual Analysis of Traffic Stops, Field Interviews, No-action Encounters, and Frisks.

DATA SOURCES

Data sources referenced in this report include: MPD encounter data, U.S. Census Bureau's 2017 American Community Survey 5-Year Estimates, and Wisconsin Department of Transportation (DOT) drivers' license data. Subsections below provide information about each of these data sources and how they were developed for use in this analysis.

Encounter Data from Milwaukee Police Department

The analysis for this report is based on data extractions provided to the Parties of the Settlement Agreement and CJI by the MPD for calendar year 2019. Data were provided in three extractions: encounters occurring during the first half of the year (quarters 1 and 2, January through June), encounters occurring from July through September (quarter 3), and encounters occurring from October through December (quarter 4). Table A-1 summarizes the data delivery date, and encounter totals by type and quarter.

The data extractions for quarters 3 and 4 differ in structure and completeness from the extraction for encounter data from quarters 1 and 2. For example, to be responsive to our request to reduce the number of merges that are required in combining the data files, MPD joined several files that had one-to-one relationships starting in quarter 3 of 2019. Additionally, MPD has added data elements to each quarter as they iteratively improve the completeness of the data extractions. Despite these changes, MPD maintains that the foundational database queries that form the basis for the extractions, and from which we derive our estimates of encounter totals, have remained the same. The Settlement Agreement requires MPD to provide specific data elements for traffic stops, field interviews, and no-action encounters that indicate the nature of the encounter, details about when and where it occurred, information about the officer(s) involved in the encounter, and written narratives by officers that detail the individualized, objective, and articulable reasonable suspicion (IOARS) for making the stop or carrying out any frisks or searches during the encounter. A full listing of the data elements provided by MPD in the extractions and the completeness of those records is detailed in the Analysis section of the Compliance chapter of the Second Annual Report. The following section discusses how the data files provided by MPD were merged together to develop the data sets analyzed for this report and data sets developed for the above-referenced semiannual reviews of IOARS published in February and June of 2020.

The Merge Process[6]

The extraction comes from four different databases: MPD's computer-aided dispatch (CAD), MPD's records management system (RMS), the state of Wisconsin's Traffic and Criminal Software application (TraCS), and MPD's Administrative Investigations Management system (AIM). No-action encounters and field interviews are documented in RMS and traffic stops are documented in TraCS. The encounters in RMS and TraCS are associated with the CAD information via the CAD call number, a nine digit number MPD utilizes as the unique encounter identifier for these data. The data linkages charts in Appendix F offer a graphic representation of the data files provided in the extraction process and how they link together.

To associate officer names to badge numbers in the RMS data files, we first merge data files containing the involved officer(s) for each field interview and a data file containing the involved officer(s) for each no-action encounter with the department roster file based on the badge number of each officer.[7]

To merge the CAD files, we begin with officer information. We associate a data file containing CAD call segments to data containing each squad (car) unit that responded to a given call and a data file containing each officer that responded to a given call.[8] The squad unit data is merged by the call key number, and the responding officer data is merged on both the call key and the unit key that is specific for the unit or squad involved on the call. To merge district information, we associate the CAD call segment data to the reporting district information.[9] The resulting file represents an observation (row) for each CAD call in the extraction data and the associated date, time, location, CAD-specific call types, and officer involvement. We then begin to incorporate the CAD file with the three different encounter types present in the data.

To relate the no-action encounter files to the CAD information, we merge the no-action encounter data files with data containing the involved officer(s) for each no-action encounter and data containing the person information for each individual no-action encounter. Both of these data files were merged based on the unique identifier given

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[6] The merge process described here is the general linkages between data files we used to create data sets for analysis and is based on the quarter 4 data structure.
[7] "INFORM_FIELDINTERVIEWOFFICER" and "INFORM_NOACTIONENCOUNTEROFFICER" are merged with "DEPARTMENT_ROSTER" via "officername_code" in the RMS files and "badge" in the department roster file.
[8] "CAD_PCARSCALLUNITASGN" provides individual officer information, "CAD_PCARSCALLUNIT" is the file for each squad, and "CAD_PCARSCALL_Joined" is the file containing the main CAD information. These files are associated with each other using the "callkey" field.
[9] "CAD_PCARSCALL_Joined" has a field called "rep_dist" that associates with "area" in "Reporting_districts."

for each no-action encounter event.[10] We merge the no-action encounter file with the no-action encounter file containing person (subject of the encounter) information. This creates a file consisting of all no-action encounters where each row is a unique person involved in the no-action encounter. We then merge the CAD encounters file with the person-level no-action encounter file using the CAD number.[11] The no-action encounter data in the file entitled "CAD_NOACTIONENCOUNTER_DISPOSITIONS" include a code for the disposition or result of the call, and we use the provided CAD disposition file as a descriptor for the disposition codes.[12] This merge process results in a merged file for no-action encounters that represents an observation for each person involved in a no-action encounter and the associated CAD information.

To relate the field interview files to the CAD information, we merge the field interview data files with data containing the involved officer(s) for each field interview and data containing the person information for each individual involved in a field interview.[13] These were both merged using the unique field interview identifier. Similar to the merged no-action encounter file, we created a field interview file representing an observation for each person by merging the field interview file with the field interview file containing the person information. We then merged the aforementioned CAD encounter file with the merged field interview file using the CAD number.[14]

Traffic stop encounters are documented in the TraCS database. The contact summary form includes information about the nature of the encounter and demographic information about the subject involved. We merge data containing encounter-level information for a given traffic stop with data containing information for each individual involved in a traffic stop using the database-generated primary key of a given traffic stop.[15]

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[10] The "noactionencounter_id" is the unique no-action encounter identifier in "INFORM_NOACTIONENCOUNTEROFFICER" and "INFORM_NOACTIONENCOUNTERPERSON" that links to "id" in "INFORM_NOACTIONENCOUNTER_JOINED."

[11] "INFORM_NOACTIONENCOUNTER_JOINED" indicates the CAD number is "cadnumber" and this is matched with "call_no" in "CAD_PCARSCALL_Joined."

[12] MPD provides a PDF file that lists the descriptions for each CAD disposition code. For example, "C21" is the CAD disposition code for "no-action encounter."

[13] The "fieldinterview_id" field is the unique field interview identifier in "INFORM_FIELDINTERVIEWOFFICER" and "INFORM_FIELDINTERVIEWPERSON" files that link to "id" in "INFORM_FIELDINTERVIEW_JOINED."

[14] "INFORM_FIELDINTERVIEW_JOINED" indicates the CAD number is "cadnumber" and this is matched with "call_no" in "CAD_PCARSCALL_Joined."

[15] The keys are indicated in the data linkages charts presented in Appendix F, and are called "collkey" in "TRACS_INDIVIDUALS" and "TRACS_LOCATION" and "prdkey" in "TRACS_CONTACTSUMMARY_JOINED," "TRACS_CONTACTSUMMARY_INDIVIDUAL," and "TRACS_CONTACTSUMMARY_UNIT."

We merge the contact summary narrative file with the contact summary file containing involved individuals.[16] This creates a file consisting of all contact summaries where each row is a unique person. We then merge the person-level contact summary information (i.e., consent to search, a search or frisk basis, contraband discovery) with the TraCS data file containing each individual involved in a traffic stop by a database-generated individual key.[17] We also merge information from a data file containing details of any vehicle search that may have occurred ("TRACS_CONTACTSUMMARY_UNIT"), and we use the TraCS location file to associate the contact summary with the geographic information available for the encounter.[18] To associate any warnings that were issued for the stop, we use the database-generated primary key ("prdkey") to merge warning data with warning violation data, which includes the outcome of the stop.[19] Both the warning file and the warning violation file were added to the extraction data as of quarter 3 of 2019 and are not present in the extraction for quarters 1 and 2.

The TraCS data file structure is such that each form (contact summary, ELCI[20], NTC, or warning) is represented as an observation in the "TRACS_PRD_HEADER" file, which contains the badge information for the involved officer, a contact descriptive narrative, and any case numbers generated from the TraCS form. In order to associate each type of form with the location and individual information that exists for the form, we merge "TRACS_INDIVIDUALS" and "TRACS_LOCATION" with each of the TraCS forms prior to merging the forms into "TRACS_PRD_HEADER" using a process similar to the associations for contact summaries described above.

We merge the TraCS header file with a data file containing imported citations that were matched to a person-level identifier, the Master Name Index (MNI), in TraCS using the case number.[21] We then merge all of the ELCI files together to create a single file with all of the ELCI data, where each observation is a unique person per ELCI. We complete this process for NTCs, warnings, and contact summaries. We then merge the TraCS header data file with each of the TraCS form files (contact summary, ELCI, warning, and NTC) using the primary key "prdkey". This creates a file in which each

[16] "TRACS_CONTACTSUMMARY_JOINED" merges with "TRACS_CONTACTSUMMARY_INDIVIDUAL" using "prdkey."
[17] "TRACS_INDIVIDUALS" is a file for the demographic information (race, date of birth, and sex) for each person listed on a form in TraCS (contact summary, citation, or warning). This file is merged with contact summaries by associating "collkey" in "TRACS_INDIVIDUALS" with "prdkey" in "TRACS_CONTACTSUMMARY_INDIVIDUAL."
[18] "TRACS_LOCATION" is associated with "TRACS_CONTACTSUMMARY_JOINED" via "collkey" and "locationcolkey" in the two files, respectively.
[19] "TRACS_WARNING_JOINED" and "TRACS_WARNING_VIOLATION" are associated with encounter data through the "TRACS_PRD_HEADER" file using "prdkey" and the link.
[20] MPD also refers to electronic citations (ELCI) as "uniform traffic citations," or UTC.
[21] Merging the MNI number provided in "INFORM_ELCI" to "TRACS_PRD_HEADER" is the only means by which to associate a specific person (based on their MNI) with a traffic encounter. This process is only available for citations that are generated as a result of a traffic stop and not provided for warnings or NTCs.

observation represents a form from TraCS and the available location, officer, and person information associated with that form. We then associate the TraCS form file to CAD based on the CAD number represented in the merged CAD encounter file.[22]

Finally, MPD provides a file from AIM that represents information about uses of force that occur during encounters that are documented in TraCS. The AIM file is merged with the CAD-associated TraCS file using the CAD number as the unique encounter identifier.[23]

Data Cleaning and Data Loss

There are a number of fields present in the encounter data files that represent manually-entered information, denoted in the data codebooks provided by MPD with the data extractions. As it is meant to be the primary encounter identifier for these data, the CAD number is an important field that brings together all associated information about a given police encounter across multiple databases. While the CAD number in the CAD database files is automatically generated when dispatch is notified about an encounter, the CAD number field represented in RMS ("cadnumber") and TraCS files ("documentpolicenumber") must be manually entered by officers when documenting field interviews or no-action encounters in RMS or contact summaries in TraCS.

Relying on manual entry for any coded field poses a risk to data loss if the field is meant to be associated with other data within or between databases. For example, the CAD number generated by dispatch may be 505050505, but the officers enter "50-505-0505" into TraCS or RMS when filling out forms associated with the call. To prevent data loss, we clean the CAD number field for TraCS and RMS data to remove obvious data errors such as dashes or spaces. We also clean CAD numbers by checking for extra, missing, or transposed digits. We do this by comparing the merged CAD encounter file (with location, date, and time information) to the RMS or TraCS files we are cleaning (with location, date, and time information). If the associated information between the CAD file and the RMS or TraCS file matches, and the CAD number differs only by missing, transposed, or extra digits, we generate a corrected CAD number so that the CAD files can match with RMS or TraCS information as much as possible. Matching CAD information to TraCS or RMS information is essential in order to gain a

[22] The CAD number in TraCS forms files in the extraction data is represented as "documentpolicenumber" and associates to "call_no" in the "CAD_PCARSCALL_joined" file.
[23] "cad_call_number" in "AIM_USE_OF_FORCE" is associated with "documentpolicenumber" in TraCS form files and "call_no" in "CAD_PCARSCALL_Joined."

complete understanding of the data elements present or missing from documentation of each encounter.[24]

The relationship between CAD numbers and TraCS forms is the primary reason for data loss during the merge process. Data loss by form and encounter type is represented in table A-2 and indicates that the majority of the unmatched forms are ELCI forms. In ongoing discussions about the data extractions and mismatches to CAD data files, MPD indicates that there are several reasons for invalid CAD numbers. First, a citation or warning form may have been generated by mistake, duplicated, or restarted by officers. For example, if an officer meant to create a field interview form in RMS but accidentally started a contact summary form, the officer might type into the CAD number field a series of zeros, "void," "delete" or other notations. A second explanation may be that the CAD number was mistyped or improperly typed by officers on the form, preventing it from being associated with other information for the stop. A third explanation may be that the citation is not associated with a CAD number or other TraCS or RMS forms because there was not a dispatch record (e.g., the CAD technology was down or it was a citation generated from a walk in at a district office) even though it does represent a traffic stop or field interview as defined by the Settlement Agreement.

The structure and association of the TraCS files requires each of the different forms (contact summary, ELCI, warning, and NTC) to relate back to the TraCS header file before creating datasets that represent all the associated information present for a person involved in a given police encounter. Invalid CAD numbers in citation and warning forms present the greatest challenge to this process in that the only way to associate citations or warnings to contact summaries or field interviews is to rely upon valid CAD numbers that match across the different forms. For example, if an officer makes a traffic stop and decides to issue a citation for speeding, documentation for the traffic stop would be present in the CAD files and there would be a row in the TraCS header file for the contact summary for the person involved in the traffic stop and another row for the speeding citation. Additional rows represent any warnings the officer may issue or additional contact summaries for passengers that may need to be documented. Associating all of this information in order to represent one traffic stop requires the correct CAD number to be recorded by officers on each form that matches the dispatched CAD number for that particular traffic stop.

Starting with the first quarter of 2020, MPD developed a process to remove voided data from the data extraction files. This does not correct mistyped CAD information,

[24] We clean other coded fields as needed or necessary. For example, the variable "address_district_code" in "INFORM_FIELDINTERVIEW_JOINED" represents manually-entered district information. Officers usually use numerical representations of the districts but sometimes enter "DISTRICT 4" or "D1" in the field and these are recoded to their corresponding numerical representations.

but does give a clearer picture of forms that represent valid citations. As described in the Supervision chapter of the Second Annual Report, MPD also developed a district-level compliance review process that emphasizes valid CAD numbers in these data which should also increase the quality of data moving forward.

Population and Sample Characteristics

The encounter data provided by MPD for 2019 includes an estimated 58,461 traffic stops, 3,415 field interviews, and 172 no-action encounter events documented by officers.[25] Of these encounter events, 1,122 encounters involved frisks. Frisks are defined as "forcible frisks" to exclude frisks that are conducted for conveyance in a squad car (e.g., transporting a person from one place to another) or as searches incident to arrest (i.e., a cursory check before placing a person in a squad car after an arrest decision has been made). In TraCS officers can select "patdown" in the "individual search basis" field and in RMS officers can select "yes" in the "pat down description" field. If officers select "arrest" as an additional search basis in TraCS or note an arrest in RMS, we further explore the officer-written narratives to understand whether the frisk was actually a search incident to arrest that occurred after the arrest determination was made. We also explored encounter information when officers indicated a search occurred to identify whether officers conducted a search or frisk. We keyword searched for "pat down," "patdown," or "frisk," in the search basis and narrative field to denote any instances where a frisk occurred rather than or in addition to a search. The frisk totals represented in Table A-4 (and other tables referencing frisks) are frisks that occur as a part of the police encounter, excluding procedural frisks that are conducted as a requirement prior to conveyance or after an arrest determination has been made.

The estimated encounter totals exclude information from TraCS forms that could not be matched to CAD information, due to the previously discussed data structure challenges that prevent association of TraCS forms to encounters when CAD information is not valid. Table A-3 summarizes the data by encounter type and district. Nearly 40 percent of encounters occur in Districts 5 and 7, two of the districts with predominantly Black residential populations. District 6, a predominantly White district, includes 14 percent of encounters and the remainder of the districts each involved 8 to 11 percent of the encounter totals.

Missing Demographic Data

We discuss missing data by each data element in the Analysis section of the Compliance chapter of the Second Annual Report to highlight MPD's compliance with the 14 percent missing data threshold (SA V.1.d.i-iii). Table A-4 summarizes missing

[25] A random person per event was selected to represent each encounter event to prevent estimates from being biased by multiple-person stops. An estimated 67,993 people were involved in the 62,048 encounter events described in this report.

demographic information by quarter and type of encounter to offer information about how missing race, ethnicity, age, and gender information influences the analysis of the data at the encounter level. The traffic stop information from TraCS for quarters 1 and 2 has the largest share of missing demographic data with quarters 3 and 4 showing marked improvement in data completeness and corresponds with the roll out of Settlement Agreement-related training that occurred between January 2 and June 18, 2019.

