ILLINOIS TRAFFIC AND PEDESTRIAN STOP STUDY

2024 ANNUAL REPORT

PEDESTRIAN STOP ANALYSIS

SUBMITTED BY THE MOUNTAIN-WHISPER-LIGHT: STATISTICS AND DATA SCIENCE

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Illinois Department of Transportation

Illinois Traffic and Pedestrian Stop Study

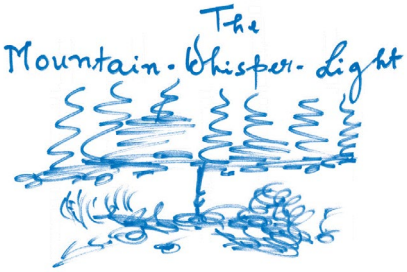
2024 ANNUAL REPORT: PEDESTRIAN STOPS

Part I Executive Summary and Appendices

Prepared for the Illinois Department of Transportation

By

The Mountain-Whisper-Light: Statistics & Data Science



In Cooperation with SC-B Consulting Inc.

Acknowledgements

The Mountain-Whisper-Light: Statistics & Data Science and SC-B Consulting Inc. gratefully acknowledge the contributions of Jessica Keldermans and Sean Berberet, Bureau of Data Collection, Illinois Department of Transportation, and their associates at IDOT. We are also grateful to the law enforcement agencies and their staff for their diligence and patience in collecting and processing the data used in this study.

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Executive Summary

I. Background

In October 2019, The Mountain-Whisper-Light Inc. (aka the Mountain-Whisper-Light: Statistics & Data Science, and hereafter, "TMWL") was awarded a contract to conduct a statistical study of the traffic and pedestrian stop data provided by law enforcement agencies to the Illinois Department of Transportation , pursuant to the Illinois Vehicle Code, 625 ILCS 5/11-212 Traffic and Pedestrian Stop Statistical Study. TMWL is carrying out the project in cooperation with SC-B Consulting Inc., an Illinois firm. Reports have already been issued on 2019, 2020, 2021, 2022 and 2023 traffic and pedestrian stops in Illinois and are available online at https://www.idot.illinois.gov/transportation-system/local-transportation-partners/law-enforcement/illinois-traffic-stop-study.

According to the IDOT website, "On July 18, 2003, Senate Bill 30 was signed into law to establish a four-year statewide study of data from traffic stops to identify racial bias. The study began on January 1, 2004, and was originally scheduled to end December 31, 2007. However, the legislature extended the data collection several times, and also expanded the study to include data on pedestrian stops. Public Act 101-0024, which took effect on June 21, 2019, eliminated the study's scheduled end date of July 1, 2019, and extended the data collection."

Under that provision of the Illinois Vehicle Code, IDOT is responsible for providing a standardized law enforcement data compilation form (see Appendix A below) and analyzing the data and submitting a report of the previous year's findings to the Governor, General Assembly, the Racial Profiling Prevention and Data Oversight Board, and each law enforcement agency no later than July 1 of each year. In May 2024, TMWL and SC-B, in cooperation with IDOT's Bureau of Data Collection, have provided copies of statistical tables to 789 law enforcement agencies in Illinois. The tables were based on the data collection provided by the respective agencies on traffic and pedestrian stops. The agencies had reported at least one traffic or pedestrian stop and were invited to review and comment on the tables. Some agencies did provide comments, and the comments from an agency are included with their tables in Part II of this report. We responded to some comments with additional information, and the readers of this report may wish to peruse the agency comments and our responses. Comments on the Traffic stop tables (or general comments) and comments on the Pedestrian stop tables are included in the Part II Traffic or Pedestrian tables, respectively.

We are pleased to submit this Annual Report on 2024 pedestrian stops for the Illinois Traffic and Pedestrian Stop Study. This document covers the pedestrian stop study. A companion volume with a similar format contains an Executive Summary for the traffic stop study.

Key Findings

1. The total number of reported pedestrian stops in 2024 was 88,019, a 6% increase from 2023 and still far from pre-COVID values.
2. Of the reporting agencies, a substantial fraction (54.4%) were non-compliant in their reporting of pedestrian stops (Table 2).

3. Stop rates are 27 times as high for Black and eight times as high for Hispanic/Latino pedestrians as compared to White pedestrians statewide.
4. Overall, non-White pedestrians were stopped more than White pedestrians in 70% of the rate ratios for agencies with at least 10 stops. This total count hasn't changed much since 2023; however, these heightened rate ratios were collectively somewhat less severe in magnitude in 2024 (Table 4).
5. The rate of search beyond a pat down is substantial for all of the racial groups (approximately 26-48% of stops), and of those searches, the yield of contraband is also substantial for all racial groups (approximately 37-51% of searches beyond a pat down).
6. Among the three largest racial groups (White, Black, Hispanic/Latino), White pedestrians are least frequently stopped and when stopped, Whites are least frequently searched and when searched contraband is least frequently found.

II. Introduction

What is racial profiling?

The Illinois Criminal Justice Information Authority describes racial profiling as "police-led action that is initiated based on a person's race or ethnicity."[1] In 2003, legislation called the Illinois Traffic and Pedestrian Stop Statistical Study Act was passed requiring officers to document who/why they stopped individuals for traffic violations. These data are reported annually to the Illinois Department of Transportation for review. In 2019, this Act became permanent and supports a Task Force to compile and analyze the resulting data.[2] This analysis is part of those ongoing efforts, which include compilation of the data and statistical analyses to uncover potential "statistically significant aberrations" in traffic stops, pedestrian stops, stops by agency and searches of drivers and pedestrians (see Section 1 and Appendix E for more details). Findings are made available to the public and shared with law enforcement agencies to increase their awareness of potential racial profiling in their communities and explore ways to reduce/eliminate it. The IDOT Racial Profiling Prevention and Data Oversight Board meets regularly to oversee these efforts.

How is this report structured?

The report is presented in two parts. **Part I** is this Executive Summary, which includes appendices with detailed technical information on the statistical methodology and analysis. **Part II** includes extensive tables (one set of tables for each law enforcement agency that collected data for stops conducted in 2024). The tables show stop rates for each racial group, along with other statistics that cover activity during the stops, such as citations or warnings, searches and contraband found.

To obtain the greatest benefit from this report, readers are encouraged to read the full Executive Summary with special attention to the Guide to Using Pedestrian Tables (Section III, below). Section III includes definitions of statistical terms used in this report and explanation of the data presented in each panel of the tables. We also include an Interpretation section with additional details on the numeric results presented in the tables and a plain-language description of how the analysis was implemented. Finally, the section on Selected Findings highlights some statewide results. The Appendices include

technical material that describes the statistical methods and calculations in detail. The information in appendices is provided for readers who wish to have a deeper understanding of the methodology.

What is the source of the data?

As noted above per Illinois law, officers from law enforcement agencies are required to fill in a report when they stop a driver or pedestrian. Separate templates are provided for traffic and pedestrian stops.

To follow the convention of previous reporting on the Illinois Traffic and Pedestrian Stop Study, we are submitting two separate reports, the Illinois Traffic Stop Study and the Illinois Pedestrian Stop Study. The above-mentioned data collection templates (known as Traffic Stop or Pedestrian Stop Data Forms) are shown in Appendix A of the ITSS and IPSS. There are instruction manuals that accompany the traffic and pedestrian stop data collection forms — available online at https://idot.illinois.gov/transportation-system/local-transportation-partners/law-enforcement/reporting/illinois-traffic-and-pedestrian-stop-study/forms.html

How were the data analyzed?

The results of the data collection are that 788 agencies generated data on 2,050,405 traffic stops and 244 agencies generated data on 88,019 pedestrian stops in 2024. A total of 789 agencies provided data on either traffic stops or pedestrian stops, with 545 agencies providing traffic stop data only, one agency providing pedestrian stop data only, and 243 agencies providing both traffic and pedestrian stop data. Only three pedestrian stops (0.003% of pedestrian stops) were missing the race designation and did not enter into the analysis. None of the reported traffic stops were missing the race designation. Further analysis was carried out to provide statistics that may be helpful in determining if there is potential bias against minorities in initiating a stop or in the activities that occur during a stop.

As specified by Illinois statute for this study, the tables report on the stops and subsequent experience of individuals stopped. The stopped individuals are classified into one of six racial groups. The law enforcement officer filling in the data collection form must use their judgment to classify an individual into one of the following groups.

- Black or African American
- Hispanic or Latino
- Asian
- American Indian or Alaska Native
- Native Hawaiian or Other Pacific Islander
- White

The data collection forms are extensive. There are more than 60 data items listed for traffic stops and more than 20 data items listed for pedestrian stops. Some items are left blank unless there are further actions beyond a stop, such as a search.

Data collected by local agencies for pedestrian stops include:

- Information about the pedestrian (including race) and the officer
- The location of the stop (using location designations developed by each agency)
- Reason for the stop (eight choices)
- Outcome of the stop (warning/citation or arrest)
- Pat down/frisk or search activity and findings of contraband.

References (for Section II)

1. Green, E., & Lavery, T. (2022). *2020-2021 Illinois Traffic and Pedestrian Stop Data Use and Collection Task Force Findings.* Illinois Criminal Justice Information Authority.
2. Illinois General Assembly. (2022, May 13). *Traffic and Pedestrian Stop Statistical Study.* Website. https://www.ilga.gov/legislation/ilcs/fulltext.asp?DocName=062500050K11-212

III. Guide to Using Pedestrian Tables

While many readers of this report previously reviewed traffic and pedestrian stop tables for their respective jurisdictions, here are some brief explanations of the statistical data.

Table 1 (below) is included as an example to show stop rates, percentages, and ratios. A ratio compares either a rate or a percentage for a Minority to the corresponding rate or percentage for Whites. The ratios are intended to make it easier to see aberrations that may suggest the possibility of racial profiling. The word "possibility" is very important, because racial profiling cannot be proved by the numeric results in this report alone. Some of the inherent uncertainties and limitations of the statistics are explained later and should be considered during the review of the statistical results presented.

The following section includes an example of pedestrian tables and offers a guide to the numbers in the tables, explained panel by panel. The table reproduced here (Table 1) refers to all pedestrian stops reported in 2024 for the state of Illinois. The counts, rates, percentages, and ratios are for purposes of illustration only and are not tied to any individual agency.

Before using the tables: Following the tables there is an important section on interpretation of the rates, ratios, percentages and 95% confidence intervals. Reading that section is important to enable users of this report to make a proper assessment of what the numbers represent.

Rates, percentages, and ratios: The terms "rate," "percentage" and "ratio" are used throughout this report. A brief explanation of the terms is provided here.

A **rate** in one context is the number of individuals (such as the number of individuals stopped) divided by the population the individuals came from, also known in this report as the population "benchmark," a term that will be used repeatedly. A **rate** in another context is the number of individuals (such as the number of individuals stopped) divided by the number of miles that the population the individuals came from have walked within a jurisdiction during an average day, also known in this report as the mileage "benchmark." For example, in Illinois in 2024 there were 23,629 stops of pedestrians whom the officer assigned to the category "Hispanic or Latino." The estimated population benchmark of Hispanic or Latinos aged 12-80 in Illinois in 2024 was 1,875,787. (As discussed later, individuals aged 12-80 in Illinois are considered to have a non-negligible risk of being stopped.) Dividing the 23,629 by 1,875,787 yields the stop rate of 0.0126. That is, there was an average of 0.0126 stops per member of the Hispanic or Latino population age 12-80. The decimal value 0.0126 does not mean that 1.26% of Hispanic or Latinos in the age range had a pedestrian stop. Some individuals may have been stopped more than once.

A **percentage** in this context has the usual meaning. For example, in Illinois in 2024 there were 9,193 stops of pedestrians whom the officer assigned to the category "White." There were 2,101 of those stops with a pat down. The number of pat downs of Whites, 2,101, divided by the number of stops of Whites, 9,193, yields the decimal fraction 0.23. That fraction represented as a percentage is 23%. In Illinois in 2024, 23% of stops of pedestrians assessed as being White resulted in a pat down.

The **ratio** used in this report is either the ratio of a Minority rate to a White rate or the ratio of a Minority percentage to a White percentage. If the ratio is 2.0, for example, it means that the Minority rate (or percentage) is twice the White rate (or percentage).

Table 1 shows the Illinois statewide results for illustration of pedestrian stop reporting. A guide to each panel of the table follows. Note that only the statistics given in Panel 1 involve benchmarks.

Panel 1 (shaded region of the table) presents the pedestrian stops and the results of the two benchmark models.

After the stops row, the next three rows show the population benchmark and the statistics based on that benchmark: the stop rate by racial group and stop rate ratio for each Minority group compared to White pedestrians. The following three rows (darker shaded rows) show the mileage benchmark and the statistics based on that benchmark: the stop rate by racial group and stop rate ratio for each Minority group compared to White pedestrians. Each benchmark value is followed by the percentage (in parentheses) of the total benchmark for all race groups. Ninety-five percent confidence intervals are shown (in parentheses) for rates and rate ratios. The 95% confidence interval is a "margin of error," and it is explained in a short section with that heading below.

Panel 2 shows pat downs, searches beyond pat down and outcomes of these searches for each racial group. The number, percentage (in parentheses) and 95% confidence interval [in brackets, like the brackets here] are shown for each outcome. The contraband-found percentage is calculated based on all searches beyond pat down. The ratio and 95% confidence interval (in parentheses) are shown, comparing each Minority group to White pedestrians on percentage with contraband found among all searches beyond pat down.

Panel 3 shows outcomes of the pedestrian stops including warning/citation (one combined category) and custodial arrest for each racial group. The number, percentage (in parentheses) and 95% confidence interval [in brackets] are shown for each outcome. The percentages are based on all pedestrian stops for each Minority group. The ratio of percentages and 95% confidence intervals (in parentheses) comparing each Minority group to White pedestrians is shown for custodial arrests.

The top-right corner of the table indicates the type of population benchmark used. All pedestrian population benchmarks are territory-based, meaning they are based on local population statistics from the U.S. Census. The note at the bottom left of the table lists the primary area of the population benchmark, which captures the jurisdiction of the agency. These areas can be one or more cities (or towns or villages), counties, or the state. All pedestrian population benchmarks include only the population within the primary area, in contrast to traffic population benchmarks, which include surrounding areas as well. Also, in contrast to pedestrian population benchmarks, pedestrian mileage benchmarks include pedestrians who are visitors to the primary area. They might have, for example, driven into the area then walked a certain distance inside it. The walked part is then included in the pedestrian mileage benchmark. Section V on benchmarks provides more information on how the benchmarks were constructed.

A ratio of 1.0 for Whites: For all rows showing comparisons of Minority groups to Whites, a value of 1.0 is shown in the White racial group column, the reference group. In this column for Whites, the Whites are being compared to themselves, so the ratio of rates must be 1.0. The column is included to make it clear that the Whites are the reference group to which each Minority is compared.

Zero stops or zero benchmark: For some agencies, the number of stops or the benchmark value or the number of outcomes may be zero for a racial group. When it is not possible to calculate a rate or percentage or ratio and an associated 95% confidence interval because of zero stops or zero benchmarks or zero outcomes, an "NA" is reported in the table. When reporting information such as searches following stops or contraband found, sometimes all racial groups have entries of zero in the row. That is, there were no searches of any racial group or no contraband found for any racial group. In that case, the row is omitted. Similarly, when making comparisons to Whites, if all minorities have counts of zero or the Whites have a count of zero, the ratios comparing each Minority to Whites cannot be computed and the row of ratios is omitted.

Table 1. Example of a table of pedestrian stops: Counts, Rates, Percentages, and Ratios.

Summary of Pedestrian Stops for 2024 - ILLINOIS STATEWIDE RESULTS						**Population Benchmark: Territory-based***
	White	**Black or African American**	**Hispanic or Latino**	**Asian**	**American Indian or Alaska Native**	**Native Hawaiian or Other Pacific Islander**
Panel: 1 Summary of Stops, Rates, and Rate Ratios with 95% Confidence Intervals. Total stops: 88,016. Total population benchmark: 10,485,208. Total mileage benchmark: 242,686,003.						
Stops (% of Total)	9,193 (10%)	54,004 (61%)	23,629 (27%)	980 (1.1%)	106 (0.1%)	104 (0.1%)
Population Benchmark (% of Total)	6,417,001 (61%)	1,472,934 (14%)	1,875,787 (18%)	662,193 (6.3%)	51,554 (0.5%)	5,739 (0.05%)
Population Stop Rate (95% Confidence Interval)	0.00143 (0.0014 - 0.00146)	0.0367 (0.0364 - 0.037)	0.0126 (0.0124 - 0.0128)	0.0015 (0.0014 - 0.0016)	0.0021 (0.0017 - 0.0025)	0.018 (0.015 - 0.022)
Population R. Ratio vs Wh. (95% Confidence Interval)	1.0	***25.6 (25 - 26.2)***	***8.8 (8.6 - 9)***	1 (0.97 - 1.1)	***1.4 (1.2 - 1.7)***	***13 (10 - 15)***
Mileage Benchmark (% of Total)	179,412,400 (74%)	26,734,750 (11%)	22,680,050 (9.3%)	13,027,780 (5.4%)	708,445 (0.3%)	122,637 (0.05%)
Mileage Stop Rate (95% Confidence Interval)	<0.0001 (<0.0001 - <0.0001)	0.00202 (0.002 - 0.00204)	0.00104 (0.00103 - 0.00106)	<0.0001 (<0.0001 - <0.0001)	0.00015 (0.00012 - 0.00018)	0.0008 (0.0007 - 0.001)
Mileage R. Ratio vs White (95% Confidence Interval)	1.0	***39.4 (38.6 - 40.3)***	***20.3 (19.8 - 20.8)***	***1.5 (1.4 - 1.6)***	***2.9 (2.4 - 3.5)***	***17 (14 - 20)***
Panel: 2 Summary of Pat Down Events - Number (Percentage for the Racial Group) [95% Confidence Interval]						
Pat Down (% of Stops)	2,101 (23%) [22% - 24%]	21,665 (40.1%) [39.6% - 40.7%]	8,287 (35%) [34% - 36%]	237 (24%) [21% - 27%]	29 (27%) [18% - 39%]	33 (32%) [22% - 45%]
Search Beyond Pat Down (% of Stops)	2,378 (26%) [25% - 27%]	25,806 (47.8%) [47.2% - 48.4%]	9,666 (41%) [40% - 42%]	251 (26%) [23% - 29%]	34 (32%) [22% - 45%]	35 (34%) [23% - 47%]
Contraband Found (% of Searches, preceding row)	921 (39%) [36% - 41%]	13,174 (51%) [50% - 52%]	4,867 (50%) [49% - 52%]	92 (37%) [30% - 45%]	14 (41%) [23% - 69%]	14 (40%) [22% - 67%]
Contraband Found Ratio vs White (95% Confidence Interval)	1.0	***1.3 (1.2 - 1.4)***	***1.3 (1.2 - 1.4)***	0.95 (0.76 - 1.2)	1.1 (0.58 - 1.8)	1 (0.56 - 1.7)