Comparison of the type of encounters with and without missing demographic data does not indicate a patterned exclusion of demographic information by encounter type. We determined this by comparing proportions of encounters by district, call type, and other non-missing information that would help inform whether the encounters with missing demographics over-represent any particular demographic profile. We performed robustness checks for each traffic-specific analysis, excluding the first two quarters in turn and found no difference in conclusions.

Wisconsin Department of Transportation Driver's License Data

On November 15, 2019 CJI requested electronic copies of the Wisconsin Department of Transportation Division of Motor Vehicles' records concerning licensed drivers and registered vehicles for the years 2018 and 2019 that provides the race, zip code, year of birth, gender, city, license type, issue date, expiration date, and status of licensed drivers. The Wisconsin Department of Transportation was unable to fulfill the request for the years requested, indicating that it would require many thousands of dollars to produce a new record and divert resources away from existing efforts and legislative mandates.[26] However, on December 19, 2019 we obtained the 2015 data produced for the Plaintiffs in 2017 since it is an existing report.[27] Given the stability of the distribution of licensed drivers, using 2015 data as a proxy for 2019 is an acceptable solution for the current analysis. In future analyses we will continue to explore ways to obtain more current records for these data.

Drivers' license data were limited to regular, valid, licenses with expiration years of 2015 or greater. A count of licensed drivers within each zip code was summed by total drivers and total drivers by each of the listed demographics. The quarterly 2015 U.S. Department of Housing and Urban Development zip code to Census tract crosswalk files were used to associate drivers to Census tracts. Esri ArcGIS software was used to

[26] The Wisconsin Department of Transportation is not required to create a new record which does not already exist, compile existing information in a new format, or obtain a record from another agency. Wis. Statute 19.35(1)(L). The Wisconsin Department of Transportation is required to provide only documents in existence at the time of a request. A continuing request for records that may be obtained, updated or created by DOT in the future is unreasonable and may be denied. 73 Op. Atty. Gen. 37,44 (1984).

[27] The Wisconsin Department of Transportation indicated that the data provided to the Plaintiffs in 2017 was only disclosed because the data had been generated in response to a previous request, and thus was not a new report generated in 2017.

identify proportionate representation of zip codes to Census tracts for cases in which a Census tract represented more than one zip code.

To calculate the number of drivers within each Milwaukee Police Department district, we summed the count of licensed drivers in all Census tracts within each district. We used Esri ArcGIS software to identify proportionate representation of Census tracts to police districts for cases in which a Census tract fell within more than one police district. Land area was used in this calculation to exclude the water area for Census tracts along Lake Michigan.

U.S. Census American Community Survey

We used the U.S. Census Bureau's 2017 American Community Survey 5-Year Estimates to represent population data for this analysis.[28] The data include population demographic characteristics by age, race, ethnicity, and sex at the Census tract level. To calculate these population demographics within each Milwaukee Police Department district, we followed the same protocol used in the driver's license data to apportion population for Census tracts that fall within more than one district.

The following race and ethnicity classifications were constructed from the Census data:

- Individuals considered "White" are those who self-report as "White" and "not Hispanic or Latino."
- Individuals considered "Black" are those who self-report as "Black or African American."
- Individuals considered "Hispanic/Latino" are those who self-report as "Hispanic or Latino" but do not report their race as "Black or African American."
- Individuals considered "other" are those who self-report as "Asian," "Native Hawaiian or other Pacific Islander," "American Indian or Alaskan Native," "Two or more races," and "Other Race."

A categorical age variable was also constructed from the Census data to be able to identify younger adults. Recent Census publications discuss the young adult population as individuals between 18 and 34 years old.[29] We use two categories to look at age composition: "young" indicating an adult under 35, and "older" indicating an adult 35 or older. Age is typically used as both a variable of interest and a control

[28] U.S. Census Bureau, 2017, American Community Survey 5-Year Estimates, Tables B02001, B03002, S0101, S02301.
[29] Vespa, J., & U.S. Census Bureau. (2017). *The changing economics and demographics of young adulthood: 1975-2016* (Ser. Current population reports. p20, population characteristics, 579). U.S. Department of Commerce, Economics and Statistics Administration, U.S. Census Bureau.

variable in explorations of police encounters as lifestyle characteristics of young adults make them more likely to come into contact with police.

The Census information was also used to construct the unemployment rate for each police district.

Milwaukee Crime Data

The MPD provided Part I and Part II crime data for 2018 by district and suspect race (if known). The analyses for the current report require inclusion of three crime variables: total crime, violent crime, and property crime rates. Violent crime categories in the data provided by MPD include Part I violent crimes (homicide, rape, robbery, and aggravated assault) and Part II crimes against persons (e.g., negligent manslaughter, simple assault). Property crime categories include Part I property crimes (burglary, theft, motor vehicle theft, and arson) and Part II crimes against property (e.g., destruction, damage, or vandalism). The total crime category adds violent and property crime together, as well as Part II crimes against society (e.g., drug violations, weapons law violations, disorderly conduct).[30] District-level crime rates were developed by dividing the total, violent, or property crime totals by the resident population totals generated from the U.S. Census Bureau's 2017 American Community Survey 5-year estimates for each district.

[30] Part I violent crime includes: homicide, rape, robbery, and aggravated assault. Part I property crime includes: burglary, motor vehicle theft, theft, and arson. Part II crimes against persons includes: negligent manslaughter, forcible fondling, simple assault, intimidation, incest, statutory rape, human trafficking (commercial sex acts), and human trafficking (involuntary servitude). Part II crimes against property includes: extortion/blackmail, counterfeiting/forgery, false pretenses/swindle/confidence game, credit card/ATM fraud, impersonation, welfare fraud, wire fraud, embezzlement, stolen property, destruction/damage/vandalism, bribery, bad checks, and trespassing. The total crime category additionally includes Part II crimes against society: drug/narcotic violations, drug equipment violations, pornography/obscene material, prostitution, assisting or promoting prostitution, purchasing prostitution, weapons law violations, disorderly conduct, DUI, non-violent family offenses, and all other offenses.

THE CITY OF MILWAUKEE POPULATION DEMOGRAPHICS

The City of Milwaukee is the largest city in Wisconsin, with a population of nearly 600,000 residents. According to the U.S. Census Bureau's 2017 American Community Survey 5-Year Estimates, males and females made up nearly the same percentage of the Milwaukee population, with the percentage of males slightly lower at 49 percent. Thirty-two percent of Milwaukee residents fell between the ages of 18 and 34.[31] Residents of Milwaukee had an estimated median household income of $38,289, with approximately 23 percent of Milwaukee residents' incomes below the poverty level. The unemployment rate for the city was 5.9 percent, compared to the national average of 4.1 percent.[32]

The unemployment rates for each police district tell a different story of the City.[33] District 1, containing the University of Wisconsin-Milwaukee, the Lake Park, Lower and Upper East Side, Historic Third Ward, and the highest number of premises licensed to serve alcohol in the City, had an unemployment rate of 3 percent according to the 2017 data.[34] District 2, which includes Walker's Point, Historic Mitchell Street, and Clarke Square, had an unemployment rate of 9 percent. Districts 3, 4, 5, and 7, comprising neighborhoods such as Avenues West, Miller Valley, Dretzka Park, Woodlands, Riverwest, Harambee, Sherman Park, and Enderis Park, had unemployment rates between 11 and 15 percent. District 6, home to Jackson Park, Bay View, and Mitchell International Airport, had an unemployment rate of 6 percent.[35]

Based on the American Community Survey 5-year population estimates (2017), Black residents accounted for 39 percent of the population of Milwaukee, White residents comprised 36 percent, Hispanic/Latino residents constituted 18 percent, and residents of other races made up 7 percent.[36] However, when we look across police districts, similar to the unemployment rate, we see a very different picture. Figure A-5 illustrates the racial composition by police district in Milwaukee. Districts 1 and 6 have the highest proportion of White residents (76 and 65 percent, respectively). District 2 has the highest proportion of Hispanic/Latino residents (70 percent). Districts 3, 4, 5, and 7 have the highest proportion of Black residents (48, 62, 72, and 67 percent,

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[31] U.S. Census Bureau, 2017, American Community Survey 5-Year Estimates, Tables B02001, B03002, S0101, S02301
[32] U.S. Census Bureau, 2017, American Community Survey 5-Year Estimates, Table DP03
[33] Milwaukee Police Department, 2009 Annual Report 5, https://city.milwaukee.gov/ImageLibrary/Groups/mpdAuthors/Documents/2009_Annual_Report.pdf
[34] U.S. Census Bureau, 2017, American Community Survey 5-Year Estimates, Tables B02001, B03002, S0101, S02301
[35] Milwaukee Police Department, 2009 Annual Report 5, https://city.milwaukee.gov/ImageLibrary/Groups/mpdAuthors/Documents/2009_Annual_Report.pdf; U.S. Census Bureau, 2017, American Community Survey 5-Year Estimates, Tables B02001, B03002, S0101, S02301
[36] U.S. Census Bureau, 2017, American Community Survey 5-Year Estimates, Tables B02001, B03002, S0101, S02301

respectively). Notably, District 3 has the narrowest differences in proportions of White and Black residents than any other district.

STOP RATE ANALYSIS (SA V.A.5)

Tables B-1 through B-4 provide the traffic stop, field interview, no-action encounter, and frisk rates by district and race or ethnicity. Comparing the stop rates across districts, we find that districts with the largest share of Black residents (Districts 5 and 7) and Hispanic/Latino residents (District 2) also have the highest stop rates. These districts have traffic stops ranging from 23 to 33 stops per 100 drivers while District 6, which is majority-White, has a traffic stop rate of 12 stops per 100 drivers. The traffic stop rates in districts that are majority-Black-or-Hispanic/Latino are 92 to 175 percent higher than in District 6.

Field interview rates across districts show similar differences. The field interview rate in District 6 is about 3 stops per 1,000 residents, with all other districts having stop rates ranging from 36 percent (4 stops per 1,000 residents in Districts 4 and 7) to 254 percent (10 stops per 1,000 residents in District 5) higher than District 6, which is majority-White. The differences in no-action encounter rates by district are more varied, likely influenced by their low totals.

Frisk rates by district follow similar trends as compared to district-level race and ethnicity shares. District 5, which is majority-Black, has the highest frisk rate of nearly 7 frisks per 1,000 residents, which is 1,600 percent higher than the frisk rate in District 6 (0.4 per 1,000 residents), which is majority-White.

Table B-5 shows the ratio of each stop rate for Black, Hispanic/Latino, and other races as compared to White stop rates. This provides a comparison across all districts in Milwaukee and shows that in 2019, the traffic stop rates for Black and Hispanic/Latino drivers were respectively five and three times higher than for White drivers. The field interview rates for Black residents were nearly four times higher than for White residents. No-action encounter rates, while rare overall, were more than twice as high for Black residents than for White residents. The differences in frisk rates were most disparate – the frisk rates for Black subjects were over eight times higher than the frisk rates for White subjects.

While descriptive of possible racial or ethnic disparities in police encounters within the city of Milwaukee, these rates do not account for reasons beyond race or ethnic population in the districts that could influence differences in stop rates. The stop rate regression analysis accounts for other individual (age and gender) and district-level (crime and sociodemographic variables) characteristics that are known to influence the likelihood of a police encounter.

Stop Rate Regression Methodology

Regression analysis is specified in the Settlement Agreement to determine whether the racial and ethnic disparities in police encounters described above could be explained by other non-racial or non-ethnic factors present within the districts. The stop rate regression analyses were conducted using a linear probability model with robust standard errors clustered by district. Ten different regression specifications are prescribed by the Settlement Agreement to estimate the influence of race or ethnic identity on the likelihood of a police encounter, relative to the likelihood that White residents will encounter police: [37]

1. Estimate of the average difference in stop rates for Black, Hispanic/Latino and other race categories relative to White stop rates, without any further controls.
2. Estimate introduces a variable to control for the encounter subject's gender.
3. Estimate introduces a variable to control for the encounter subject's age, specified as younger than 35 or 35 or older.
4. Estimate introduces district-level racial composition variables measuring the percent Black, percent Hispanic/Latino, and percent other race categories of the district.
5. Estimate introduces district-level age variable measuring the proportion of the district that is younger than 35 years old.
6. Estimate introduces a district-level gender variable measuring the proportion of the district that is male.
7. Estimate introduces district-level unemployment rate to control for the relationship between the share of the district population that is unemployed and the likelihood that it influences the initiation of police encounters.
8. Estimate introduces district-level total crime rate to control for the relationship between the level of total crime in the district and the likelihood that it influences the initiation of police encounters.
9. Estimate introduces district-level violent crime rate to control for the relationship between the level of violent crime in the district and the likelihood that it influences the initiation of police encounters.
10. Estimate introduces district-level property crime rate to control for the relationship between the level of property crime in the district and the likelihood that it influences the initiation of police encounters.

For traffic stops, the outcome of interest in this analysis is the stop rate per 100 drivers of a given race or ethnicity (r), age group (a) and gender (g) in a given district (d) and quarter (t). Variables were then added to the model as specified by the Settlement

[37] SA V.A.5.a and SA V.A.5.b are specified in one model below as the data do not allow for investigation of race by ethnicity. Regression specifications 8, 9, and 10 that include total, violent, and property crime rates are omitted from the regression tables because these variables are significantly correlated with the unemployment rate and necessarily drop out of the model.

Agreement: indicator for young (one for individuals under 35 years old and zero for 35 or older), indicator for male (coded one for males and zero for females), and district level racial composition, unemployment, and crime rates.

$$Traffic\ Stop\ Rate_{ragdt} = \frac{Total\ Traffic\ Stops_{ragdt}}{Total\ Drivers_{ragdt}} * 100$$

Analysis of field interviews, no-action encounters, and frisks followed the same protocols. For field interviews, the outcome of interest in this analysis is the stop rate per 1,000 residents of a given race or ethnicity (r), age group (a) and gender (g) in a given district (d). Given the lower field interview totals in the encounter data, estimates were not calculated by quarter and rather pooled for the full year.

The outcome of interest for no-action encounters is the stop rate per 1,000 residents of a given race or ethnicity (r), and gender (g) in a given district (d). Age is not a required field for officers to document for no-action encounters and thus is omitted in the analysis. Given the lower no-action encounter totals in the encounter data, estimates were not calculated by quarter and rather pooled for the full year.

For frisks, the outcome of interest was explored two ways. The Settlement Agreement specifies to estimate frisk rates by district in the same fashion as the other stop rates. The outcome of interest in this analysis is the frisk rate per 1,000 residents of a given race or ethnicity (r), age group (a) and gender (g) in a given district (d). Given the lower frisk totals in the encounter data, estimates were not calculated by quarter and were pooled for the full year.

Frisks were also investigated using a logistic regression model at the individual level where the outcome of interest (whether a frisk occurred during an encounter) is coded as one (1) if a frisk occurred during an encounter and zero (0) if documentation for the encounter did not indicate a frisk occurred. Estimates are reported using odds ratios and predicted probabilities to develop a specific understanding of the estimated differences by race and ethnicity of a frisk occurring during an encounter with police. Three regression specifications were used for the individual-level frisk analysis:

1. An estimate of the log odds and predicted probability of a frisk occurring for Black or Hispanic/Latino drivers or residents within a district, without any further controls.
2. The second specification introduces independent variables for gender and age to control for the possibility that these attributes contribute to a person's odds of being frisked during a police encounter.
3. The third specification adds fixed effects for time of day, quarter of the year, and district the stop occurred. The time of day is specified into four time intervals (9:00 am to 2:59 pm, 3:00 pm to 8:59 pm, 9:00 pm to 2:59 am, and 3:00 am to 8:59 am). Quarters of the year follow the calendar year with the first

quarter January through March, second quarter as April through June, third quarter as July through September, and fourth quarter as October through December.

We also estimated district by race interactions to identify whether the probability of a frisk for a given race or ethnic category is higher or lower in certain police districts.

Stop Rate Regression Analysis Findings

The regression analysis for rates of traffic stops, field interviews, no-action encounters, and frisks are presented in Appendix B, Tables B-6 through B-13. Tables B-6 and B-7 present the summary of variables in the traffic stop regression analysis and the results for the regression specifications detailed above. While controlling for all known predictors (Model 7), the results indicate that on average over the four quarters of 2019, the MPD stop rate was higher for Black drivers than White drivers by 16.96 per 100 drivers. The stop rate was higher for Hispanic/Latino drivers than White drivers by 3.30 stops per 100 drivers. These differences from zero are statistically significant at the 99 percent confidence level.