Summary of Pedestrian Stops for 2024 - ILLINOIS STATEWIDE RESULTS						Population Benchmark: Territory-based*
	White	**Black or African American**	**Hispanic or Latino**	**Asian**	**American Indian or Alaska Native**	**Native Hawaiian or Other Pacific Islander**
Panel: 3 Summary of Outcome of Stop - Number (Percentage of All Stops for the Racial Group with the Noted Outcome of the Stop) [95% Confidence Interval]						
Warning/Citation	2,564 (28%) [27% - 29%]	3,812 (7.1%) [6.8% - 7.3%]	2,338 (9.9%) [9.5% - 10%]	164 (17%) [14% - 20%]	15 (14%) [7.9% - 23%]	13 (12%) [6.7% - 21%]
Custodial Arrest	1,422 (15.5%) [14.7% - 16.3%]	9,706 (18%) [17.6% - 18.3%]	2,787 (11.8%) [11.4% - 12.2%]	110 (11%) [9.2% - 14%]	16 (15%) [8.6% - 25%]	14 (13%) [7.4% - 23%]
Custodial Arrest Ratio vs White (95% Confidence Interval)	1.0	***1.16 (1.1 - 1.23)***	0.76 (0.72 - 0.81)	0.73 (0.59 - 0.88)	0.98 (0.56 - 1.6)	0.87 (0.47 - 1.5)

***Population Benchmark Definition**

Benchmark Type: Territory-based.
Primary Benchmark Area (State): Illinois.
100% of the benchmark comes from ZIP codes within the primary area.

IV. Interpretation of Pedestrian Tables

95% Confidence Interval

Table 1 includes a "95% confidence interval" for each rate, percentage or ratio. Here, the 95% confidence interval represents that part of uncertainty (not the whole component of uncertainty) in estimating the rate, percentage or ratio, which is due to sampling variability. Most generally, the 95% confidence interval provides a range of plausible values. The "95%" figure can roughly be interpreted in the following way: if the year could be repeated many times with nothing essentially changing in the real world (in traffic patterns and behavior of pedestrians and officers) and with methods of analysis kept the same, 95% of the time the repeated result would be expected to be found inside that given interval. Because there is an element of chance involved in being stopped, being searched, etc., the value of a rate or percentage or ratio would be somewhat different with each repetition. The 95% confidence interval reflects that particular aspect of the overall problem, the ever-present play of chance. It uses widely accepted methods and expresses some of the uncertainty in the estimated rate, percentage or ratio. There is another important source of uncertainty that reflects the methodology used and, most importantly, the component of uncertainty arising from the datasets that inform the analysis. The confidence interval does not cover that aspect of the problem. Yet, it is useful to be aware of that part of uncertainty, which is due to simple play of chance and which gets more and more prominent as agencies become smaller, have fewer stops or smaller benchmark values that are used for calculating rates, percentages or ratios.

Ratios

A ratio of rates or percentages with a value of 1.0 indicates that the rates or percentages are equal between the Minority group and Whites. Ratios above or below 1.0 show greater or lesser stop activity with minorities, respectively. Comparisons of Minority groups to White drivers or White pedestrians where the 95% confidence interval lies above 1.0 are **bolded** in the stop's tables. When the ratio is **bolded**, one can say that the value of 1.0 does not fall within the 95% confidence interval of the estimated ratio. These **bolded** ratios are statistical deviations and may be the basis for further consideration of potential racial disparities related to stops. A **bolded** ratio does not prove that there is racial profiling. (See "Limitations," below.) A **bolded** ratio may be taken as the basis for further inquiry. In addition to whether or not a ratio is bolded, the absolute magnitude of the ratio should be considered. For example, a **bolded** ratio of 5.0 is a higher priority to investigate than a small, **bolded** ratio of 1.2. A larger ratio implies the potential impact on individuals is larger, and it is less likely that the elevated ratio is only due to limitations of the chosen benchmark than when the ratio is closer to 1.0.

Limitations

There is a limitation in the use of ratios to determine potential racial disparities. As explained, the 95% confidence intervals for stop rates and stop rate ratios do not involve the uncertainty in estimating the driver and pedestrian benchmarks. Note that each law enforcement agency has a "jurisdiction," which is the geographic area that the agency is responsible for policing. In this report "agency" and "jurisdiction" are sometimes used interchangeably.

For this study, the pedestrian population benchmarks have been estimated based on the population in cities and counties of Illinois corresponding to each agency's jurisdiction. Those population counts are

available from the Census and surveys carried out by the U.S. Census Bureau. However, the true pedestrian populations likely include people who reside in communities both inside and outside of the specific area of jurisdiction of an agency. As the pedestrian population benchmarks count only people who reside within the agency's jurisdiction, people who live outside of those communities but enter the jurisdiction and may be encountered by law enforcement officers are not included in those benchmarks. Also, population benchmarks do not take into account the distance walked. If an average individual of one race walks more than an average individual of another race, this affects their rate ratio, but the population benchmarks miss this aspect of the problem. In contrast, mileage benchmarks include in their models both visiting walkers and the distances walked. However elaborate, these models can only approximate local traffic/walking dynamics and necessarily rely on particular assumptions which themselves may have some uncertainty.

Thus, all benchmarks will always come with some uncertainty, and the extent of this uncertainty is unknown inasmuch the underlying "truth" is unknown. See the companion report on 2024 traffic stops, Executive Summary Part I, for a discussion of this topic. If it were possible to estimate this type of uncertainty as it affects rates and rate ratios, the 95% confidence intervals would be wider and, thus, some confidence intervals might then include 1.0 (no racial disparity) and would not prompt bolding and the need for further inquiry. (The section labelled "**Benchmarks**", below, describes the methods used to estimate the population from which stopped individuals originated.)

The Census and ACS surveys have been used to designate pedestrian population benchmarks for this study because they have readily available populations for cities and counties. The Census' city and county populations are virtually the only option for building pedestrian population benchmarks within the resources available to this study. (Datasets involved in the model that was used to create mileage benchmarks are not freely available to be used annually in choosing benchmarks for hundreds of law enforcement agencies.) The city and county populations do have some validity as benchmarks because they include the jurisdiction of interest, and it is expected that a substantial fraction of pedestrians in the jurisdiction originate from the designated benchmark city (or cities) and county (or counties).

Another limitation that may affect the rates, percentages and ratios is the designation of race by the law enforcement officer conducting the stop. That designation of race might not correspond to the driver's or pedestrian's own racial identity. (See the companion report on traffic stops, Executive Summary Part I, for a discussion of this topic.) In addition, the stop rate for a racial group will depend on a) the assignment of beats (geographic surveillance area) to officers in a jurisdiction and b) the degree of association of those beats with the walking patterns of each racial group. A higher (or lower) surveillance of an area with a high residential concentration of a racial group can lead to a higher (or lower) stop rate for the racial group, compared to surveillance being uniform across the jurisdiction.

Statistics based on stops only

The percentages and ratios of percentages in the tables are based on stop counts and stop activity only. They are given in Panels 2 and 3 of the statistical tables. These percentages and ratios of percentages do not depend on the estimated benchmark values, and they do not have the potential benchmarking uncertainty noted above. Percentages based on stops can be a resource for any inquiry about potential racial profiling.

It is important to note that the percentages are calculated with reference to a specific activity. For example, in the pedestrian tables, the percentage of searches beyond pat down for a racial group is a

percentage of *stops* leading to a search beyond pat down. The percentage of contraband found is the percentage of *pedestrian searches beyond pat down* leading to contraband found. For percentages, each row label (or the heading for the panel) indicates the basis for the percentage.