By order of magnitude, we are able to compare the predicted traffic stop rate for White drivers using Model 1 to understand the relative difference in traffic stop rates by race. The estimated average traffic stop rate for White drivers is 2.28 per 100 drivers. This indicates that the estimated Black traffic stop rate is 8.4 times higher than the traffic stop rate for White drivers, or a rate that is 744 percent higher. The estimated Hispanic/Latino traffic stop rate is 2.4 times higher than the traffic stop rate for White drivers, or 44.7 percent higher.[38]

Tables B-8 and B-9 present the summary of variables in the field interview regression analysis and the results for the regression specifications. While controlling for all known predictors (Model 7), the results indicate that in 2019 the MPD field interview rate was higher for Black residents than White residents by 3.91 stops per 1,000 residents. This difference was statistically significant at the 95 percent confidence level. Given the estimated average field interview rate for White residents, the Black field interview rate is 5.16 times higher than the field interview rate for White residents, or a 316 percent difference. The Hispanic/Latino field interview rate was not statistically different from the White field interview rate.

Tables B-10 and B-11 offer the summary of variables in the no-action encounter regression analysis and the results for the various regression specifications. As discussed previously and shown in Table A-1, MPD documented few no-action

[38] The stop rate for Black drivers equals the White stop rate of 2.28 stops per 100 drivers + 16.96 stops per 100 drivers = 19.24 stops per hundred drivers or 19.24/2.28 = 8.4. The percent difference is calculated by measuring the difference between the Black and White stop rates divided by the White stop rate multiplied by 100.

encounters throughout the year. These low totals make it difficult to detect variability in rates across district and race or ethnicity demographic profiles. We find no statistically significant differences in the no-action encounter rates for Black, Hispanic/Latino, White, or other race residents of Milwaukee based on how no-action encounters are currently documented.

Frisks were explored two ways to determine whether and to what extent race or ethnicity of a resident or stop subject plays a role in the likelihood that a frisk will occur. The Settlement Agreement specifies analysis of frisks as a rate by district, similar to the estimates generated for traffic stops, field interviews, and no-action encounters. We also explored the relationship between race or ethnicity and frisks at the individual level to determine odds or predicted probability that a frisk will occur during an encounter with police.

Tables B-12 and B-13 provide the summary of variables in the frisk rate regression analysis and the results for the district-level regression specifications. While controlling for all known predictors (Model 7), the results indicate that in 2019 the MPD frisk rate was higher for Black residents than White residents by 3.03 frisks per 1,000 residents. This difference is statistically significant at the 95 percent confidence level. Given the estimated average frisk rate for White residents, the Black frisk rate is 7.86 times higher than the frisk rate for White residents, or a 589 percent difference. The Hispanic/Latino frisk rate was not statistically different from the White frisk rate.

An exploration of frisk rates at the individual encounter level shows a similar pattern. Table B-14 shows frisk rates by race and type of stop. Twenty-two percent of field interviews result in a frisk, with frisks occurring more often for Black subjects than White subjects (25% and 11%, respectively). Table B-15 provides the individual-level regression analysis of frisks. When controlling for time of day, time of year, and district, the odds of a Black subject being frisked during an encounter are two times that of a White subject and the odds of a Hispanic/Latino subject being frisked are 1.3 times that of a White subject. Both of these results are statistically significant.

To further examine how a stop subject's race and ethnicity influence the probability that the MPD will conduct a frisk, we also estimate a set of regressions in which a stop subject's race or ethnicity is allowed to have different effects in each district. An indicator variable for each combination of subject race or ethnicity and district allows us to understand district-specific differences in frisks by race and ethnicity. Table B-16 summarizes the predicted probabilities from the regression model estimating frisks for each race or ethnicity in each district.

Recall that District 6 is a majority-White residential population. According to Table B-16, the likelihood for a Black subject to be frisked during a police encounter in District 6 is 0.8 percent. The likelihood of a Hispanic/Latino or White stop subject getting

frisked in District 6 is 0.5 percent. This indicates that during police encounters in District 6, the likelihood that a Black subject will get frisked is 47 percent higher than the likelihood for Hispanic/Latino or White stop subjects. The largest difference is found in District 1 where the likelihood that Black subjects are frisked during an encounter with police is 458 percent higher than when White subjects are encountered by police.

The main findings of the Milwaukee stop rate regression analysis are summarized below. For 2019, after ruling out other demographic and district-level predictors of police encounters, we find:

- The traffic stop rate for Black drivers is 8.4 times higher than for White drivers and the traffic stop rate for Hispanic/Latino drivers is 2.4 times higher than for White drivers. These results are statistically significant. Traffic stop rates for drivers of other races did not significantly differ from traffic stop rates of White drivers.
- The field interview rate for Black residents is five times higher than for White residents. This result is statistically significant. Field interview rates for residents that are Hispanic/Latino or of other races did not significantly differ from field interview rates of White residents.
- Rates of no-action encounters did not differ significantly by race or ethnicity. This conclusion is due to low stop totals from which we could make statistical inferences.
- The frisk rate for Black residents is almost eight times higher than for White residents. Frisk rates for Hispanic/Latino residents or residents of other races did not significantly differ from frisk rates of White residents.
- The likelihood of a frisk occurring after a police encounter has been initiated is two times higher for Black stop subjects than it is for White stop subjects. Hispanic/Latino subjects of police encounters are 1.3 times more likely to be frisked than White subjects. These results are statistically significant.

IOARS ANALYSIS (SA V.A.6)

The regression analysis of individualized, objective, and articulable reasonable suspicion (IOARS) is based on sample data used for the two semiannual reviews of IOARS published in February and June 2020, which include an analysis of traffic stops, field interviews, no-action encounters and frisks that took place during the 2019 calendar year. The semiannual reviews are conducted for fulfillment of SA V.A.3.a-e to measure MPD's compliance with the Fourth Amendment in conducting traffic stops, field interviews, no-action encounters, and frisks. Officers must provide "objective, individualized, and articulable facts that, within the totality of the circumstances, lead a police member to reasonably believe that criminal activity has been, is being, or is about to be committed by a specific person or people."[39] Additionally, for frisks to be warranted during a stop, "the police member must be able to articulate specific facts, circumstances and conclusions that support objective and individualized reasonable suspicion that the person is armed and dangerous."[40] The February and June 2020 semiannual reviews offer details regarding the sampling strategy and IOARS decision rules that were used in the reviews.

Table C-1 includes summary statistics for IOARS documentation fulfillment to justify a stop by race or ethnicity and quarter of the year. Table C-2 provides summary statistics for IOARS documentation fulfillment to justify frisks by race or ethnicity and quarter of the year. Based on 1,233 randomly selected encounters that occurred in 2019, 79 percent of stops have documentation that meets the IOARS standard to justify officers initiating the stop. The ability to meet the IOARS documentation standard does not appear to vary much by race; however the 69 encounters in the sample that are missing race information have the lowest rate of IOARS documentation achievement (61 percent). The quarterly totals show marked improvement throughout the year in meeting documentation standards, with only 58 percent of encounters occurring in the first quarter (January through March) achieving the IOARS standard, 73 percent meeting the standard in quarter two (April through June) and quarters three (July through September) and four (October through December) representing 90 and 94 percent compliance. The increasing compliance trend is found regardless of the race or ethnic identity of the stop subject. As mentioned previously, Settlement Agreement-related training was completed in waves from January to June 2019, with the department fully trained by June 18, 2019.

Table C-2 provides descriptive statistics for IOARS documentation for justifying frisks during stops for the 467 frisks in the sample. While MPD has shown clear progress in documenting IOARS to justify initiating a police encounter, they have not

[39] For further discussions of how IOARS determinations were made, see February 2020 and June 2020 Semiannual Analysis of Traffic Stops, Field Interviews, No-action Encounters, and Frisks.
[40] Milwaukee Police Department Standard Operating Procedure 085 "Citizen Contacts, Field Interviews, Search and Seizure." Effective January 25, 2019.

demonstrated progress in documenting IOARS to justify performing a frisk during an encounter. Overall, only 21 percent of frisk encounters meet the IOARS documentation standard, far below the 85 percent threshold denoted in the Settlement Agreement as the acceptable minimum proportion of stops that fail to document IOARS (SA V.1.d.i-vii). These rates are low for all race and ethnicity categories.

Tables C-3 and C-4 describe the stop totals and IOARS thresholds for the stop sample and the frisk sample by district. In meeting the IOARS documentation standard for stops, by quarter four the districts ranged between 89 and 100 percent documentation compliance. For frisks, Districts 2, 5, and 7 had the lowest proportion of frisk documentation meeting the IOARS standard, ranging between 14 and 19 percent compliant for the full year totals.

IOARS Regression Analysis

The regression specifications provided in SA V.A.3 were used to assess whether subject race or ethnicity is significantly related to the likelihood that documentation for the stop or frisk meets the IOARS standard. Logistic regression with robust standard errors clustered by district was used as a modeling strategy, where the dependent variable is coded one if the encounter documentation met the IOARS standard and zero if the IOARS standard was not met. This modeling strategy predicts whether there are significant differences by race or ethnicity in the likelihood that officers meet the IOARS standard, controlling for subject demographics (age and gender) and the specified district-level social and demographic variables. Tables C-5 and C-6, display summary statistics and regression estimation with odds ratios for the IOARS stop analysis. Tables C-7 and C-8 include the summary statistics and regression estimation with odds ratios for the IOARS frisk analysis. Table C-9 provides the predicted probabilities and average marginal effects for both IOARS analyses. For race and ethnicity, the reference category is a White subject, with the odds ratio for Black interpreted as the odds of an encounter achieving the IOARS standard when it involves a Black subject relative to IOARS documentation for White subjects, holding all other variables constant. Predicted probabilities present the estimated probability that encounters with each race or ethnic category will meet the IOARS documentation standard during a police stop or frisk, and the average marginal effects show the magnitude of the difference between IOARS documentation for Black or Hispanic/Latino subjects as compared to White subjects.

Table C-6 lists the odds ratios for whether there are significant differences in IOARS documentation to justify initiating a police encounter for each variable specified in the model. Table C-9 reports the predicted probability of achieving the IOARS standard for the stop, controlling for district and other subject demographic effects. The odds ratios indicate that IOARS standards for both Black and Hispanic/Latino stop subjects are less likely to be met, relative to White stop subjects. In terms of predicted

probabilities, the model estimates that the IOARS standard is met in 83 percent of stops involving White subjects, as compared to an estimated 82 percent for Black subjects and 75 percent for Hispanic/Latino subjects. The difference in IOARS documentation is not statistically significant for Black subjects relative to White subjects, but it does achieve significance for Hispanic/Latino subjects relative to White subjects, using a 90 percent confidence level.[41]

Table C-8 lists the odds ratios for whether there are significant differences in IOARS documentation to justify a frisk encounter for each variable specified in the models. Table C-9 provides the predicted probabilities of achieving the IOARS standard for frisks, controlling for subject and district-level explanatory variables. The odds ratios for the variables of interest, an indicator for a Black subject and an indicator for a Hispanic/Latino subject, are higher than one, indicating the estimated odds for IOARS documentations for frisks are higher for Black subjects and Hispanic/Latino subjects relative to White subjects. However, these odds are not statistically significant. The relative imbalance of frisks by race and ethnic category likely interferes with the estimation of whether race or ethnicity influences the documentation of IOARS. As indicated in Table C-2, approximately 80 percent of frisks in the sample were conducted with Black subjects, while the rate generated for White subjects is based on documentation for 38 frisks. The model estimation procedure factors in this imbalance when attempting to estimate whether the differences in documentation of IOARS between race or ethnic groups is statistically significant.

The main findings of the IOARS regression analysis are summarized below. For 2019, after ruling out other demographic and district-level explanatory variables, we find:

- IOARS documentation to justify stops of subjects of any race or ethnic category has increased in quality over each of the quarters of the 2019 calendar year. By quarter 4, 94 percent of documentation met the IOARS standard.
- IOARS documentation to justify frisks of subjects of any race or ethnic category has been steadily deficient throughout 2019, with 13 to 24 percent of records meeting the IOARS standard.
- The probability of proper IOARS documentation for an encounter involving a Hispanic/Latino subject is 8.4 percentage points lower relative to the probability of proper IOARS documentation for encounters involving White subjects. This difference is statistically significant at the 90 percent confidence level. There is not a statistically significant difference in IOARS documentation for Black subjects relative to White subjects of police stops.

[41] The differences in the estimated predicted probabilities for Black subjects and Hispanic/Latino subjects relative to White subjects is known as the average marginal effects. That is, the IOARS documentation rate is 8.3 percentage points lower for Hispanic/Latino subjects relative to White subjects (.834 - .75 = -.084*100 = 8.4).

- The probability of proper IOARS documentation for frisks involving Black subjects or frisks involving Hispanic/Latino subjects is higher relative to White subjects but not statistically significant.

FRISK AND CONTRABAND HIT RATE ANALYSIS (SA V.A.7.A)

The Settlement Agreement (SA V.A.7a) requires a hit rate analysis to determine the possible effects of race and ethnicity in encounters with police.[42] As summarized in Table D-1, 1,122 frisks are documented in 2019, during traffic stops, field interviews, and no-action encounters. Of those frisks, 195 (17 percent) resulted in the discovery of contraband. Drug contraband was discovered during 84 frisks and 68 frisks recovered weapons, discovery rates of 7.5 percent and 6.1 percent respectively.

It is important to note that searches are not discussed in this analysis as the focus of the Settlement Agreement specifies frisks. Searches are different from frisks in that searches involve looking into hidden places in vehicles or on a subject's person for contraband or evidence of a crime with the intent of charging the individual with an offense. Frisks are a pat down of the outer garments of a subject and are to be conducted only when officers have IOARS that the subject is armed and dangerous. If during a frisk of a subject's outer clothing an officer feels an object that is identifiable as contraband, the officer is authorized to seize the object. This can lead to discovery of drugs or other non-weapon contraband as a result of a frisk even as the intent of frisks are to retrieve and secure weapons.

Table D-1 also provides a summary of contraband hit rates by race. The overall contraband hit rates are 2.7 and 1.0 percentage points lower for Black and Hispanic/Latino frisk subjects, respectively, than for White subjects. This preliminarily suggests that officers may be more likely to make a decision to frisk Black and Hispanic/Latino stop subjects than White subjects. Regression analysis is used to explore this hypothesis by accounting for other explanations for why officers may frisk a given stop subject.

Contraband Hit Rate Regression Analysis

We conduct multivariate logistic regression analyses to determine whether the discovery of contraband in a frisk during a police encounter differs by race or ethnicity after controlling for other demographic factors, as well as the time and district in which the encounter occurred.[43] The models provide odds ratios indicating the odds of contraband discovery relative to the reference category, which in this analysis represents White frisk subjects. We also present predicted probabilities of contraband

[42] The Settlement Agreement specifies traffic stops, field interviews, and frisks for inclusion in the hit rate analysis. Since four encounters that were documented as no-action encounters also included frisks, they are included in the hit rate analysis as well.

[43] Contraband includes weapons, drugs, and other items such as drug paraphernalia, stolen goods, or tools used to commit a crime. We analyze contraband as all contraband types and more specifically weapons or drug discoveries.

discovery along with the average marginal effects in order to describe differences in contraband discovery by race or ethnicity in terms of percentage points. The dependent variable is an indicator variable equal to one if contraband is discovered and zero otherwise. We estimate three regression models:

1. Model 1 controls only for the frisk subject's race or ethnicity, Black or Hispanic/Latino. other race categories are excluded from the analysis due to the low frisk totals represented by people of races or ethnicities other than Black, Hispanic/Latino, or White.
2. Model 2 adds controls for the frisk subject's age and gender. Age is specified as an indicator for whether the subject is younger than 35 years old and gender is specified as an indicator for whether the frisk subject is male.
3. Model 3 adds controls for the time of day the stop occurred, district, and quarter. Time of day is split into four quarters of the day: 9:00am to 2:59pm, 3:00pm to 8:59pm, 9:00pm to 2:59am, and 3:00am to 8:59am.

Table D-2 provides the full regression results for each model by reporting odds ratios and confidence intervals for each coefficient in the model. Table D-4 reports the predicted probabilities and average marginal effects for the relationship between race or ethnicity and contraband discovery based on Model 3. After controlling for other frisk subject characteristics, time of day, time of year, and district, the probability of discovering contraband during a frisk is lower for Black subjects than for White subjects by 6.6 percentage points, although this difference is not statistically significant. Additionally, while frisks of Hispanic/Latino subjects are predicted to yield slightly higher contraband discovery rates than frisks with White subjects, this result is not statistically significant.

Since the expressed purpose of conducting a frisk is related to weapon possession, we conducted additional analyses focused on understanding whether the weapons discovery rate varies by race or ethnicity and whether the drug discovery rate varies by race or ethnicity. We used Model 3 specifications for these analyses and find no statistically significant differences in the probability of discovering weapons during a frisk by race or ethnicity. Drug discovery rates also did not differ by race or ethnicity. Full regression results are presented in Table D-3 and associated predicted probabilities and average marginal effects are presented in Table D-4.

The main findings of the frisk and contraband hit rate analysis are summarized below. For 2019, after ruling out other demographic and district-level explanatory variables, we find:

- The probability of discovering contraband during a frisk is lower for Black subjects than for White subjects by 6.6 percentage points; however, this difference is not statistically significant.

- Frisks of Hispanic/Latino subjects yield slightly higher contraband discovery rates as compared to frisks with White subjects; however, this difference is not statistically significant.
- Weapon discovery rates during frisks do not differ significantly by race or ethnicity.
- Drug discovery rates during frisks do not differ significantly by race or ethnicity.

DISTRICT-LEVEL ENCOUNTERS BY CRIME HIT RATE ANALYSIS (SA V.A.7.B)

We conduct a hit rate analysis at the police district level to explore whether police encounters are more likely to occur in majority Black or majority Hispanic/Latino police districts. The Settlement Agreement (SA V.A.7b) requires this analysis to develop encounter rates per reported crime rates to determine whether the ratios are related to district racial or ethnic demographics. If districts with majority shares of Black or Hispanic/Latino populations have higher stop or frisk rates but lower relative crime rates than districts with majority White populations, then there is a stronger likelihood that race or ethnicity is a determining factor in officers' initiation of traffic stops, field interviews, no-action encounters or frisks.

As indicated in Figure A-5, Districts 4, 5, and 7 encompass majority-Black neighborhoods, District 2 is a majority-Hispanic/Latino neighborhood, and Districts 1 and 6 are majority-White neighborhoods. District 3 appears to be the most diverse district, with 48 percent Black residents, 34 percent White residents, 9 percent other race categories and 9 percent Hispanic/Latino residents.

Table E-1 provides the ratios of the traffic stop rate (per 100 drivers), field interview rate (per 1,000 residents), no-action encounter rate (per 1,000 residents), and frisk rate (per 1,000 residents) to crime rates in each district. For ease of description, Table E-2 summarizes a comparison of majority Black districts (Districts 4, 5, and 7) to majority White districts (Districts 1 and 6) and a comparison of the majority Hispanic/Latino district (District 2) to majority White districts.

While the ratios of traffic stop, field interview, and no-action encounter rates relative to crime rates in majority-Black districts are lower than the ratios of encounters to crime rates in majority-White districts, the ratio of frisk rates to crime rates in Black districts is 112 percent higher than the ratio of frisk rates to crime rates in White districts. The ratios of traffic stop and field interview rates to crime rates in the majority-Hispanic/Latino District 2 are higher than the ratios of these encounters to crime rates in White districts. Similar to the frisk ratio comparison between Black and White districts, the ratio of frisk rates to crime rates in District 2 is 162 percent higher than the ratio of frisk rates to crime rates in White districts.[44]

[44] District 3 is 48% Black residents, 34% White residents, 9% Hispanic/Latino residents, and 9% residents of other races and thus has no clear majority racial or ethnic group. The encounter comparisons to white districts of ratios of encounters to crime rates are: -36% (traffic stops), -3% (field interviews), -42% (no-action encounters), and 68% (frisks).

Overall, these results suggest that, when accounting for relative crime rates, frisks are conducted more often in Black and Hispanic/Latino neighborhoods than in White neighborhoods.

DISCUSSION OF FINDINGS

The Settlement Agreement (SA V.A.5-8) stipulates specific data sources, regression protocols, and hit rate analyses required to measure the Milwaukee Police Department's (MPD) compliance with the Fourteenth Amendment of the U.S. Constitution and Title VI of the Civil Rights Act of 1964 in conducting traffic stops, field interviews, no-action encounters and frisks. The intent of the analysis in this report is to determine the impact of a person's race or ethnicity on the likelihood of a police encounter while controlling for crime and population characteristics of each of the police districts. Four analyses were conducted to measure compliance: stop rate analysis, IOARS rate analysis, hit rate analysis of frisks and contraband, and hit rate analysis of districts by crime rates.

Limitations

The analyses offered in this report provides an exploration of police encounters in 2019, after imposition of the Settlement Agreement. MPD continues to make progress in policy and practice to be responsive to the requirements of the Settlement Agreement and, in turn, the quarterly data extractions reflect similar progress in data quality and completeness. MPD is not required to re-extract past quarters as they implement changes to their data systems or extraction protocols, and as such, we must acknowledge the limitations of analyses combining data sets that may use different extraction protocols intended to improve the quality and completeness of the data sets. We identify and are able to compensate for some of the limitations, but acknowledge that these limitations hamper our ability to make strong conclusions in some cases and are explicit in our reports when these limitations arise

There are encounters provided in the CAD files that do not have corresponding documentation in files from TraCS, RMS, or AIM (see Table A-1). The video review we are currently conducting will help us understand the extent to which these unmatched encounters are a product of extraction protocols or police encounters without required documentation. The exploration of data presented in this report does not include these observations, as there is not enough information about them to help inform the required analyses.

As described in the "Data cleaning and data loss" subsection, the citation and warning files in TraCS are responsible for the most data loss due to an inability to match observations to CAD files. We work to include these observations in the sampling frame for the IOARS analyses, but continue to work with MPD to understand how to integrate these data.

Despite the limitations to the data extractions provided for police encounters that occurred in 2019, we believe the analyses presented in this report inform a baseline

understanding of racial disparities present in police encounters after imposition of the Settlement Agreement and during implementation of policy and procedural changes to respond to the requirements of the Settlement Agreement.

Summary of Findings

The stop rate analysis indicates, after controlling for known predictors, that Black drivers and residents are subjected to traffic stops, field interviews, and frisks at significantly higher rates than White drivers and residents. Black drivers are eight times more likely to get stopped than White drivers, Black residents are four times more likely to be subjected to a field interview, and seven times more likely to be subjected to a frisk than White residents of Milwaukee. A deeper analysis of frisks indicates that during a police encounter, Black subjects are two times more likely to be frisked than White subjects, with the disparity largest in Districts 1, 3, and 5. Differences in no-action encounters for Black residents and White residents were not statistically significant.

Controlling for demographic and district-level population characteristics, Hispanic/Latino drivers were 2.4 times more likely than White drivers to be subjected to a traffic stop. During a police encounter, Hispanic/Latino subjects were 1.3 times more likely to be frisked than White subjects. Both of these results are statistically significant. The stop rates of Hispanic/Latino residents for field interviews, no-action encounters and frisks compared to residential population were not significantly different than for White residents.

There were only 172 no-action encounters documented in 2019, a low number to rely upon to draw definitive conclusions about this newly-recorded type of police encounter. This hampered our ability to detect variation in no-action encounter rates by race, ethnicity, or district. Descriptive statistics indicate that no-action encounter rates for Black residents are higher in each district than for White residents, with the most noticeable difference in District 1 (4.6 and 0.5, respectively). However, statistical models do not show race or ethnic disparity in no-action encounters, likely due to the low stop totals and the detectable variation across districts.

Analysis of IOARS documentation to justify stops of subjects of any race or ethnic category has increased in quality over each of the quarters of the 2019 calendar year. By quarter 4, 94 percent of documentation met the IOARS standard of justification for initiating a police encounter. However, IOARS documentation to justify frisks has been steadily deficient throughout 2019, with 13 to 24 percent of records meeting the IOARS standard.

The probability of proper IOARS documentation for an encounter involving a Hispanic/Latino subject is 8.4 percentage points lower relative to the probability of proper IOARS documentation for encounters involving White subjects. This difference

is statistically significant at the 90 percent confidence level. There is not a statistically significant difference in IOARS documentation for Black subjects relative to White subjects of police stops. The probability of proper IOARS documentation for frisks involving Black subjects or frisks involving Hispanic/Latino subjects is higher relative to White subjects but not statistically significant.

Hit rates for contraband discovery were 17 percent overall, and while discovery rates for Black and Hispanic/Latino subjects were lower than for White subjects, the differences are not statistically significant. Exploration of contraband hit rates by race or ethnicity and type of contraband (drug or weapon) also did not reveal statistically significant differences.

An analysis of the ratio of frisk rates to crime rates by district shows that when accounting for relative crime rates, officers conduct frisks more often in Black and Hispanic/Latino neighborhoods than in White neighborhoods.

Overall, we find a racial and ethnic disparity in traffic stops, field interviews, and frisks conducted by MPD in Milwaukee. Racial and ethnic disparity in no-action encounters is uncertain due to the low documentation totals for this type of encounter and likely inconsistency in the way no-action encounters are documented. IOARS documentation standards have improved throughout 2019, though encounters with Hispanic/Latino subjects are significantly less likely to meet the IOARS standard in written documentation. Documentation of IOARS for frisks is deficient regardless of race or ethnicity of the frisk subject. These results indicate that MPD will need to continue focusing on training and accountability for constitutional policing practices.

CONTRIBUTORS

Katie Zafft manages CJI's policing and corrections portfolios and leads the data analysis efforts for the Milwaukee Settlement Agreement work. She has over 10 years of experience working in criminal justice policy evaluation and implementation. Dr. Zafft's professional research experience includes both quantitative and qualitative data analysis at the local, state, and national level to evaluate a wide range of criminal justice topics, including the intersection of law enforcement and drug policy, community supervision strategies, drug court implementation, sentencing guidelines, and felony theft statutes. Her work for The Pew Charitable Trusts' public safety performance project involved evaluating state criminal justice policy reforms to inform the national conversation about sentencing and corrections. She holds a Ph.D. in Criminology and Criminal Justice from the University of Maryland, a Master's Degree in Criminology from the University of Minnesota-Duluth, and a BA in Psychology from St. Catherine's University in St. Paul, Minnesota.

Joanna Abaroa-Ellison provides data analysis support with her policy and data experience in various parts of the criminal justice system, including jails, courts, policing, and corrections. Prior to her work with CJI, Ms. Abaroa-Ellison served as the Data Integration Specialist and Research Analyst at the Middlesex Sheriff's Office (MA). There, she was able to extract, analyze, and visualize data as well as build capacity for implementing data-driven practices and policies. She holds a Master's of Social Work in Macro Practice from Boston College and a BA in Criminology from the University of Pennsylvania.

Torri Sperry provides data analysis support for CJI's Consultant role in the Milwaukee Settlement Agreement. Her previous research experience includes a variety of topics relating to issues of inequity within the criminal justice system, including race, policing, and juvenile justice. She is a Ph.D. student in Criminology and Criminal Justice at the University of Maryland and holds a BA in Sociology from the University of Oklahoma.

Amy Farrell reviewed the methodology for the data analysis of this report. Dr. Farrell is a Professor of Criminology and Criminal Justice at Northeastern University and the Director of the School of Criminology and Criminal Justice. She is also the Co-Director of the Violence and Justice Research Laboratory, housed within the Institute on Race and Justice at Northeastern University.

APPENDIX A: POPULATION AND ENCOUNTER TABLES & FIGURES

A-1: Encounters by Quarter and Type

Quarter	Data Extraction Delivery Date	CAD Numbers	TraCS – Traffic Stops	RMS - Field Interviews	RMS - No-Action Encounters
Quarter 1 Jan. - March	August 6, 2019	19,143	17,978	555	36
Quarter 2 April - June	August 6, 2019	15,942	14,193	1,179	71
Quarter 3 July – Sept.	October 21, 2019	14,172	11,988	997	45
Quarter 4 Oct. – Dec.	February 7, 2020	15,835	14,302	684	20
Total		65,092	58,461	3,415	172

Notes:
[1]The first extraction of quarter 1 2019 data was delivered April 15, 2019 but was incomplete in content and structure.
[2]The second delivery of quarter 1 occurred June 17, 2019 with changes but still incomplete. A final version of quarter 1 data was delivered with quarter 2 data on August 6, 2019.
[3]The first extraction of quarter 2 2019 data was delivered July 31, 2019. A final version of quarter 2 data was delivered with quarter 1 data on August 6, 2019.
[4]Date of birth was omitted from the field interview persons file in the quarter 4 extraction and an amended file was delivered February 13th to rectify the omission.
[5]MPD performed manual redaction of the public's personally-identifiable information from the quarter 4 data extraction. Personally-identifiable information includes name, home address, driver's license or state ID number, personal phone number, and social security number.
[6]CAD number totals represent the total number of unique CAD numbers provided with encounter dates that fall within the specified quarter. The total number of encounters do not equal the total number of CAD numbers because not all CAD numbers had corresponding TraCS or RMS data provided in the extraction.

Sources:
Milwaukee Police Department Stop Data, 2019

A-2: Data Loss by Encounter Type and Form

Form	Extraction 1 (Q1Q2)	Extraction 2 (Q3)	Extraction 3 (Q4)
TraCS: Contact Summaries	531	217	171
TraCS: ELCI	3,390	3,505	2,987
TraCS: NTC	N/A	22	2,236
TraCS: Warnings	N/A	486	491
RMS: Field Interviews	75	35	9
RMS: No-Action Encounters	25	1	0
AIM	N/A	10	24

Notes:
[1]N/A denotes information not included in extraction data.

Sources:
Milwaukee Police Department Stop Data, 2019

A-3: Encounters by Type and District

District	Traffic Stops	Field Interviews	No-Action Encounters	Totals	Percent by District
1	4315	354	43	4712	7.6%
2	6465	662	21	7148	11.5%
3	6614	643	32	7289	11.8%
4	6982	357	28	7367	11.9%
5	9907	628	20	10555	17.0%
6	8610	327	13	8950	14.4%
7	13621	407	13	14041	22.6%
NULL	1930	37	2	1969	3.2%
Missing	17	0	0	17	0.03%
Total	58461	3415	172	62048	100.0%

Notes:
[1]According to the extraction data dictionaries, "NULL" refers to locations of encounters that fall outside of district boundaries or special circumstance stops. We include them here for reference but do not include them in the district-level analyses.
[2]Missing refers to encounters with missing address or latitude/longitude data. Encounters with missing or null location information were not included in the district-level analyses.

Sources:
Milwaukee Police Department Stop Data, 2019

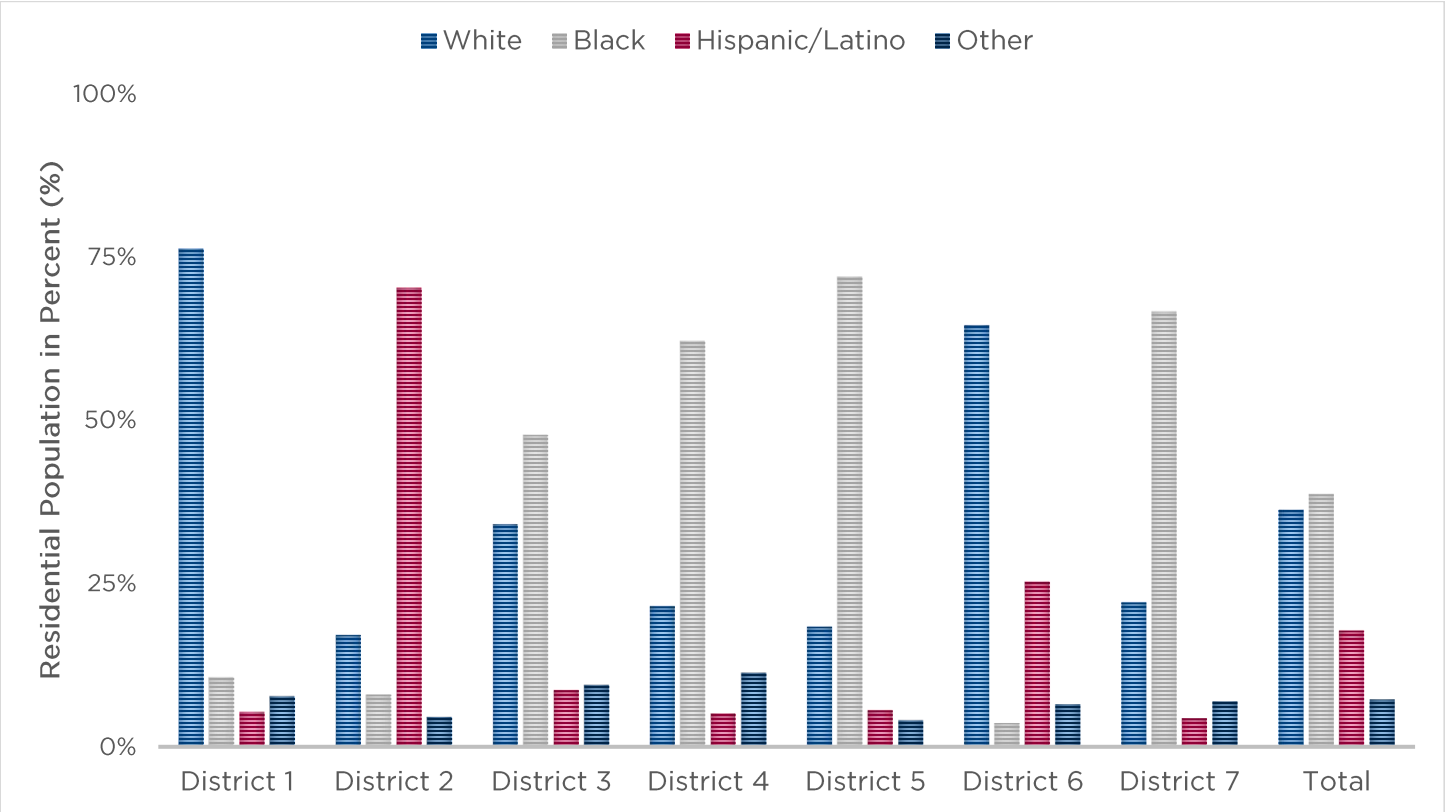
A-4: Share of Encounters with Missing Demographic Information

	Number of Stops				Share of Stops Missing Demographic and Location Data			
Quarter	Traffic Stops	Field Interviews	No-Action Encounters	Frisks	Traffic Stops	Field Interviews	No-Action Encounters	Frisks
Q1	17,978	555	36	213	33%	1%	0%	2%
Q2	14,193	1,179	71	400	17%	2%	1%	3%
Q3	11,988	997	45	256	7%	4%	7%	4%
Q4	14,302	684	20	253	4%	4%	0%	3%
Total	58,461	3,415	172	1,122	17%	3%	2%	3%

Notes:
[1]Each observation in the data represents a single encounter with police.
[2]For traffic stops, field interviews, and frisks, an observation is considered to be missing demographic information if subject race/ethnicity, age, or gender is not present in TraCS or RMS data.
[3]For no-action encounters, an observation is considered to be missing demographic information if subject race/ethnicity or gender is not present in TraCS or RMS data. Age is not required to be documented by officers during no-action encounters.
[4]Frisks are a subset of traffic stops or field interviews.