Can stop rates be compared across years?

The methodology used for calculating pedestrian stop rates in this study (and for 2019-2023 stops) differs from studies of stops in 2018 and earlier. While the new methodology provides more accurate stop rates, the methodologic improvements over time make it difficult to compare results from the 2024 stops analysis to the analyses in years prior to 2019. The 2024 stop statistics can be compared to 2021-2023 results as the methodologies are the same. The 2024 stop statistics can also be compared to 2019 and 2020, though there have been some additional changes in methodology starting from 2021 stops, described in the report on 2021 stops.

These and other changes have improved the estimate of the population benchmarks and the accuracy of stop rates based on them. Thus, any difference in rates between 2019-2023 stops reports and earlier stops reports (2018 and earlier) may be at least partly due to an improvement in methods rather than to a real change in stop rates. The new methods are intended to estimate the population benchmarks more accurately. For example, population rate ratios (comparing a Minority stop rate to a White stop rate) are more accurate in 2019 and later stops reports than in 2018 and earlier stops reports. Another factor making it difficult to compare 2019-2024 stop rates to 2018 rates (and earlier) is that the 2019-2024 reports present rates, percentages, and rate ratios separately for each of the six individual races—rather than with all Minorities combined into one category, as used in the 2018 and earlier reports. Perusal of tables in Part II of this report will show the reader that the five Minority races do have different stop rates. The statewide rates in Table 1, Panel 1, above, show a diversity of stop rates among the six races as well as among the five Minority races.

Certain percentages will be comparable across years, because the percentages are based on stop data only without involving a benchmark, and percentages are calculated in the same manner as in previous years. However, to compare a percentage based on 2024 stops data to a percentage reported for a year prior to 2019, some additional calculations will be needed for a comparison of all Minorities combined to Whites. This 2024 stop report and the 2019-2023 stop reports present results for each racial group, whereas reports prior to 2019 combined five races into one group: all Minorities. To calculate a percentage for 2024 stops of all minorities, the user will need to add together (across the five Minority racial groups) all of the numerators of rates and, separately, all of the denominators and then divide the numerator sum by the denominator sum, then multiply by 100% to get the all-Minority percentages. As noted earlier, this report presents results for each racial group separately, since the Minority groups do have differing rates, percentages and ratios in some jurisdictions.

V. Benchmarks

The number of stops for each racial group and each agency is compared to a “benchmark” to calculate the agency’s stop rate for the racial group.

In all previous reports since 2004, benchmarks were synonymous with population counts. This year we expand this view by introducing benchmarks with different added meaning: the total distance that pedestrians of a particular race group collectively walked inside a jurisdiction. It should be emphasized that the new benchmark model is not meant to replace the old, but to serve as a meaningful alternative, since it is informed by different and potentially very rich data sources. See the companion report on traffic stops, Executive Summary Part I, Section V, for a more general discussion of this topic.

As in the case of traffic stops, the new (mileage) benchmarks are not used in any further analysis or summary in key findings and selected findings. A reader who wishes to skip the new benchmarks and the rates and rate ratios based on them can readily do so.

Population Benchmarks

The first benchmark model is the one we have used since our report on 2021 stops. We now distinguish it by naming it "population benchmarks."

The population benchmark provides an estimated pedestrian population count for each of the six racial groups. These population counts are then compared to the pedestrian stop counts of each racial group to assess and compare the stop rates (stops per unit of population) of each racial group. See Appendix C of our last year's report, Technical Notes on Benchmarks, for a detailed discussion of benchmarks and associated calculations, including limitations.

The methods for calculating the population benchmarks for each agency for this report are the same methods used in reports on 2021-2024 stops, which rely primarily on local population statistics on the associated cities or counties based on data provided by the U.S. Census Bureau. However, the numeric values of the benchmarks for 2024 stops may be different than those for 2021-2023 stops because the underlying population statistics are updated annually to be as up to date as possible. The primary source for population statistics in this report on 2024 stops is the 5-year ACS release, the most recent release available.

Note that the traffic stop and pedestrian stop population benchmark methodologies differ from each other due to the different data sources available to generate them. Thus, it is not unusual for there to be notable differences between the traffic and pedestrian population benchmarks for the same agency.

Mileage Benchmarks

The second model is based on the estimated number of miles walked within a jurisdiction. The meaning of this benchmark is, precisely: the total number of miles walked by all individuals of a particular race group, within the boundaries of a jurisdiction during a single average day. In this view, a stop can happen within each walked mile, and only some of these miles experienced a stop. Thus, the stop rate here is the count of stops divided by the count of miles walked within a jurisdiction for a particular race group. We refer to this benchmark as the "mileage benchmark," as its numerical values estimate counts of miles of walking within a jurisdiction.

These benchmarks are constructed from the various outputs of the Replica data platform — a massive computer simulation of traffic dynamics at a nationwide level with high granularity of geolocation detail maintained and updated using extensive data sources. See the companion report on 2024 traffic stops, Executive Summary Part I, Section V, for a more general discussion of this topic, and particularly, see

Appendix D in that document for more information on the methodologies, strengths and limitations of the mileage benchmark model.

On comparing the two pedestrian benchmark models

As already mentioned, the introduction of the mileage benchmarks is mainly to provide an alternative and largely independent description of the local pedestrian dynamics. Both the mileage and population benchmark models start with the same demographic information on the location where potential walkers reside (ACS, PUMS data), and this is where the development of population benchmark model stops because the population model does not include any information on where and how much various individuals walk. It has to assume that all pedestrians within a particular age range can be found equally and anywhere inside the agency jurisdiction in which they reside, independently of their race or other characteristics.

The mileage benchmark model goes further, with a unified approach for describing traveling dynamics of both drivers and pedestrians. It employs the same rich and varied sources of information in modeling both driving and walking patterns, as described in the companion report on traffic stops, Executive Summary Part I. The pedestrian mileage benchmark model both: 1) includes pedestrians visiting from surrounding areas and 2) takes account of particular distances walked. Therefore, unless the Replica model is seriously flawed in describing pedestrian dynamics, it can be reasonably expected that the mileage benchmark counts should be a better choice for estimating pedestrian rate ratios than the much simpler population benchmarks.

VI. Selected Findings

This section of the report shows some tables and figures that present results on the agencies and their pedestrian stops from the entire State of Illinois for 2024. Some results are contrasted with their corresponding 2022 and/or 2023 values. All benchmark-related results are solely based on population benchmarks.

Agency reporting status

Among the 978 agencies that were active at the end of 2024 and could submit stop data to IDOT, 24.9% of the agencies had stops and provided complete stop data to IDOT (Table 2, below, top numeric row). A total of 202 agencies had no pedestrian stops (20.7%), which is a notable decrease since 2023 (27.1%). Yet 54.4% of agencies did not submit any stop data (“Non-compliant”), which is a notable increase from 2023 (48.6%). The fraction of agencies non-compliant with pedestrian stop submissions was about three times larger than the corresponding non-compliant percentage (18.1%) for traffic stop submissions.

Table 2. *Agency status on reporting.* Illinois, all agencies, Pedestrian stops, 2023 and 2024.

Status of Agency	2023		2024	
	Number of agencies	Percent of agencies	Number of agencies	Percent of agencies
Complete reporting[a]	242	24.3%	244	24.9%
Zero stops[b]	270	27.1%	202	20.7%
Incomplete[c]	0	0	0	0
Non-compliant[d]	485	48.6%	532	54.4%
All agencies combined	997	100%	978	100%

[a]Agency with one or more stops that were completely reported.
[b]Agency performed no stops over the year.
[c]Agency submitted some but not all of their stops for the year.
[d]Agency made stops, but no stop data was submitted.

Number of stops

The total number of reported traffic and pedestrian stops in 2024 was 2,138,424. Among all of these stops, 88,019 (4.1%) were pedestrian stops and 2,050,405 (95.9%) were traffic stops — there were a little over 23 traffic stops per each pedestrian stop. Most agencies with pedestrian stops had very few of such stops — 10 or fewer (70.5% of the 244 agencies with more than zero pedestrian stops reported had 10 or fewer pedestrian stops). The Chicago Police Department reported 82,660 pedestrian stops, which was 93.9% of all the reported pedestrian stops statewide (see the note in Table 3).

Table 3. *Number of Pedestrian stops for agencies with at least one stop.* Illinois, all agencies, Pedestrian stops, 2023 and 2024.

Number of stops	2023		2024	
	Number of agencies	Percent of agencies	Number of agencies	Percent of agencies
1-10	173	71.5%	172	70.5%
11-100	58	24.0%	59	24.2%
101-1,000	10	4.1%	12	4.9%
1,001-10,000	0	0	0	0
10,001-100,000	1	0.4%	1	0.4%
More than 100,000	0	0	0	0

All compliant agencies with ≥ 1 stops	242	100%	244	100%
Notes: (1) Includes only agencies with at least one stop and complete reporting of their stops. (2) Chicago Police: 78,642 pedestrian stops in 2023; 82,660 in 2024. The Chicago pedestrian stops data are included in the table above.				