Sources:
Milwaukee Police Department Stop Data, quarters 1-4, 2019

A-5: Population Race and Ethnic Composition by District



Sources:
U.S. Census American Community Survey 5-Year Estimates, 2013-2017

APPENDIX B: STOP RATE ANALYSIS TABLES

B-1: Traffic Stops per 100 Drivers by Race, Ethnicity, and District

District	1	2	3	4	5	6	7	All
Traffic Stops per 100 Drivers	13	24	14	12	33	12	23	17
Traffic Stops per 100 Black Drivers	71	116	30	17	47	74	34	34
Traffic Stops per 100 Hispanic/Latino Drivers	30	21	13	12	18	22	19	21
Traffic Stops per 100 White Drivers	8	14	4	5	10	7	5	7
Traffic Stops per 100 Drivers of Other Races	9	16	5	4	12	15	7	9
Percentage of Black Residents	11%	8%	48%	62%	72%	4%	67%	39%
Percentage of Hispanic/Latino Residents	5%	70%	9%	5%	6%	25%	4%	18%
Percentage of White Residents	76%	17%	34%	22%	18%	65%	22%	36%
Percentage of Residents of Other Races	8%	5%	9%	11%	4%	6%	7%	7%

Notes:
[1]The Black traffic stop rate in each district is calculated as the total number of traffic stops of Black drivers in that district, multiplied by 100, and divided by the number of Black drivers in that district. The white, Hispanic/Latino, and other race traffic stop rates are calculated the same way.
[2]Other race refers to individuals from the following race categories: Native American or Alaskan Native, Asian, Native Hawaiian or other Pacific Islander, two or more races, and "other" race.

Sources:
Milwaukee Police Department Stop Data, 2019
Wisconsin Driver License Data, 2015
U.S. Census American Community Survey 5-Year Estimates, 2013-2017

B-2: Field Interviews per 1,000 Residents by Race, Ethnicity, and District

District	1	2	3	4	5	6	7	All
Field Interviews per 1000 Residents	7	8	8	4	10	3	4	6
Field Interviews per 1000 Black Residents	40	36	14	5	13	23	5	10
Field Interviews per 1000 Hispanic/Latino Residents	8	4	2	1	4	3	2	3
Field Interviews per 1000 White Residents	3	14	3	2	3	2	1	3
Field Interviews per 1000 Residents of Other Races	4	2	1	0	1	2	0	1
Percentage of Black Residents	11%	8%	48%	62%	72%	4%	67%	39%
Percentage of Hispanic/Latino Residents	5%	70%	9%	5%	6%	25%	4%	18%
Percentage of White Residents	76%	17%	34%	22%	18%	65%	22%	36%
Percentage of Residents of Other Races	8%	5%	9%	11%	4%	6%	7%	7%

Notes:
[1]The Black field interview rate in each district is calculated as the total number of field interviews of Black residents in that district, multiplied by 1,000, and divided by the number of Black residents in that district. The white, Hispanic/Latino, and other race field interview rates are calculated the same way.
[2]Other race refers to individuals from the following race categories: Native American or Alaskan Native, Asian, Native Hawaiian or other Pacific Islander, two or more races, and "other" race.

Sources:
Milwaukee Police Department Stop Data, 2019
U.S. Census American Community Survey 5-Year Estimates, 2013-2017

B-3: No-Action Encounters per 1,000 Residents by Race, Ethnicity, and District

District	1	2	3	4	5	6	7	All
No-Action Encounters per 1000 Residents	0.9	0.3	0.4	0.3	0.3	0.1	0.1	0.3
No-Action Encounters per 1000 Black Residents	4.6	1.1	0.5	0.4	0.4	0.7	0.2	0.5
No-Action Encounters per 1000 Hispanic/Latino Residents	0.4	0.2	0.1	0.0	0.3	0.0	0.0	0.1
No-Action Encounters per 1000 White Residents	0.5	0.3	0.3	0.2	0.1	0.1	0.0	0.2
No-Action Encounters per 1000 Residents of Other Races	0.3	0.0	0.1	0.2	0.0	0.3	0.0	0.1
Percentage of Black Residents	11%	8%	48%	62%	72%	4%	67%	39%
Percentage of Hispanic/Latino Residents	5%	70%	9%	5%	6%	25%	4%	18%
Percentage of White Residents	76%	17%	34%	22%	18%	65%	22%	36%
Percentage of Residents of Other Races	8%	5%	9%	11%	4%	6%	7%	7%

Notes:
[1]The Black no-action encounter rate in each district is calculated as the total number of no-action encounters of Black residents in that district, multiplied by 1,000, and divided by the number of Black residents in that district. The white, Hispanic/Latino, and other race no-action encounter rates are calculated the same way.
[2]Other race refers to individuals from the following race categories: Native American or Alaskan Native, Asian, Native Hawaiian or other Pacific Islander, two or more races, and "other" race.

Sources:
Milwaukee Police Department Stop Data, 2019
U.S. Census American Community Survey 5-Year Estimates, 2013-2017

B-4: Frisk Rates per 1,000 Residents by Race, Ethnicity, and District

District	1	2	3	4	5	6	7	All
Frisks per 1,000 Residents	0.9	2.4	1.8	0.9	6.8	0.4	1.5	1.9
Frisks per 1,000 Black Residents	6.7	12.2	3.5	1.4	9.0	3.3	2.0	3.9
Frisks per 1,000 Hispanic/Latino Residents	0.8	1.3	0.1	0.6	0.8	0.4	0.2	0.9
Frisks per 1,000 White Residents	0.2	2.6	0.3	0.3	1.4	0.2	0.4	0.5
Frisks per 1,000 Residents of Other Races	0.3	0.8	0.1	0.0	0.4	0.1	0.0	0.2
Percentage of Black Residents	11%	8%	48%	62%	72%	4%	67%	39%
Percentage of Hispanic/Latino Residents	5%	70%	9%	5%	6%	25%	4%	18%
Percentage of White Residents	76%	17%	34%	22%	18%	65%	22%	36%
Percentage of Residents of Other Races	8%	5%	9%	11%	4%	6%	7%	7%

Notes:
[1]The Black frisk rate in each district is calculated as the total number of frisks of Black residents in that district, multiplied by 1,000, and divided by the number of Black residents in that district. The white, Hispanic/Latino, and other race frisk rates are calculated the same way.
[2]Other race refers to individuals from the following race categories: Native American or Alaskan Native, Asian, Native Hawaiian or other Pacific Islander, two or more races, and "other" race.

Sources:
Milwaukee Police Department Stop Data, 2019
U.S. Census American Community Survey 5-Year Estimates, 2013-2017

B-5: Ratio of Black and Hispanic/Latino Stop Rates to White Stop Rates

	Traffic Stops	Field Interviews	No-Action Encounters	Frisks
Ratio of Black Stop Rate to White Stop Rate	4.9	3.7	2.3	8.3
Ratio of Hispanic/Latino Stop Rate to White Stop Rate	3.0	1.2	0.6	1.9
Ratio of Stop Rate of Other Races to White Stop Rate	1.3	0.4	0.7	0.3

Notes:
[1]The ratio of the Black traffic stop rate to the White traffic stop rate is calculated as the number of traffic stops per 100 Black drivers divided by the number of traffic stops per 100 White drivers. The same calculation is performed for the other encounter types and other race or ethnic categories.

Sources:
Milwaukee Police Department Stop Data, 2019
Wisconsin Driver License Data, 2015
U.S. Census American Community Survey 5-Year Estimates, 2013-2017

B-6: Summary of Variables in Traffic Stop Rate Analysis

	Mean	Standard Deviation	Minimum	Maximum	Observations
Traffic Stop Rate	7.40	12.40	0.00	100.00	448
Black	0.25	0.43	0.00	1.00	448
Hispanic/Latino	0.25	0.43	0.00	1.00	448
Other Race	0.25	0.43	0.00	1.00	448
Male	0.50	0.50	0.00	1.00	448
Young	0.50	0.50	0.00	1.00	448
Black Share of District	0.39	0.28	0.04	0.72	448
Hispanic/Latino Share of District	0.18	0.23	0.04	0.70	448
Other Race Share of District	0.07	0.02	0.04	0.11	448
White share of District	0.36	0.22	0.17	0.76	448
Male Share of District	0.48	0.03	0.46	0.54	448
Young Share of District	0.32	0.12	0.23	0.60	448
Unemployment Rate in District	0.10	0.04	0.03	0.15	448
Lagged Total Crime Rate in District	0.09	0.03	0.03	0.15	448
Lagged Violent Crime Rate in District	0.03	0.02	0.01	0.07	448
Lagged Property Crime Rate in District	0.04	0.01	0.02	0.06	448

Notes:
[1]The unit of observation in the traffic stop rate analysis is MPD district x race or ethnicity x age x gender x quarter.
[2]The dataset contains one observation for each race or ethnicity (Black, Hispanic/Latino, other race, and White) of each gender (Male, Female) and each age group (younger or older than 35) in each MPD district in each quarter of 2019. By construction, the race or ethnicity indicator variables have a mean of one quarter and the gender and age variables have a mean of one-half.

Sources:
Milwaukee Police Department Stop Data, 2019
Wisconsin Driver License Data, 2015
U.S. Census American Community Survey 5-Year Estimates, 2013-2017
Milwaukee Part I and Part II Crime Data, 2018

B-7: Traffic Stop Rate Estimation Results

Dependent Variable: Traffic Stops per 100 Drivers	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Black	16.96*** (3.112)	16.96*** (3.115)	16.96*** (3.119)	16.96*** (3.129)	16.96*** (3.133)	16.96*** (3.136)	16.96*** (3.140)
Hispanic/Latino	3.304*** (0.557)	3.304*** (0.558)	3.304*** (0.559)	3.304*** (0.561)	3.304*** (0.561)	3.304*** (0.562)	3.304*** (0.562)
Other Race	0.236 (0.315)	0.236 (0.315)	0.236 (0.316)	0.236 (0.317)	0.236 (0.317)	0.236 (0.318)	0.236 (0.318)
Male		5.044*** (0.995)	5.044*** (0.996)	5.044*** (0.999)	5.044*** (1.000)	5.044*** (1.001)	5.044*** (1.003)
Young			8.525*** (1.413)	8.525*** (1.417)	8.525*** (1.419)	8.525*** (1.421)	8.525*** (1.422)
Black Share of District				-3.148 (1.623)	-1.016** (0.372)	0.483*** (0.0864)	1.214*** (0)
Hispanic/Latino Share of District				3.803* (1.731)	6.414*** (0.459)	3.035*** (0.131)	3.828*** (0)
Other Share of District				-75.20*** (6.047)	-72.58*** (7.102)	-67.49*** (0.938)	-69.33*** (0)
Young Share of District					5.971*** (0.848)	-4.011*** (0.364)	-3.106*** (0)
Male Share of District						55.81*** (1.631)	49.64*** (0)
District Unemployment Rate							-6.252*** (0)
Constant	2.279*** (0.420)	-0.243 (0.270)	-4.505*** (0.856)	1.440 (2.275)	-1.922 (2.112)	-26.18*** (2.358)	-23.17*** (1.920)
Observations	448	448	448	448	448	448	448
R-squared	0.316	0.357	0.475	0.526	0.527	0.528	0.528

Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Notes:
[1]Observations in the data are at the level of race or ethnicity, age, gender, district, and quarter of the year.
[2]The dependent variable is the total number of traffic stops per 100 licensed drivers by race or ethnicity, age, gender, district, and quarter of the year.
[3]Each variable's coefficient measures its relationship with the stop rate per 100 licensed drivers.
[4]Other race refers to individuals from the following race categories: Native American or Alaskan Native, Asian, Native Hawaiian or other Pacific Islander, two or more races, and "other" race.
[5]Regression Models 8-10 are identical to Model 7 estimates and are omitted due to multicollinearity with the unemployment rate (total and property crime) and percent young (property crime).
[6]"Male Share of District" is based on the residential population and varies by district.
[7]Standard errors are clustered by MPD district.
[8]In Model 1, the constant provides an estimate of the White traffic stop rate.

Sources:
Milwaukee Police Department Stop Data, 2019
Wisconsin Driver License Data, 2015
U.S. Census American Community Survey 5-Year Estimates, 2013-2017

B-8: Summary of Variables in Field Interview Rate Analysis

	Mean	Standard Deviation	Minimum	Maximum	Observations
Field Interview Rate	1.73	3.38	0.00	17.88	112
Black	0.25	0.43	0.00	1.00	112
Hispanic/Latino	0.25	0.43	0.00	1.00	112
Other Race	0.25	0.43	0.00	1.00	112
Male	0.50	0.50	0.00	1.00	112
Young	0.50	0.50	0.00	1.00	112
Black Share of District	0.39	0.28	0.04	0.72	112
Hispanic/Latino Share of District	0.18	0.23	0.04	0.70	112
Other Race Share of District	0.07	0.02	0.04	0.11	112
White share of District	0.36	0.23	0.17	0.76	112
Male Share of District	0.48	0.03	0.46	0.54	112
Young Share of District	0.32	0.12	0.23	0.60	112
Unemployment Rate in District	0.10	0.04	0.03	0.15	112
Lagged Total Crime Rate in District	0.09	0.03	0.03	0.15	112
Lagged Violent Crime Rate in District	0.03	0.02	0.01	0.07	112
Lagged Property Crime Rate in District	0.04	0.01	0.02	0.06	112

Notes:
[1]The unit of observation in the field interview rate analysis is MPD district x race or ethnicity x age x gender.
[2]The dataset contains one observation for each race or ethnicity (Black, Hispanic/Latino, other race, and White) of each gender (Male, Female) and each age group (younger or older than 35) in each MPD district in 2019. By construction, the race or ethnicity indicator variables have a mean of one quarter and the gender and age variables have a mean of one-half.