The counts in Figure 1a show that the number of pedestrian stops increased by nearly 30% from 2016 to 2019 while there was a sharp decrease in 2020 when the number of reported stops decreased 45% from the year before. In 2021, the number further decreased 29.5% from 2020. Since then, the number of stops increased each year. Between 2021 and 2024, the number of stops increased 21%. However, there is little indication that the numbers will return to their pre-COVID-19 values. This stands in contrast with traffic stops that have to a good extent returned to their pre-COVID-19 values.

Figure 1a. ***Illinois, number of Pedestrian stops*****, 2016-2024.**

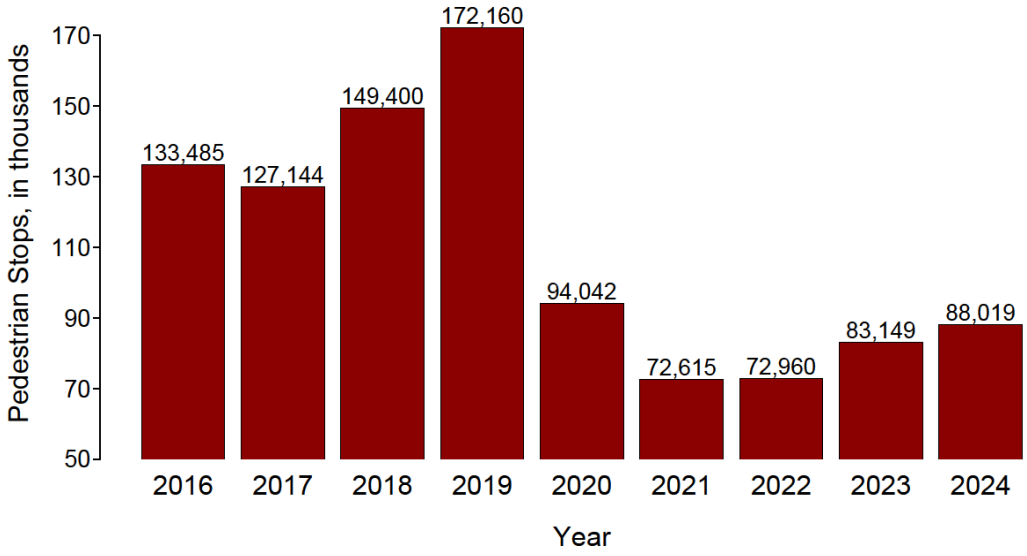
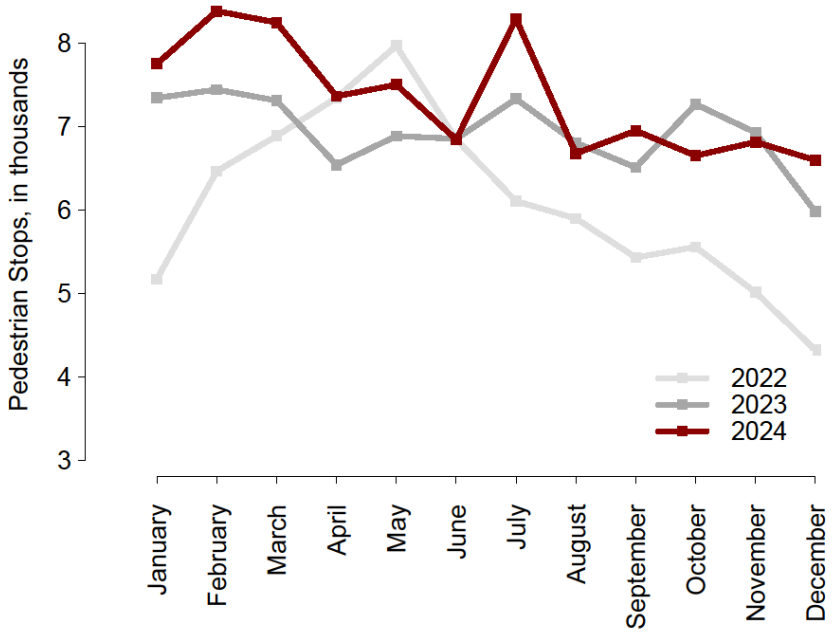


Figure 1b shows that the monthly pattern of stops has changed little in the last three years, with less variation across months in 2023-2024.

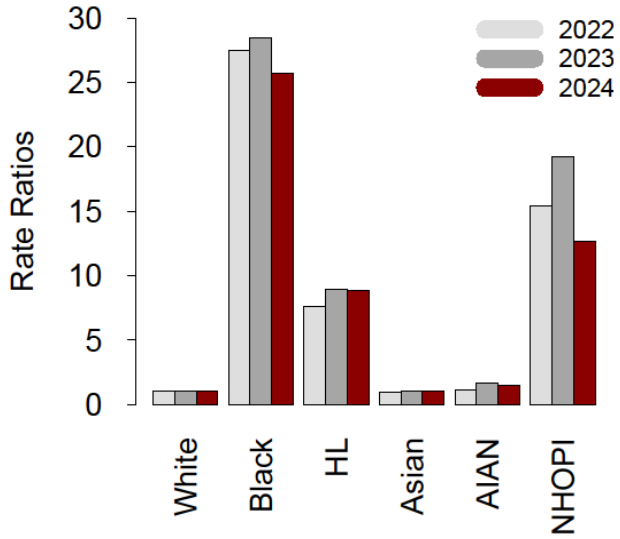
Figure 1b. ***Illinois, number of Pedestrian stops per month, 2022 (light gray line), 2023 (gray line) and 2024 (dark red line).***



Statewide rate ratios

The statewide rate ratios are very diverse among the six racial groups (Figure 2). While Asian and AIAN groups are comparable with the reference White group, the remaining three groups have their rate ratios notably larger. The Black group stands out with the rate ratio 25-30 times as large as the White group. The Hispanic/Latino group is approximately 8 times as large. The smallest Minority group, Native Hawaiian or Other Pacific Islander, has its rate ratio 10-20 times as large as the White group. However, this may be — at least partially — an anomaly due to a persisting mismatch between the officer-identified race of stopped individuals and the self-identified race reported in U.S. census survey data. These relations between rate ratios remained largely constant within the last three years.

Figure 2. ***Rate ratios for each racial group, 2022 (light gray bars), 2023 (gray bars) and 2024 (dark red bars).*** **Illinois, Pedestrian stops, 2022-2024.**



Abbreviations for racial groups: Black = "Black or African American," HL = "Hispanic or Latino," AIAN = "American Indian or Alaska Native," NHOPI = "Native Hawaiian or Other Pacific Islander."

Distribution of stop rate ratios

Table 4 shows comparisons of stop rates of a Minority racial group and Whites carried out in the pedestrian stops study. Any comparison yields a rate ratio — the Minority stop rate divided by the White stop rate. Each agency might contribute up to five such comparisons (five Minority groups, each compared to Whites on their stop rates). There would be fewer than five comparisons when one or more of the racial groups had zero stops in an agency.

The first column under "A" in Table 4 shows the counts of all comparisons (each Minority/White rate ratio and all the ratios compiled across all agencies and then categorized in Table 4 by the magnitude of the rate ratio). The columns under "B" restrict the comparisons to those based on at least 10 White stops and 10 stops of the Minority group compared. Having at least 10 stops provides a more precise estimate of the rate ratio than a smaller number of stops.

We note a drastic reduction — over 20-fold from Panel A to Panel B — in the total number of rate ratios, from 994 (all comparisons) down to only 48 (more precise comparisons), and that this reduction comes mainly from eliminating the smallest ratios. From the more precise comparisons (Panel B, based on 10 or more stops of Whites and 10 or more stops of the Minority group compared) we estimate that in 73% of these rate ratios, Minority pedestrians were stopped more than the White pedestrians relative to their proportion in the benchmark population (rate ratio > 1). This suggests as a possibility, but does not prove, that racial profiling was a factor in a number of pedestrian stops.

Comparing 2023 and 2024, there is some change in the distribution of rate ratios that are larger than 1. The category with the most extreme rate ratios (>4.0) has been reduced from 37% in 2023 to 25% in

2024, while less extreme rate ratios (<4.0) increased from 32.5% in 2023 to 47.9% in 2024. This suggests that although the total number of rate ratios >1 has not changed much from 2023 to 2024, they were collectively somewhat less severe in magnitude in 2024.

The 95% confidence intervals provided in the tables of Part II should be used as a guide to the precision of rates, percentages and rate ratios when interpreting the numeric results. There are not enough pedestrian stops to extend this analysis to particular racial groups, as performed for the traffic stop report.

Table 4 *Distribution of Pedestrian stop rate ratios.* (Each non-White racial group compared to Whites for an agency.) Illinois, Pedestrian stops, 2023 and 2024.

	A. All agencies and racial groups*		B. Agencies and the racial groups with at least 10 stops**	
Rate ratios	2023	2024	2023	2024
<0.25	77.3%	79.0%	2.5%	2.1%
0.25 to <0.5	1.5%	1.2%	7.5%	6.3%
0.5 to <1.0	3.2%	2.1%	20.0%	18.8%
1.0 to <2.0	3.6%	4.5%	20.0%	27.1%
2.0 to <4.0	3.6%	4.8%	12.5%	20.8%
≥4.0	10.9%	8.4%	37.5%	25.0%
All ratios***	100%	100%	100%	100%

* All comparisons of Whites and a racial group for all agencies. Excludes ratios from agencies with zero stops of White pedestrians or a benchmark population value of zero for either racial group.

** All comparisons of Whites and a racial group for all agencies; all comparisons must have at least 10 stops of Whites and 10 stops of the compared racial group. Excludes ratios where either Whites or the compared racial group have less than 10 stops.

***The number of ratios (each involve a comparison of one non-White racial group vs. White for one agency) that were included in the analysis in columns A and B respectively, were 956 and 40 in 2023; 994 and 48 in 2024.

Searches and contraband

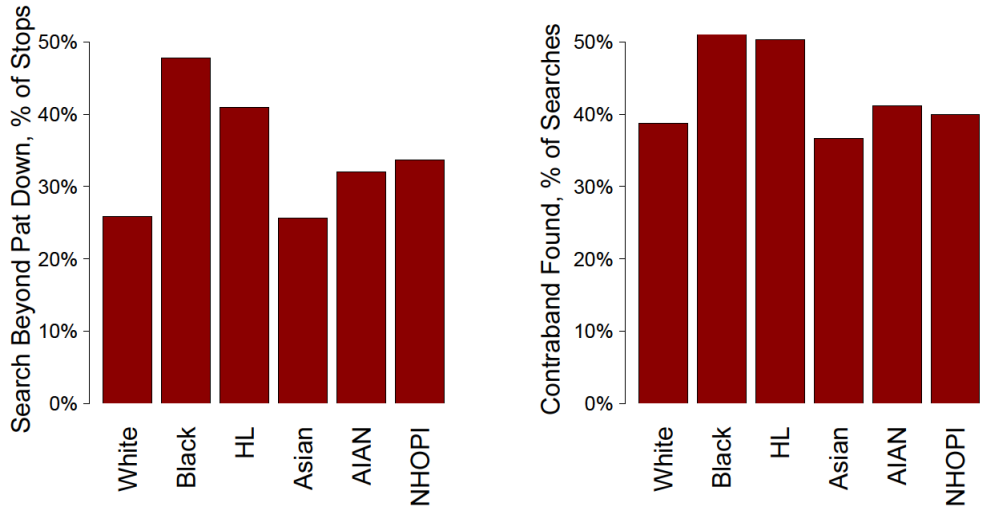
Figure 3 shows that the rate of search beyond a pat down is substantial for all the racial groups (approximately 26-48% of stops, left panel), and, given a search beyond pat down, the yield of contraband is also substantial (approximately 37-51% of searches beyond a pat down, right panel).

There is diversity among the races' percentages in both panels. Focusing on the three largest racial groups (White, Black, Hispanic/Latino) having substantial numbers of stops (>1,000), the White group is:

- The least frequently stopped, its rate being the smallest (see Figure 2);
- When stopped, it is least frequently searched; and

- When stopped and then searched, the contraband is least frequently found.

Figure 3. *Percentage of Pedestrian stops with a search beyond pat down*. Percentage of searches beyond pat down with contraband found. Illinois, Pedestrian stops, 2024.



Abbreviations for racial groups: Black = "Black or African American," HL = "Hispanic or Latino," AIAN = "American Indian or Alaska Native," NHOPI= "Native Hawaiian or Other Pacific Islander."

VII. Considerations for Interpreting the Data

In 2024, over half of all agencies (54.4%) were non-compliant in reporting their pedestrian stops, which is higher than in 2023 (49%), although still lower than in 2021 (59%). This substantial level of non-compliance raises some concern about results based on pooling compliant agencies together, such as in tables and figures of this "Selected Findings" section. Are the pooled compliant agencies representative of the whole State of Illinois and all its law enforcement agencies? Again, the Chicago Police Department accounts for 94% of all pedestrian stops.

A considerable number of agencies have a relatively small number of stops for one or more of the racial groups. The limited stop counts yield wide 95% confidence intervals, which means high uncertainty due to the play of chance, in the corresponding rate, percentage or ratio for the agency. The uncertainty from potential benchmark issues (discussed earlier) or race classification issues (also discussed earlier) add to the uncertainty implied by the confidence intervals. Any investigation of racial profiling that is initiated based on this report should consider all of the sources of uncertainty.

In Part II of this report (agency tables), each agency has ratios of rates or ratios of percentages. Some of them are bolded as a "statistical deviation." The bolded ratios and their meaning and interpretation are

topics covered elsewhere in this report. In addition to whether or not a ratio is bolded, the absolute magnitude of the ratio should be considered when interpreting the results, as discussed earlier.

If a ratio is not bolded, it does not prove that there is no racial profiling in the agency. It is worth looking at the upper and lower bound of the 95% confidence interval to see what the uncertainty is. That interval quantifies the uncertainty and shows the largest ratio and the smallest ratio that are plausible, given the data.

For example, consider a ratio of ***1.0*** for a specific Minority percentage of stops with a search, compared to the corresponding White percentage of stops with a search — in a particular agency. The ratio of 1.0 indicates that the percentage of stops with a search was the same for both the Whites and for the specific Minority group. However, the counts of searches are very small in this example, and the 95% confidence interval for the ratio is ***0.025*** up to ***5.8***. (This is similar to an actual agency result.) It is plausible that the true search percentage of the Minority group is anywhere from one-fortieth of the White percentage up to almost six times the White percentage.

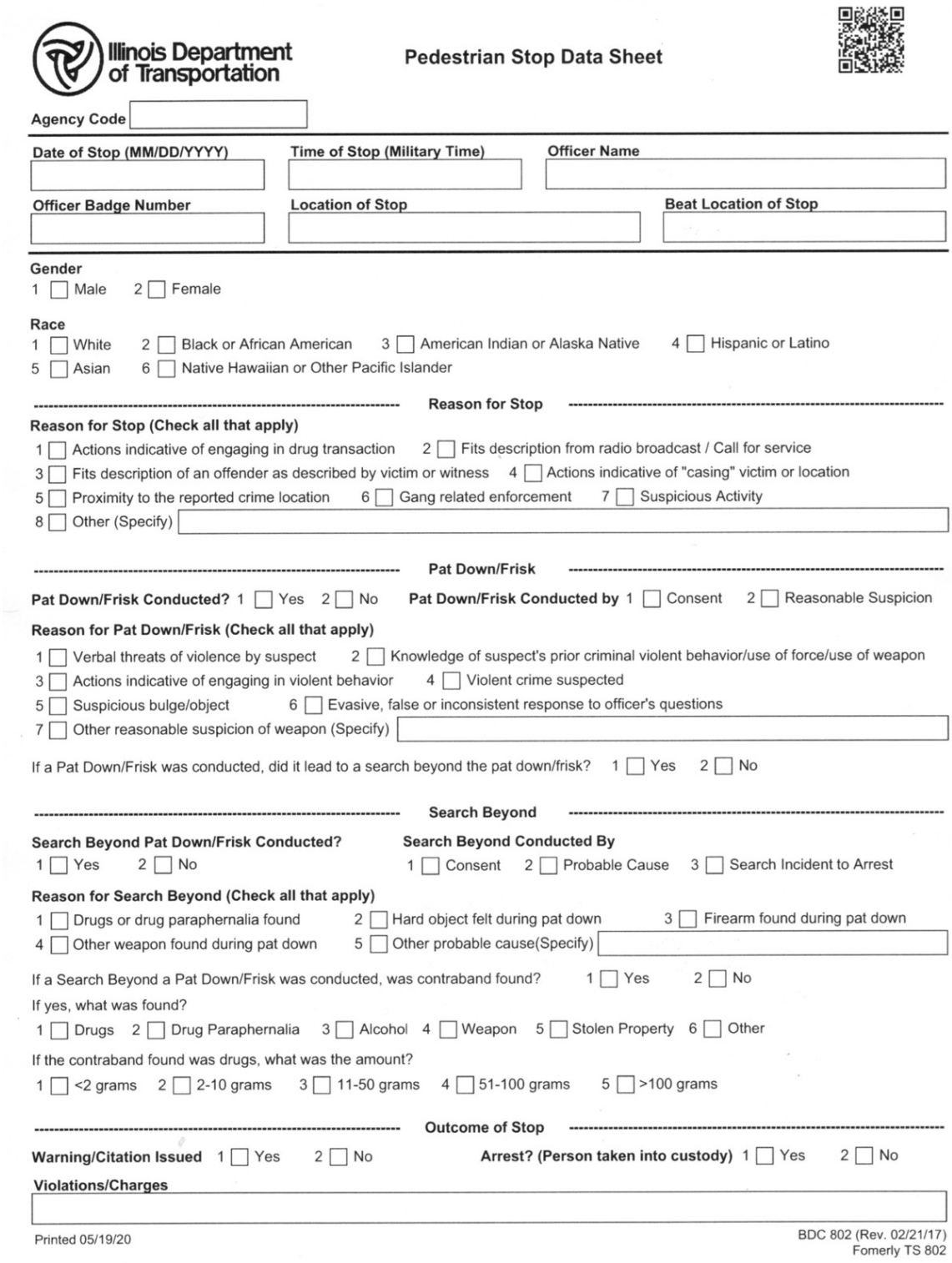
Clearly, in a case like the one described above, we do not know enough about the ratio to draw any conclusion except that we are uncertain. Thus, a confidence interval for a ratio that includes 1.0 and is very wide (encompassing values well above the calculated ratio and also well below the ratio) usually means that presence or absence of potential racial profiling cannot be determined from the data in hand.