Sources:
Milwaukee Police Department Stop Data, 2019
U.S. Census American Community Survey 5-Year Estimates, 2013-2017
Milwaukee Part I and Part II Crime Data, 2018

B-9: Field Interview Rate Estimation Results

Dependent Variable: Field Interviews per 1,000 Residents	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Black	3.907** (1.145)	3.907** (1.151)	3.907** (1.156)	3.907** (1.173)	3.907** (1.179)	3.907** (1.184)	3.907** (1.190)
Hispanic/Latino	-0.153 (0.450)	-0.153 (0.453)	-0.153 (0.455)	-0.153 (0.461)	-0.153 (0.464)	-0.153 (0.466)	-0.153 (0.468)
Other Race	-0.601 (0.426)	-0.601 (0.428)	-0.601 (0.430)	-0.601 (0.436)	-0.601 (0.438)	-0.601 (0.440)	-0.601 (0.443)
Male		1.971*** (0.524)	1.971*** (0.527)	1.971** (0.535)	1.971** (0.537)	1.971** (0.540)	1.971** (0.543)
Young			1.185** (0.371)	1.185** (0.376)	1.185** (0.378)	1.185** (0.380)	1.185** (0.382)
Black Share of District				-3.110* (1.460)	-0.972*** (0.108)	-0.659*** (0.120)	-1.639*** (0.000)
Hispanic/Latino Share of District				0.310 (1.493)	2.929*** (0.123)	2.224*** (0.182)	1.162*** (0.000)
Other Share of District				-11.08** (4.129)	-8.455** (2.325)	-7.395*** (1.302)	-4.937*** (0.000)
Young Share of District					5.989*** (0.181)	3.907*** (0.505)	2.694*** (0.000)
Male Share of District						11.64*** (2.265)	19.92*** (0.000)
District Unemployment Rate							8.376*** (0.000)
Constant	0.940* (0.438)	-0.0456 (0.424)	-0.638 (0.459)	1.307 (1.265)	-2.066** (0.702)	-7.128*** (1.071)	-11.17*** (0.711)
Observations	112	112	112	112	112	112	112
R-squared	0.291	0.377	0.409	0.498	0.522	0.523	0.523

Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Notes:
[1]Observations in the data are at the level of race or ethnicity, age, gender, and district.
[2]The dependent variable is the total number of field interviews per 1000 residents by race or ethnicity, age, gender, and district.
[3]Each variable's coefficient measures its relationship with the stop rate per 1,000 residents.
[4]Other race refers to individuals from the following race categories: Native American or Alaskan Native, Asian, Native Hawaiian or other Pacific Islander, two or more races, and "other" race.
[5]Regression Models 8-10 are identical to Model 7 estimates and are omitted due to multicollinearity with the unemployment rate (total and property crime) and percent young (property crime).
[6]"Male Share of District" is based on the residential population and varies by district.
[7]Standard errors are clustered by MPD district.
[8]In Model 1, the constant provides an estimate of the White field interview rate.

Sources:
Milwaukee Police Department Stop Data, 2019
U.S. Census American Community Survey 5-Year Estimates, 2013-2017
Milwaukee Part I and Part II Crime Data, 2018

B-10: Summary of Variables in No-Action Encounter Rate Analysis

	Mean	Standard Deviation	Minimum	Maximum	Observations
No-Action Encounter Rate	0.19	0.49	0.00	3.44	56
Black	0.25	0.44	0.00	1.00	56
Hispanic/Latino	0.25	0.44	0.00	1.00	56
Other Race	0.25	0.44	0.00	1.00	56
Male	0.50	0.50	0.00	1.00	56
Black Share of District	0.39	0.28	0.04	0.72	56
Hispanic/Latino Share of District	0.18	0.23	0.04	0.70	56
Other Race Share of District	0.07	0.02	0.04	0.11	56
White share of District	0.36	0.23	0.17	0.76	56
Male Share of District	0.32	0.12	0.23	0.60	56
Young Share of District	0.48	0.03	0.46	0.54	56
Unemployment Rate in District	0.10	0.04	0.03	0.15	56
Lagged Total Crime Rate in District	0.09	0.03	0.03	0.15	56
Lagged Violent Crime Rate in District	0.03	0.02	0.01	0.07	56
Lagged Property Crime Rate in District	0.04	0.01	0.02	0.06	56

Notes:
[1]The unit of observation in the no-action encounter rate analysis is MPD district x race or ethnicity x gender.
[2]The dataset contains one observation for each race or ethnicity (Black, Hispanic/Latino, other race, and White) of each gender (Male, Female) in each MPD district in 2019. By construction, the race or ethnicity indicator variables have a mean of one quarter and the gender variable has a mean of one-half.
[3]Age is not included in this analysis because age is not documented for no-action encounters.

Sources:
Milwaukee Police Department Stop Data, 2019
U.S. Census American Community Survey 5-Year Estimates, 2013-2017

B-11: No-Action Encounter Rate Estimation Results

Dependent Variable: No-action Encounters per 1,000 Residents	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Black	0.454 (0.281)	0.454 (0.283)	0.454 (0.292)	0.454 (0.295)	0.454 (0.299)	0.454 (0.302)
Hispanic/Latino	-0.0341 (0.0276)	-0.0341 (0.0279)	-0.0341 (0.0287)	-0.0341 (0.0290)	-0.0341 (0.0293)	-0.0341 (0.0297)
Other Race	-0.0713 (0.0391)	-0.0713 (0.0395)	-0.0713 (0.0407)	-0.0713 (0.0411)	-0.0713 (0.0415)	-0.0713 (0.0420)
Male		0.221** (0.0885)	0.221* (0.0912)	0.221* (0.0922)	0.221* (0.0932)	0.221* (0.0942)
Black Share of District			-0.694 (0.390)	-0.155*** (0.0366)	-0.0141 (0.0114)	-0.104*** (0.000)
Hispanic/Latino Share of District			-0.604 (0.404)	0.0559 (0.0442)	-0.262*** (0.0174)	-0.359*** (0.000)
Other Share of District			-0.822 (1.015)	-0.160 (0.790)	0.318** (0.124)	0.542*** (0.000)
Young Share of District				1.508*** (0.0775)	0.569*** (0.0482)	0.459*** (0.000)
Male Share of District					5.250*** (0.216)	6.006*** (0.000)
District Unemployment Rate						0.766*** (0.000)
Constant	0.106** (0.0310)	-0.00422 (0.0342)	0.431 (0.277)	-0.419** (0.141)	-2.701*** (0.133)	-3.070*** (0.115)
Observations	56	56	56	56	56	56
R-squared	0.193	0.244	0.343	0.416	0.420	0.420

Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Notes:
[1]Observations in the data are at the level of race or ethnicity, gender, and district.
[2]The dependent variable is the total number of no-action encounters per 1,000 residents by race or ethnicity, gender, and district.
[3]Each variable's coefficient measures its relationship with the stop rate per 1,000 residents.
[4]Other race refers to individuals from the following race categories: Native American or Alaskan Native, Asian, Native Hawaiian or other Pacific Islander, two or more races, and "other" race.
[5]Regression Models 7-9 are identical to Model 6 estimates and are omitted due to multicollinearity with the unemployment rate (total and property crime) and percent young (property crime).
[6]"Male Share of District" is based on the residential population and varies by district.
[7]Standard errors are clustered by MPD district.
[8]In Model 1, the constant provides an estimate of the White no-action encounter rate.

Sources:
Milwaukee Police Department Stop Data, 2019
U.S. Census American Community Survey 5-Year Estimates, 2013-2017

B-12: Summary of Variables in Frisk Rate Analysis

	Mean	Standard Deviation	Minimum	Maximum	Observations
Frisk Rate	1.10	3.30	0.00	28.71	112
Black	0.25	0.43	0.00	1.00	112
Hispanic/Latino	0.25	0.43	0.00	1.00	112
Other Race	0.25	0.43	0.00	1.00	112
Male	0.50	0.50	0.00	1.00	112
Young	0.50	0.50	0.00	1.00	112
Black Share of District	0.39	0.28	0.04	0.72	112
Hispanic/Latino Share of District	0.18	0.23	0.04	0.70	112
Other Race Share of District	0.07	0.02	0.04	0.11	112
White share of District	0.36	0.23	0.17	0.76	112
Male Share of District	0.32	0.12	0.23	0.60	112
Young Share of District	0.48	0.03	0.46	0.54	112
Unemployment Rate in District	0.10	0.04	0.03	0.15	112
Lagged Total Crime Rate in District	0.09	0.03	0.03	0.15	112
Lagged Violent Crime Rate in District	0.03	0.02	0.01	0.07	112
Lagged Property Crime Rate in District	0.04	0.01	0.02	0.06	112

Notes:
[1]The unit of observation in the frisk rate analysis is MPD district x race or ethnicity x age x gender.
[2]The dataset contains one observation for each race or ethnicity (Black, Hispanic/Latino, other race, and White) of each gender (Male, Female) and each age group (younger or older than 35) in each MPD district in 2019. By construction, the race or ethnicity indicator variables have a mean of one quarter and the gender and age variables have a mean of one half.

Sources:
Milwaukee Police Department Stop Data, 2019
U.S. Census American Community Survey 5-Year Estimates, 2013-2017

B-13: Frisk Rate Estimation Results

Dependent Variable: Frisks per 1,000 Residents	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Black	3.026** (1.150)	3.026** (1.155)	3.026** (1.161)	3.026** (1.177)	3.026** (1.183)	3.026** (1.189)	3.026** (1.195)
Hispanic/Latino	0.0343 (0.239)	0.0343 (0.240)	0.0343 (0.241)	0.0343 (0.244)	0.0343 (0.246)	0.0343 (0.247)	0.0343 (0.248)
Other Race	-0.420** (0.130)	-0.420** (0.131)	-0.420** (0.132)	-0.420** (0.134)	-0.420** (0.134)	-0.420** (0.135)	-0.420** (0.136)
Male		1.877** (0.513)	1.877** (0.515)	1.877** (0.522)	1.877** (0.525)	1.877** (0.528)	1.877** (0.530)
Young			1.099** (0.409)	1.099** (0.415)	1.099** (0.417)	1.099** (0.420)	1.099** (0.422)
Black Share of District				1.834** (0.697)	2.871*** (0.464)	2.145** (0.600)	-2.755*** (0.000)
Hispanic/Latino Share of District				1.284** (0.523)	2.553*** (0.545)	4.188*** (0.912)	-1.122*** (0.000)
Other Share of District				-15.57* (6.846)	-14.30* (5.959)	-16.75** (6.514)	-4.460*** (0.000)
Young Share of District					2.902** (0.931)	7.733** (2.527)	1.665*** (0.000)
Male Share of District						-27.01* (11.33)	14.39*** (0.000)
District Unemployment Rate							41.90*** (0.000)
Constant	0.442** (0.145)	-0.496* (0.251)	-1.046** (0.418)	-0.865 (0.561)	-2.499** (0.930)	9.241 (4.894)	-10.97*** (0.726)
Observations	112	112	112	112	112	112	112
R-squared	0.176	0.258	0.286	0.317	0.322	0.325	0.333

Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Notes:
[1]Observations in the data are at the level of race or ethnicity, gender, age, and district.
[2]The dependent variable is the total number of frisks per 1,000 residents by race or ethnicity, gender, age, and district.
[3]Each variable's coefficient measures its relationship with the stop rate per 1,000 residents.
[4]Other race refers to individuals from the following race categories: Native American or Alaskan Native, Asian, Native Hawaiian or other Pacific Islander, two or more races, and "other" race.
[5]Regression Models 8-10 are identical to Model 7 estimates and are omitted due to multicollinearity with the unemployment rate (total and property crime) and percent young (property crime).
[6]"Male Share of District" is based on the residential population and varies by district.
[7]Standard errors are clustered by MPD district.
[8]In Model 1, the constant provides an estimate of the White frisk rate.

Sources:
Milwaukee Police Department Stop Data, 2019
Wisconsin Driver License Data, 2015
U.S. Census American Community Survey 5-Year Estimates, 2013-2017

B-14: Frisks per Encounter Type by Race/Ethnicity

Race/Ethnicity	Encounters	Frisks	Frisks per Encounter	Frisks per Traffic Stop	Frisks per Field Interview	Frisks per No-Action Encounter
Black	35048	908	3%	1%	25%	4%
Hispanic/Latino	6143	101	2%	1%	19%	0%
Other Race	1335	7	1%	0%	4%	0%
White	11620	101	1%	0%	11%	0%
Total	54146	1117	2%	1%	22%	2%

Notes:
[1]The frisk rates presented in this table excludes 7,897 encounters where race and ethnicity information were missing.
[2]There were 5 frisks documented in the excluded encounters.

Sources:
Milwaukee Police Department Stop Data, 2019

B-15: Individual-Level Frisk Regression Analysis Estimation Results

Dependent Variable: Indicator Variable Equal to 1 if Frisk Occurred	Model 1 Odds Ratio	Model 2 Odds Ratio	Model 3 Odds Ratio
Black	2.980*** (1.456 - 6.100)	2.502** (1.225 - 5.107)	1.992*** (1.294 - 3.066)
Hispanic/Latino	1.851** (1.154 - 2.969)	1.602* (0.978 - 2.624)	1.315* (0.990 - 1.747)
Male		6.306*** (5.602 - 7.099)	5.768*** (5.197 - 6.401)
Young		1.677*** (1.206 - 2.331)	1.582*** (1.154 - 2.168)
Time of Day Fixed Effects Quarter Fixed Effects District Fixed Effects			X X X
Constant	0.009*** (0.005 – 0.018)	0.002*** (0.001 – 0.003)	0.001*** (0.000 – 0.001)
Observations	50,977	50,771	50,771

Robust confidence intervals in parentheses *** p<0.01, ** p<0.05, * p<0.1

Notes:
[1]Each observations represents a traffic stop, field interview, or no-action encounter with police.

Sources:
Milwaukee Police Department Stop Data, 2019

B-16: Predicted Probabilities of Frisks by Race and District

Race/Ethnicity	District	Predicted Probability	95% Confidence Interval	
Black	District 1	2.27%	0.022	0.023
Hispanic/Latino	District 1	0.62%	0.006	0.006
White	District 1	0.41%	0.004	0.004
Black	District 2	3.20%	0.031	0.033
Hispanic/Latino	District 2	2.99%	0.029	0.031
White	District 2	2.36%	0.023	0.024
Black	District 3	2.73%	0.027	0.028
Hispanic/Latino	District 3	0.34%	0.003	0.004
White	District 3	0.74%	0.007	0.008
Black	District 4	1.48%	0.015	0.015
Hispanic/Latino	District 4	1.82%	0.017	0.019
White	District 4	0.71%	0.006	0.008
Black	District 5	4.42%	0.043	0.046
Hispanic/Latino	District 5	0.90%	0.009	0.009
White	District 5	2.11%	0.021	0.022
Black	District 6	0.76%	0.007	0.008
Hispanic/Latino	District 6	0.54%	0.005	0.006
White	District 6	0.52%	0.005	0.006
Black	District 7	1.40%	0.014	0.014
Hispanic/Latino	District 7	0.55%	0.005	0.006
White	District 7	1.73%	0.016	0.018

Notes:
[1]Predicted probabilities are estimated from a full district by race interaction model that controls for age, gender, time of day, and quarter.
The predicted probabilities estimate the rate of frisks per police encounter for a given race or ethnicity in a given district.

Sources:
Milwaukee Police Department Stop Data, 2019

APPENDIX C: IOARS ANALYSIS TABLES

C-1: IOARS for Sampled Encounters by Race/Ethnicity and Quarter

Race/ Ethnicity	Q1 Stops	Q1 IOARS	Q2 Stops	Q2 IOARS	Q3 Stops	Q3 IOARS	Q4 Stops	Q4 IOARS
Black	156	63%	237	74%	197	89%	230	93%
Hispanic/ Latino	33	48%	31	71%	36	89%	33	100%
Other Race	8	88%	3	67%	4	75%	6	67%
White	33	45%	45	69%	58	95%	54	96%
Missing Race Information	44	52%	16	75%	5	80%	4	75%
Total	274	58%	332	73%	300	90%	327	94%

Notes:
[1]Other race refers to individuals from the following race categories: Native American or Alaskan Native, Asian, and Native Hawaiian or other Pacific Islander.
[2]IOARS determinations as made in CJI's February and June 2020 semiannual reviews.

Sources:
Milwaukee Police Department Stop Data, 2019

C-2: IOARS for Sampled Frisks by Race/Ethnicity and Quarter

Race/ Ethnicity	Q1 Frisks	Q1 IOARS	Q2 Frisks	Q2 IOARS	Q3 Frisks	Q3 IOARS	Q4 Frisks	Q4 IOARS
Black	50	12%	110	27%	103	23%	111	17%
Hispanic/ Latino	13	23%	14	14%	13	31%	12	17%
Other Race	0	0	1	0%	0	0	0	0
White	5	0%	6	0%	14	0%	13	31%
Missing Race Information	0	0	0	0	2	100%	0	0
Total	68	13%	131	24%	132	23%	136	18%

Notes:
[1]Other race refers to individuals from the following race categories: Native American or Alaskan Native, Asian, and Native Hawaiian or other Pacific Islander.
[2]IOARS determinations as made in CJI's February and June 2020 semiannual reviews.