Lastly, while there is a considerable focus on the stop rate ratios reported in Panel 1 of the tables in Part II of this report (detailed tables), the other panels provide valuable complementary information on the outcomes of stops and how the outcome statistics compare between racial groups. As noted earlier, the stop outcome results are compared among individuals that were stopped and do not rely on any external benchmark. This avoids some limitations of benchmarks. Ultimately, stop results for an agency should be interpreted holistically, considering all panels together; different panels may suggest different interpretations when viewed individually.

VIII. Looking Ahead

The Mountain-Whisper-Light is continuing to review the current statistical methodology and consider refinements and improvements. See the “Looking Ahead” section of Part I (Executive Summary) of the traffic report.

Appendix A. Pedestrian Stop Data Collection Form in Use during 2024



Illinois Department of Transportation

Pedestrian Stop Data Sheet

Agency Code ☐

Date of Stop (MM/DD/YYYY) ☐ **Time of Stop (Military Time)** ☐ **Officer Name** ☐

Officer Badge Number ☐ **Location of Stop** ☐ **Beat Location of Stop** ☐

Gender
1 ☐ Male 2 ☐ Female

Race
1 ☐ White 2 ☐ Black or African American 3 ☐ American Indian or Alaska Native 4 ☐ Hispanic or Latino
5 ☐ Asian 6 ☐ Native Hawaiian or Other Pacific Islander

Reason for Stop

Reason for Stop (Check all that apply)
1 ☐ Actions indicative of engaging in drug transaction 2 ☐ Fits description from radio broadcast / Call for service
3 ☐ Fits description of an offender as described by victim or witness 4 ☐ Actions indicative of "casing" victim or location
5 ☐ Proximity to the reported crime location 6 ☐ Gang related enforcement 7 ☐ Suspicious Activity
8 ☐ Other (Specify) ☐

Pat Down/Frisk

Pat Down/Frisk Conducted? 1 ☐ Yes 2 ☐ No **Pat Down/Frisk Conducted by** 1 ☐ Consent 2 ☐ Reasonable Suspicion

Reason for Pat Down/Frisk (Check all that apply)
1 ☐ Verbal threats of violence by suspect 2 ☐ Knowledge of suspect's prior criminal violent behavior/use of force/use of weapon
3 ☐ Actions indicative of engaging in violent behavior 4 ☐ Violent crime suspected
5 ☐ Suspicious bulge/object 6 ☐ Evasive, false or inconsistent response to officer's questions
7 ☐ Other reasonable suspicion of weapon (Specify) ☐

If a Pat Down/Frisk was conducted, did it lead to a search beyond the pat down/frisk? 1 ☐ Yes 2 ☐ No

Search Beyond

Search Beyond Pat Down/Frisk Conducted?
1 ☐ Yes 2 ☐ No

Search Beyond Conducted By
1 ☐ Consent 2 ☐ Probable Cause 3 ☐ Search Incident to Arrest

Reason for Search Beyond (Check all that apply)
1 ☐ Drugs or drug paraphernalia found 2 ☐ Hard object felt during pat down 3 ☐ Firearm found during pat down
4 ☐ Other weapon found during pat down 5 ☐ Other probable cause(Specify) ☐

If a Search Beyond a Pat Down/Frisk was conducted, was contraband found? 1 ☐ Yes 2 ☐ No

If yes, what was found?
1 ☐ Drugs 2 ☐ Drug Paraphernalia 3 ☐ Alcohol 4 ☐ Weapon 5 ☐ Stolen Property 6 ☐ Other

If the contraband found was drugs, what was the amount?
1 ☐ <2 grams 2 ☐ 2-10 grams 3 ☐ 11-50 grams 4 ☐ 51-100 grams 5 ☐ >100 grams

Outcome of Stop

Warning/Citation Issued 1 ☐ Yes 2 ☐ No **Arrest? (Person taken into custody)** 1 ☐ Yes 2 ☐ No

Violations/Charges ☐

Printed 05/19/20

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Appendix B. Technical Notes on Rates, Percentages and Ratios

B.1. Overview

This technical appendix includes a detailed explanation of the rate, post-stop outcomes and ratio calculations used in constructing the statewide and agency tables for pedestrian stops. The tables appear in Part II of this report. We explain how comparisons of each Minority group to White pedestrians are carried out. We also explain how the confidence interval is calculated based on known sources of uncertainty in the data.[1] Further, this section describes how an agency may be designated (by a bold font in the tables) as potentially standing out beyond an assumption of no racial profiling. An agency that is designated as standing out might use this report as a basis for further inquiry. As stated elsewhere and repeated here, there is nothing in this report which proves an agency is practicing racial profiling. We provide some limitations for interpreting the findings based on the available data and methods.

B.2. Stop rates, post-stop outcomes and ratio calculations

We performed all calculations for the entire State of Illinois and for each agency.

B.2.1. Stop rates and rate ratios

We calculated stop rates separately for each racial group by dividing the number of stops in the racial group by the benchmark estimate of the pedestrian population in the racial group. (A description of the methods used to estimate the population benchmarks is included in Appendix C of last year's report.)

We assumed the number of stops followed a Poisson distribution, used in previous examination of racial disparities in traffic stops (Gelman, et al. 2007, Ridgeway 2007) and calculated 95% confidence intervals for the rates using exact methods (Garwood 1936). When the benchmark estimate of the population was zero, no rate or confidence interval could be calculated. A benchmark population of zero for a specific Minority group happens when the census population estimate for the Minority is zero.

We compared each Minority group to White pedestrians using the ratio of the Minority group stop rate to the White group stop rate. We calculated a 95% confidence interval for each rate ratio by conditioning on the sum of the numbers of stops in the two racial groups being compared. Assuming the number of stops in each group followed a Poisson distribution, conditioning on the sum of the number of stops creates a binomial variable and an exact confidence was calculated using binomial methods (Lehmann and Romano 2005). If it was impossible to calculate a rate because of a zero benchmark, or if the number of stops in the White group was zero, no rate ratio or confidence interval was reported.

A rate ratio of 1.0 indicates the Minority group and White pedestrians had equal rates of stops. If the 95% confidence interval lies entirely above 1.0, the rate ratio is statistically significantly greater than 1.0 and may require agency inquiry. These statistically significant rate ratios are bolded in the summary tables. These bolded ratios are statistical deviations, and the basis for further consideration of potential racial disparities. Comparisons of Minority groups to White pedestrians where the 95% confidence lies below 1.0 are not bolded because the intent of this study is to identify potential racial profiling that discriminates against Minority pedestrians.

[1] The estimated population benchmark is an example of a component of the methodology that has uncertainty that could not be quantified for this study. Population benchmark technical details are included in Appendix C.

For all calculations, we assumed the population benchmark accurately captured the population of pedestrians. The population benchmark used to calculate each rate is itself an estimate of the population of pedestrians for a racial group. Confidence intervals of rates and rate ratios assumed only sampling uncertainty and thus do not account for this additional source of uncertainty in benchmark estimates. Accounting for benchmark uncertainty would increase the width of the confidence intervals reported for rates and rate ratios and would likely reduce the number of agencies that appear to stand out as needing further inquiry.

B.2.2. Post-stop outcomes

We calculated post-stop outcome percentages (such as searches) separately for each racial group. Table B1 shows the type of numerator and denominator used to calculate each percentage shown in the pedestrian tables.

Table B1. ***Numerators and denominators for pedestrian stop outcomes.***

Outcome	Numerator	Denominator
CATEGORY: *Pat Downs and Searches Beyond Pat Down*		
Pat down	Number of pat downs	Number of stops
Search beyond pat down	Number of searches beyond pat down	Number of stops
Contraband found	Number of searches beyond pat down where contraband was found	Number of searches beyond pat down
CATEGORY: *Outcomes of Stop*		
Warning/Citation	Number of warnings/citations	Number of stops
Custodial Arrest	Number of custodial arrests	Number of stops

We assumed that percentages follow a binomial distribution and can be approximated by a Poisson distribution (Serfling 1978), and we calculated confidence intervals for the rates using exact methods (Garwood 1936). When the denominator of the percentage was zero (for example, an agency had a benchmark of zero for a specific racial group), no percentage or confidence interval could be calculated.