Sources:
Milwaukee Police Department Stop Data, 2019

C-3: IOARS for Sampled Encounters by District and Quarter

	Q1 Stops	Q1 IOARS	Q2 Stops	Q2 IOARS	Q3 Stops	Q3 IOARS	Q4 Stops	Q4 IOARS	2019 Stops	2019 IOARS
District 1	23	61%	17	88%	21	90%	13	100%	74	82%
District 2	32	63%	44	75%	49	92%	50	98%	175	84%
District 3	35	49%	43	70%	43	91%	36	100%	157	78%
District 4	34	76%	28	82%	32	100%	37	89%	131	87%
District 5	74	64%	105	74%	64	88%	78	95%	321	79%
District 6	29	31%	25	68%	35	94%	35	89%	124	73%
District 7	43	60%	67	66%	46	80%	71	92%	227	76%
NULL	4	25%	3	67%	10	90%	7	86%	24	75%
Total	274	58%	332	73%	300	90%	327	94%	1,233	79%

Notes:
[1]IOARS determinations as made in CJI's February and June 2020 semiannual reviews.
[2]According to the extraction data dictionaries, "NULL" refers to locations of encounters that fall outside of district boundaries or special circumstance stops.

Sources:
Milwaukee Police Department Stop Data, 2019

C-4: IOARS for Sampled Frisks by District and Quarter

District	Q1 Frisks	Q1 IOARS	Q2 Frisks	Q2 IOARS	Q3 Frisks	Q3 IOARS	Q4 Frisks	Q4 IOARS	2019 Frisks	2019 IOARS
1	4	25%	2	0%	4	50%	4	50%	14	36%
2	12	25%	21	10%	31	16%	27	11%	91	14%
3	9	0%	18	50%	21	33%	14	7%	62	27%
4	6	33%	2	50%	11	36%	15	27%	34	32%
5	30	10%	61	30%	45	13%	53	15%	189	19%
6	4	0%	2	0%	4	50%	5	60%	15	33%
7	3	0%	25	8%	15	20%	16	19%	59	14%
NULL	0	0%	0	0%	1	100%	2	50%	3	67%
Total	68	13%	131	24%	132	23%	136	18%	467	21%

Notes:
[1]IOARS determinations as made in CJI's February and June 2020 semiannual reviews.
[2]According to the extraction data dictionaries, "NULL" refers to locations of encounters that fall outside of district boundaries or special circumstance stops.

Sources:
Milwaukee Police Department Stop Data, 2019

C-5: Summary of Variables in IOARS Analysis of Sampled Stops

	Mean	Standard Deviation	Minimum	Maximum	Obs.
IOARS Stop Rate	0.81	0.39	0.00	1.00	1079
Black	0.72	0.45	0.00	1.00	1079
Hispanic/Latino	0.12	0.32	0.00	1.00	1079
Male	0.79	0.41	0.00	1.00	1079
Young	0.70	0.46	0.00	1.00	1079
Black Share of District	0.47	0.28	0.04	0.72	1079
Hispanic/Latino Share of District	0.17	0.23	0.04	0.70	1079
White share of District	0.07	0.02	0.04	0.11	1079
Male Share of District	0.29	0.08	0.23	0.60	1079
Young Share of District	0.48	0.02	0.46	0.54	1079
Unemployment Rate in District	0.11	0.03	0.03	0.15	1079
Lagged Total Crime Rate in District	0.10	0.04	0.03	0.15	1079
Lagged Violent Crime Rate in District	0.04	0.02	0.01	0.07	1079
Lagged Property Crime Rate in District	0.04	0.01	0.02	0.06	1079

Notes:
[1]IOARS determinations as made in CJI's February and June 2020 semiannual reviews.

Sources:
Milwaukee Police Department Stop Data, 2019
U.S. Census American Community Survey 5-Year Estimates, 2013-2017
Milwaukee Part 1 and Part 2 Crime data, 2018

C-6: IOARS Stop Regression Estimation Results

Dependent Variable: Indicator Variable Equal to 1 if IOARS	Model 1 Odds Ratio	Model 2 Odds Ratio	Model 3 Odds Ratio	Model 4 Odds Ratio	Model 5 Odds Ratio	Model 6 Odds Ratio	Model 7 Odds Ratio
Black	0.953 (0.631 - 1.441)	0.938 (0.603 - 1.462)	0.854 (0.548 - 1.331)	0.879 (0.540 - 1.431)	0.852 (0.521 - 1.395)	0.872 (0.529 - 1.438)	0.887 (0.540 - 1.459)
Hispanic/Latino	0.790 (0.463 - 1.347)	0.774 (0.473 - 1.266)	0.704 (0.395 - 1.253)	0.576* (0.327 - 1.015)	0.591* (0.334 - 1.049)	0.591* (0.333 - 1.049)	0.594* (0.336 - 1.051)
Male		1.126 (0.791 - 1.601)	1.190 (0.853 - 1.660)	1.190 (0.867 - 1.634)	1.157 (0.835 - 1.603)	1.164 (0.843 - 1.606)	1.160 (0.841 - 1.601)
Young			1.383 (0.898 - 2.130)	1.378 (0.923 - 2.057)	1.374 (0.920 - 2.052)	1.363 (0.911 - 2.039)	1.354 (0.900 - 2.035)
Black Share of District				1.660 (0.523 - 5.265)	2.596*** (1.515 - 4.448)	4.344*** (2.655 - 7.107)	1.118 (0.673 - 1.856)
Hispanic/Latino Share of District				4.419*** (1.564 - 12.49)	7.388*** (4.433 - 12.31)	2.232* (0.994 - 5.012)	0.432*** (0.269 - 0.695)
Other Race Share of District				561.2* (0.359 - 876,302)	1,061* (0.518 - 2.175e+06)	8,851*** (76.88 - 1.019e+06)	1.458e+06*** (876,347 - 2.424e+06)
Young Share of District					5.137*** (2.007 - 13.15)	0.184 (0.0182 - 1.850)	0.0174*** (0.00693 - 0.0437)
Male Share of District						4.687e+08*** (9,248 - 2.375e+13)	6.708e+14*** (6.758e+12 - 6.658e+16)
District Unemployment Rate							155,838*** (26,185 - 927,468)
Constant	4.455*** (2.962 - 6.698)	4.115*** (2.912 - 5.814)	3.551*** (2.325 - 5.424)	1.458 (0.516 - 4.119)	0.679 (0.292 - 1.580)	0.000106*** (8.31e-07 - 0.0135)	1.15e-07*** (1.85e-08 - 7.17e-07)
Observations	1,119	1,119	1,079	1,079	1,079	1,079	1,079

Robust confidence intervals in parentheses *** p<0.01, ** p<0.05, * p<0.1

Notes:
[1]IOARS determinations as made in CJI's February and June 2020 semiannual reviews.
[2]Each observation represents a traffic stop, field interview, or no-action encounter with police.
[3]Regression coefficients represent a change in the log odds of an encounter given a one unit increase in each regressor.
[4]The constant for Model 1 represents the log odds of an encounter meeting the IOARS standard for White subjects.
[5]Standard errors are clustered by MPD district.

Sources:
Milwaukee Police Department Stop Data, 2019
U.S. Census American Community Survey 5-Year Estimates, 2013-2017
Milwaukee Part 1 and Part 2 Crime data, 2018

C-7: Summary of Variables in IOARS Analysis of Sampled Frisks

	Mean	Standard Deviation	Minimum	Maximum	Observations
IOARS Frisk Rate	0.19	0.39	0.00	1.00	451
Black	0.81	0.40	0.00	1.00	451
Hispanic/Latino	0.11	0.32	0.00	1.00	451
Male	0.93	0.25	0.00	1.00	451
Young	0.76	0.43	0.00	1.00	451
Black Share of District	0.51	0.27	0.04	0.72	451
Hispanic/Latino Share of District	0.19	0.26	0.04	0.70	451
White share of District	0.06	0.02	0.04	0.11	451
Male Share of District	0.29	0.07	0.23	0.60	451
Young Share of District	0.48	0.02	0.46	0.54	451
Unemployment Rate in District	0.12	0.03	0.03	0.15	451
Lagged Total Crime Rate in District	0.11	0.04	0.03	0.15	451
Lagged Violent Crime Rate in District	0.05	0.02	0.01	0.07	451
Lagged Property Crime Rate in District	0.04	0.01	0.02	0.06	451

Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Notes:
[1]IOARS determinations as made in CJI's February and June 2020 semiannual reviews.

Sources:
Milwaukee Police Department Stop Data, 2019
U.S. Census American Community Survey 5-Year Estimates, 2013-2017
Milwaukee Part 1 and Part 2 Crime data, 2018

C-8: IOARS Frisk Regression Estimation Results

Dependent Variable: Indicator Variable Equal to 1 if IOARS	Model 1 Odds Ratio	Model 2 Odds Ratio	Model 3 Odds Ratio	Model 4 Odds Ratio	Model 5 Odds Ratio	Model 6 Odds Ratio	Model 7 Odds Ratio
Black	2.153 (0.472 - 9.824)	2.117 (0.477 - 9.404)	1.890 (0.427 - 8.373)	1.814 (0.418 - 7.871)	1.823 (0.423 - 7.861)	1.815 (0.413 - 7.974)	1.963 (0.421 - 9.141)
Hispanic/ Latino	2.213 (0.378 - 12.98)	2.205 (0.376 - 12.93)	2.208 (0.355 - 13.74)	3.715 (0.409 - 33.79)	3.722 (0.418 - 33.12)	3.718 (0.418 - 33.05)	3.778 (0.412 - 34.65)
Male		1.257 (0.474 - 3.337)	1.181 (0.441 - 3.159)	1.308 (0.471 - 3.632)	1.309 (0.477 - 3.594)	1.311 (0.478 - 3.597)	1.343 (0.482 - 3.741)
Young			0.946 (0.526 - 1.703)	1.148 (0.558 - 2.363)	1.148 (0.557 - 2.366)	1.150 (0.559 - 2.365)	1.145 (0.554 - 2.368)
Black Share of District				0.175*** (0.109 - 0.281)	0.168*** (0.0675 - 0.420)	0.159*** (0.0660 - 0.386)	0.00394*** (0.000890 - 0.0174)
Hispanic/ Latino Share of District				0.0792*** (0.0155 - 0.403)	0.0759*** (0.0202 - 0.285)	0.0837*** (0.0161 - 0.435)	0.00206*** (0.000402 - 0.0106)
Other Race Share of District				10,590*** (27.75 - 4.042e+06)	9,863*** (41.21 - 2.361e+06)	7,775** (6.642 - 9.102e+06)	1.864e+08*** (1.680e+07 - 2.067e+09)
Young Share of District					0.900 (0.0719 - 11.27)	1.188 (0.0113 - 125.2)	0.0104*** (0.000338 - 0.317)
Male Share of District						0.170 (3.65e-09 - 7.954e+06)	1.668e+11*** (633,686 - 4.389e+16)
District Unemployment Rate							1.619e+12*** (4.759e+09 - 5.506e+14)
Constant	0.121*** (0.0260 - 0.566)	0.0992** (0.01000 - 0.984)	0.112** (0.0146 - 0.865)	0.180* (0.0266 - 1.225)	0.191 (0.0190 - 1.928)	0.421 (9.36e-05 - 1,894)	7.00e-07*** (2.72e-09 - 0.000181)
Observations	461	461	451	451	451	451	451

Robust confidence intervals in parentheses *** p<0.01, ** p<0.05, * p<0.1

Notes:

[1]IOARS determinations as made in CJI's February and June 2020 semiannual reviews.
[2]Each observation represents a traffic stop, field interview, or no-action encounter with police.
[3]Regression coefficients represent a change in the log odds of an encounter given a one unit increase in each regressor.
[4]The constant for Model 1 represents the log odds of an encounter meeting the IOARS standard for White subjects.
[5]Standard errors are clustered by MPD district.

Sources:

Milwaukee Police Department Stop Data, 2019
U.S. Census American Community Survey 5-Year Estimates, 2013-2017

C-9: Predicted Probabilities and Average Marginal Effects of IOARS for Sampled Stops and Sampled Frisks

	IOARS for the Stop		IOARS for the Frisk	
	Predicted Probability	Average Marginal Effect	Predicted Probability	Average Marginal Effect
Black	81.7% 0.009	-1.70%	18.5% 0.018	7.90%
Hispanic/Latino	75.0% 0.043	-8.30%*	29.7% 0.171	19.10%
White	83.4% 0.028		10.6% 0.067	

*** p<0.01, ** p<0.05, * p<0.1

Notes:
[1]Predicted probabilities based on estimates for Model 7 in Tables C-6 and C-8.
[2]Average Marginal Effect measures the difference in the Black predicted probability of IOARS as compared to predicted probability for White stop or frisk subjects. Similar calculations were made for the difference between Hispanic/Latino and White stop or frisk subjects.

Sources:
Milwaukee Police Department Stop Data, 2019
U.S. Census American Community Survey 5-Year Estimates, 2013-2017

APPENDIX D: HIT RATE ANALYSIS TABLES

D-1: Frisks and Contraband Discovery by Race

		Contraband			Contraband Discovery Rate per Frisk (Percent)			Difference in Discovery Rate Per Frisk, As Compared to White Subjects (Percent)		
Subject Race/ Ethnicity	Frisks	All	Drug	Weapon	All	Drug	Weapon	All	Drug	Weapon
Black	908	155	70	56	17.07	7.71	6.17	-2.73	-1.20	1.22
Hispanic /Latino	101	19	5	6	18.81	4.95	5.94	-0.99	-3.96	0.99
Other Race	7	1	0	1	14.29	0.00	14.29	-5.52	-8.91	9.34
White	101	20	9	5	19.80	8.91	4.95			
Missing Race	5	0	0	0	0.00	0.00	0.00			
Total	1122	195	84	68	17.38	7.49	6.06			

Notes:
[1] Contraband Discovery Rate per Frisk" is the proportion of frisks that result in discovery of contraband.
[2] Difference in Discovery Rate per Frisk, As Compared to White Subjects" is calculated as the contraband discovery rate per frisk for Black or Hispanic/Latino subjects, minus the contraband discovery rate per frisk for White subjects.
[3] Other race refers to individuals from the following race categories: Native American or Alaskan Native, Asian, and Native Hawaiian or other Pacific Islander.
[4]All contraband includes weapons, drugs, and other items such as drug paraphernalia, stolen goods, and items used or gained during the course of a crime. Weapon contraband includes firearms and non-firearm weapons. Drug contraband includes all illegal drugs and prescription drugs not prescribed to the subject.

Sources:
Milwaukee Police Department Stop Data, 2019

D-2: Contraband Regression Results, All Contraband

	Model 1 Odds ratio	Model 2 Odds ratio	Model 3 Odds ratio
Black	0.808 (0.513 - 1.270)	0.854 (0.562 - 1.297)	0.658 (0.388 - 1.116)
Hispanic/Latino	0.938 (0.473 - 1.860)	0.936 (0.468 - 1.874)	1.142 (0.602 - 2.165)
Male		1.405 (0.808 - 2.444)	1.416 (0.869 - 2.309)
Young		0.956 (0.770 - 1.188)	0.905 (0.664 - 1.233)
Time of Day Fixed Effects Quarter Fixed Effects District Fixed Effects			X X X
Observations	1,088	1,069	1,069

Robust confidence intervals in parentheses *** p<0.01, ** p<0.05, * p<0.1

Notes:
[1]These regressions are based on data from four quarters of 2019.
[2]Observations in the data are at the level of the individual stop.
[3]The "other race" category was omitted from this analysis due to the low frisk totals across all districts and time periods.
[4]The dependent variable is an indicator variable equal to one if contraband was found and zero otherwise
[5]Time-of-day fixed effects are indicator variables for the quarter of the day in which the stop occurred (9:00am-2:59pm, 3:00pm-8:59pm, 9:00pm-2:59am, 3:00am-8:59am).
[6]Standard errors are clustered by MPD district.
[7]Odds Ratios are reported with CI in parentheses beneath.

Sources:
Milwaukee Police Department Stop Data, 2019

D-3: Contraband Regression Results, Weapons and Drugs

	Weapons Contraband	Drug Contraband
	Model 3 Odds ratio	Model 3 Odds ratio
Black	1.185 (0.348 - 4.027)	0.634 (0.234 - 1.714)
Hispanic/Latino	1.437 (0.212 - 9.716)	0.515 (0.211 - 1.254)
Male	1.625 (0.727 - 3.632)	1.700** (1.120 - 2.580)
Young	0.757 (0.415 - 1.382)	0.861 (0.534 - 1.390)
Time of Day Fixed Effects Quarter Fixed Effects District Fixed Effects	X X X	X X X
Observations	1,069	1,028

Robust confidence intervals in parentheses *** p<0.01, ** p<0.05, * p<0.1

Notes:
[1]These regressions are based on data from four quarters of 2019.
[2]Observations in the data are at the level of the individual stop.
[3]The "other race" category was omitted from this analysis due to the low frisk totals across all districts and time periods.
[4]The dependent variable in the weapons contraband analysis is an indicator variable equal to one if weapons contraband was found and zero otherwise.
[5]The dependent variable in the drug contraband analysis is an indicator variable equal to one if drug contraband was found and zero otherwise.
[6]Time-of-day fixed effects are indicator variables for the quarter of the day in which the stop occurred (9:00am-2:59pm, 3:00pm-8:59pm, 9:00pm-2:59am, 3:00am-8:59am).
[7]Standard errors are clustered by MPD district.
[8]Odds Ratios are reported with CI in parentheses beneath.

Sources:
Milwaukee Police Department Stop Data, 2019

D-4: Predicted Probabilities Contraband Discovery by Type of Contraband and Race/Ethnicity

	All Contraband		Weapons Contraband		Drug Contraband	
	Predicted Probability	Average Marginal Effect	Predicted Probability	Average Marginal Effect	Predicted Probability	Average Marginal Effect
Black	16.8% 0.004	-6.5%	6.3% 0.002	0.9%	7.8% 0.004	-3.8%
Hispanic/Latino	25.7% 0.037	2.4%	7.5% 0.028	2.1%	6.5% 0.008	-5.2%
White	23.3% 0.042		5.3% 0.030		11.6% 0.045	

*** p<0.01, ** p<0.05, * p<0.1

Notes:
[1]Predicted probabilities based on estimates presented in Table D-3.
[2]Average Marginal Effect measures the difference in the Black predicted probability of contraband discovery as compared to predicted probability of contraband discovery for White frisk subjects. Similar calculations were made for the difference between Hispanic/Latino and White frisk subjects.

Sources:
Milwaukee Police Department Stop Data, 2019

APPENDIX E: HIT RATES TO CRIME ANALYSIS TABLES

E-1: Ratio of Stops to Crime Rate

District	Crime Rate per 100 Residents	Crime Rate per 1000 Residents	Ratio of Traffic Stop Rate to Crime Rate, per 100 drivers	Ratio of Field Interview Rate to Crime Rate, per 1000 residents	Ratio of No-Action Encounter Rate to Crime Rate, per 1000 Residents	Ratio of Frisk Rate to Crime Rate, per 1000 Residents
1	7.6641	76.6410	2.1111	0.0941	0.0114	0.0120
2	8.0124	80.1238	3.3297	0.1007	0.0032	0.0304
3	9.1972	91.9717	1.8490	0.0865	0.0043	0.0195
4	7.9101	79.1009	1.6247	0.0476	0.0037	0.0119
5	15.2050	152.0501	2.4584	0.0648	0.0021	0.0450
6	3.3536	33.5362	3.6927	0.0835	0.0033	0.0112
7	8.7423	87.4233	3.4412	0.0438	0.0014	0.0168

Notes:
[1]The ratio of the traffic stop rate to the crime rate is calculated as (traffic stops per 100 drivers) divided by (crimes per 100 residents) in each district.
[2]The ratio of the field interview, no-action encounter, and frisk rates to crime rates are calculated as (encounter type per 1,000 residents) divided by (crimes per 1,000 residents) in each district.
[3]The ratio of the no-action encounter rate to the crime rate per 1,000 residents is smaller than reportable by two decimal places. There were 172 documented no-action encounters in 2019 across all districts, making it a rarely documented type of police encounter.

Sources:
Milwaukee Police Department Stop Data, 2019
U.S. Census American Community Survey 5-Year Estimates, 2013-2017
Milwaukee Part 1 and Part 2 Crime data, 2018

E-2: Ratio of Majority Black and Hispanic/Latino Districts to White Districts

Average ratios comparison	Traffic Stop Ratios	Field Interview Ratios	No-Action Encounter Ratios	Frisk Ratios
Majority Black Districts (4,5,7)	2.508	0.052	0.002	0.025
Majority Hispanic/Latino District (2)	3.330	0.101	0.003	0.030
Majority White Districts (1,6)	2.902	0.089	0.007	0.012
Comparison of Black Districts to White Districts	-14%	-41%	-67%	112%
Comparison of Hispanic/Latino District to White Districts	15%	13%	-57%	162%

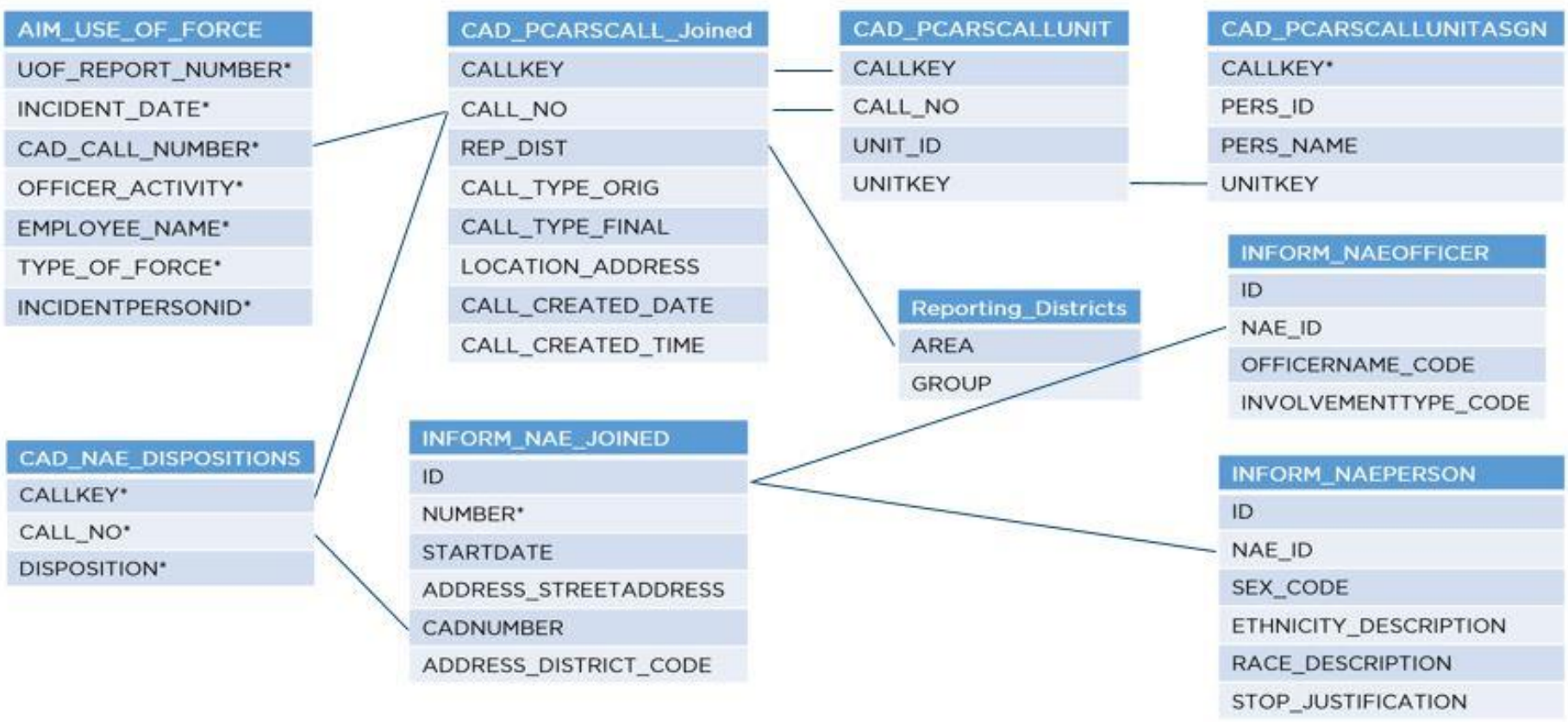
Notes:
[1]Districts are considered "majority" for each race or ethnic category if the proportion of the population exceeds 50% for a given race or ethnic category. District numbers for each comparison are in parentheses.
[2]District 3 does not represent a clear racial or ethnic majority so is omitted from the table calculations.
[3]Traffic stop ratios are calculated as the average ratio of the traffic stop rate to the crime rate for reach district grouping. Similar calculations were made for field interviews, no-action encounters, and frisks.
[4]The comparison of Black districts to White districts represents the percent change in the average encounter ratio from White districts to Black districts. Similar calculations were made for the comparison of Hispanic/Latino districts to White districts.

Sources:
Milwaukee Police Department Stop Data, 2019
U.S. Census American Community Survey 5-Year Estimates, 2013-2017
Milwaukee Part 1 and Part 2 Crime data, 2018

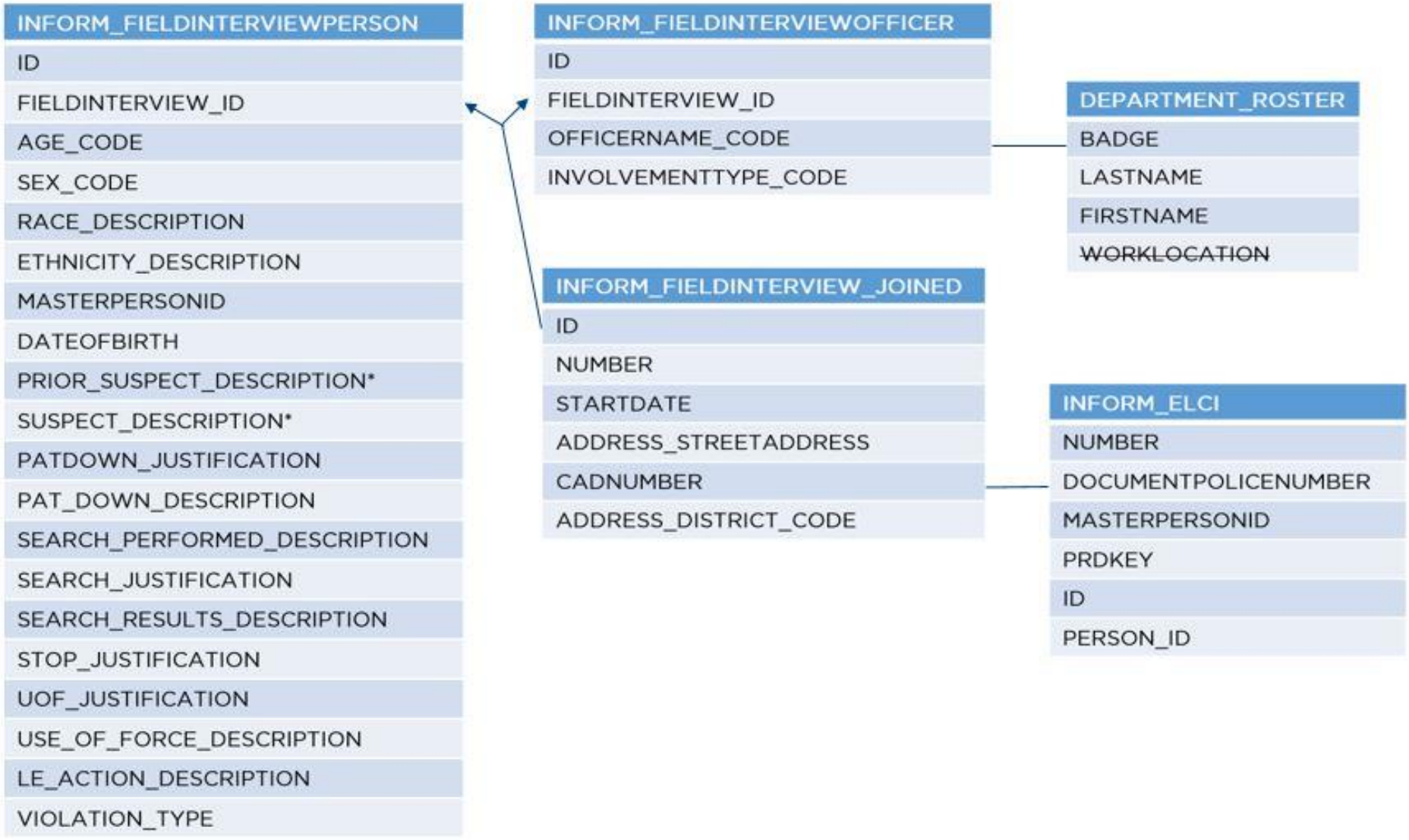
APPENDIX F: ENCOUNTER DATA LINKAGES CHARTS

Key:
* indicates that the field was added to the data extraction for quarter 3.
** indicates that the field was added to the data extraction for quarter 4.
~~strikethrough~~ indicates that the field was removed from the data extraction for quarter 4.

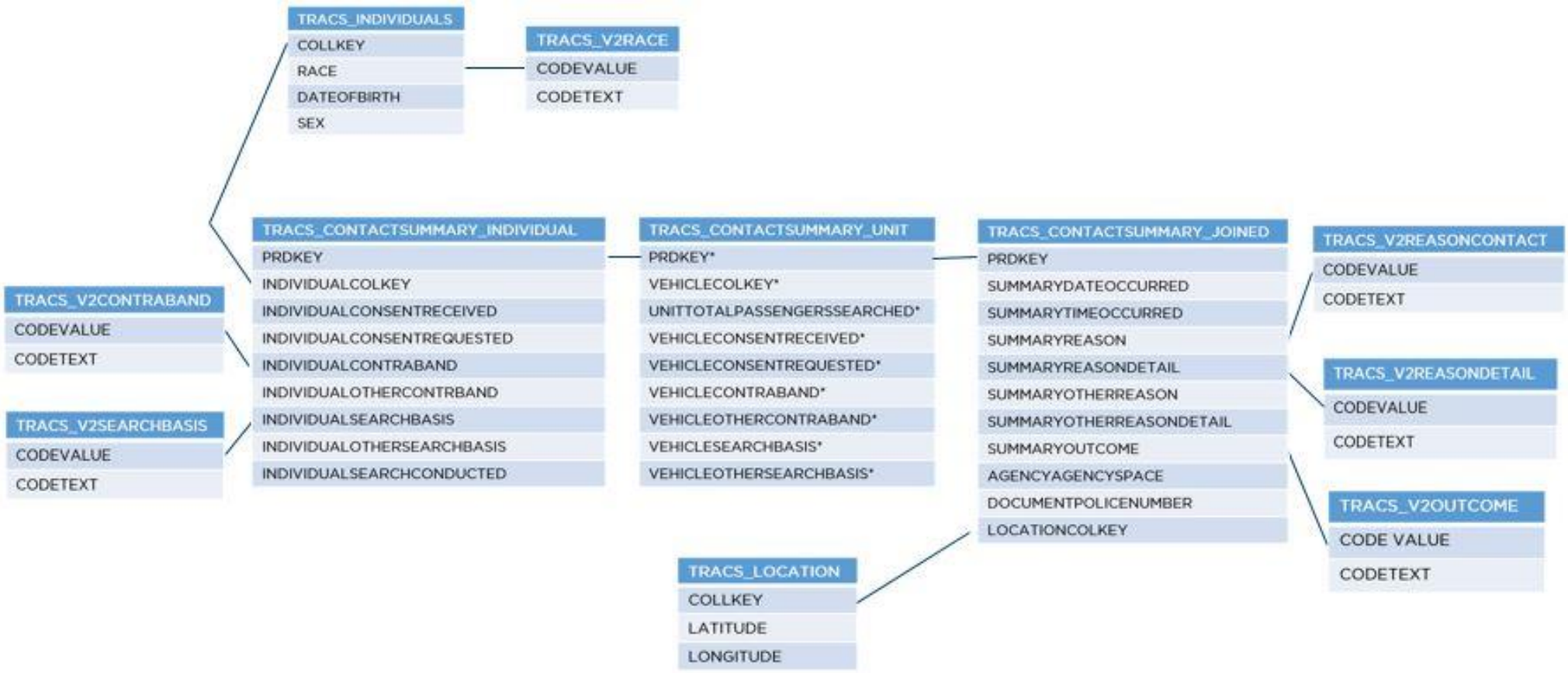
"NAE" in the below charts refers to "no-action encounter"



CALL_NO and CADNUMBER link to CADNUMBER and DOCUMENTPOLICENUMBER below.



CADNUMBER and DOCUMENTPOLICENUMBER link to DOCUMENTPOLICENUMBER below.



COLLKEY in TRACS_INDIVIDUALS links to INDIVIDUALCOLKEY and DEFENDANTCOLKEY below.
COLLKEY in TRACS_LOCATION links to LOCATIONCOLKEY below.
PRDKEY links to PRDKEY below.