For selected outcomes we compared each Minority group to White pedestrians using the ratio of the Minority group percentage to the White group percentage. We calculated a 95% confidence interval for each ratio using exact methods (Lehmann and Romano 2005). If it was impossible to calculate a percentage because of a zero denominator, or if the numerator of the White group percentage was zero, no ratio or confidence interval was reported.

B.3. Limitations

For all calculations, we assumed that the pedestrian was assigned to the correct racial group. However, an officer's assessment of the race of a pedestrian may be in error. Because police officers made the racial group assignment, there is a potential misclassification bias of pedestrians. If misclassification resulted in a Minority pedestrian frequently being categorized in a different Minority group, the stop rates of some Minority groups may be underestimated, while others are overestimated. Consequently,

the rate ratios of some Minority groups may be underestimated, while others are overestimated. This is a limitation that would be difficult to correct based on the available information.

Some of the alerts to rate ratios (**bolded font** in the tables) may be "false positives." This can happen as follows. Within the statewide or individual agency tables for pedestrian stops, we calculated five Minority group comparisons with the White group. There were five of these comparisons for each ratio analysis. For example, there are five ratios comparing the stop rate for each of the five minorities to the stop rate for Whites.[2] Thus, we constructed five 95% confidence intervals — one each for the five stop-rate ratios. That is, each agency was checked for profiling in each of five Minority groups. For each Minority comparison with White pedestrians there was the potential to make a type I error. That is, we may have, by chance, incorrectly indicated the potential need for inquiry for profiling. While we set a 5% type I error rate for each Minority comparison, the multiple comparisons inflate the possibility of making such an error overall to more than 5%. We chose not to correct for these multiple comparisons, viewing each Minority comparison to Whites as an independent examination of profiling.

References (for Appendix B)

Garwood, F (1936). Fiducial limits for the Poisson distribution. Biometrika, Vol. 28, Issue 3-4: 437-442.

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Ridgeway, G. (2007). Analysis of Racial Disparities in the New York Police Department's Stop, Question, and Frisk Practices. Santa Monica, CA: RAND Corporation. https://www.rand.org/pubs/technical_reports/TR534.html.

Serfling, RJ (1978). Some elementary results on Poisson approximation in a sequence of Bernoulli trials. SIAM Review, Vol. 20, No. 3, 567-579.

[2] There may be fewer than five ratios depending on the occurrence of zero stops for Whites or zero benchmark for a Minority. These are cases where a ratio cannot be calculated.

Appendix C. Technical Notes on Population Benchmarks

C.1. Overview

In the analysis of potential racial profiling, the number of stops by each agency of each racial group is compared to a "population benchmark" of the racial group. The rate of stops per population benchmark for the racial group can be compared to the same rate for Whites. The population benchmark provides an expected racial distribution of the local population of drivers.

This distribution would be approximately equal to the expected racial distribution of the stops if the stops were conducted in a completely randomized way, blind to the race and the behavior of the driver. That is, the stop rates calculated using a perfectly accurate population benchmark would be approximately constant across all racial groups if there were no profiling and if there were no difference in the general behavior of drivers across all racial groups.

This report shares the same methodology of calculating the population benchmarks as our previous year's report. The only difference is that our data sources were updated to their most recent available versions, and that there were some changes in the selection of data sources used this year. Details on this are covered below. Details on how racial categories were defined, how population benchmark regions were determined and other benchmark calculations, the differences in population benchmark methodology employed now compared with prior years, and limitations and strengths of the methodology are described at length in the Appendix C of our previous year's report on 2023 stops.

C.2. Data Sources

Multiple data sources were combined to calculate population benchmarks, including multiple datasets provided by the U.S. Census Bureau. The datasets used include those from the decennial census, the American Community Survey and Gazetteer files, depending on the year and type of benchmark (traffic stops or pedestrian stops).

The ACS is an ongoing survey conducted by the U.S. Census Bureau that collects information on the U.S. population in all 50 states, the District of Columbia and Puerto Rico.[3] The information collected is similar to that collected by the U.S. decennial census, but the ACS results are released on an annual basis rather than every 10 years. Another difference between the ACS and census is that the ACS is based on a random sample of about 3.5 million individuals while the census attempts to reach every person living in the U.S. and its territories.

Besides the 1-year (1Y) ACS releases, there are also 5-year (5Y) releases. These 5Y releases combine 5 consecutive years, primarily to increase the sample size of relatively small areas or groups of individuals. It would be challenging to estimate the population of small communities reliably with only one survey-year of data. In addition to standard tabulations, the ACS also provides individual-level data, referred to as the public use microdata sample (PUMS). The PUMS data allows more detailed and complex analyses involving multiple variables. Due to privacy concerns, there are restrictions on the level of geographic identification provided with each type of release of ACS data.

[3] https://www.census.gov/programs-surveys/acs. Last accessed 5/15/22.

The Gazetteer files provide geographic information, such as geographic area, latitude and longitude, for different relevant regions in the U.S., including ZIP codes, places (a city, town or village, referred to simply as city hereafter), counties and states.[4] These files are updated annually.

The U.S. Census Bureau approximates ZIP codes (defined by the U.S. Postal Service) with ZIP code tabulation areas (ZCTAs).[5] Throughout this report, the term "ZIP code" will be used to refer both to ZCTAs and the U.S. Postal Service ZIP code for simplicity.

Table C.1 lists the U.S. Census Bureau datasets used for different purposes, for both the traffic and pedestrian stop benchmarks. Of note, as can be seen from the table, this year the same datasets were used for traffic and pedestrian benchmarks.

Table C1. ***U.S. Census Bureau datasets used for benchmarks.***

Information Needed	Traffic Stop Benchmarks	Pedestrian Stop Benchmarks
Age distribution in Illinois	1Y ACS PUMS 2023	N/A
Age distribution by race/ethnicity*	5Y ACS PUMS 2019-2023	5Y ACS PUMS 2019-2023
Individual race groups to reallocate residents with more than one race*	5Y ACS PUMS 2019-2023	5Y ACS PUMS 2019-2023
Population counts for each race/ethnicity		
By ZIP code†	5Y ACS 2019-2023	5Y ACS 201892023‡
By city	N/A	5Y ACS 2019-2023
By county	N/A	5Y ACS 2019-2023
For Illinois	N/A	5Y ACS 2019-2023
Geographic area of each city in Illinois	Gazetteer Files 2024	N/A
Geographic area of each county in Illinois	Gazetteer Files 2024	N/A
Latitude and longitude of each ZIP code	Gazetteer Files 2024	N/A
1Y = 1-year; 5Y = 5-year; ACS = American Community Survey; PUMS = public-use microdata sample; *Includes Illinois and 24 states within 400 miles of Illinois; †ZIP codes approximated using ZIP code tabulation areas (ZCTAs) defined by the U.S. Census Bureau; ‡ZIP-code-level data was used for Chicago Police District benchmarks.		

The 5Y ACS PUMS was used for city-, county- and state-level population statistics instead of the decennial datasets, because they are now more current (2019-2023 versus 2020), and ACS will become still more recent in the coming years until a new decennial update is available. The 5Y ACS PUMS was also used to estimate the age distribution of each race/ethnicity group.

[4] https://www.census.gov/geographies/reference-files/time-series/geo/gazetteer-files.html. Last accessed 5/14/22.
[5] https://www.census.gov/programs-surveys/geography/guidance/geo-areas/zctas.html. Last accessed 5/21/22.

Appendix D. Technical Notes on Mileage Benchmarks

Mileage benchmarks for drivers and pedestrians were generated for each agency using the Replica data platform (https://www.replicahq.com), of which IDOT is a pre-existing client among other state and local government agencies using the Replica traffic models.

We invite the reader to see the companion report on 2024 traffic stops, Executive Summary Part I, Appendix D for more details on the Replica model, its strengths and limitations, the data sources that inform the model, and mileage benchmarks constructed from various outputs of the model.

The Replica model simulates individual trips taken during one typical day. Each trip involves detailed information including the mode of travel: car drive, bike ride, walking, etc. In calculating pedestrian mileage benchmarks, the method selects trips of one specific travel mode: walking. Only these trips are used, categorized according to the race of the driver, partitioned into segments, and the lengths of those segments that are geolocated within a boundary of the given jurisdiction are summed up into benchmark estimates for each race group.

Since each trip is partitioned into relatively small street segments roughly 20-300 meters in length, the model allows for calculations at high spatial resolution. Also, one long trip can be seen as a collection of shorter trips, differing by the mode of travel. For example, a particular virtual driver can take off from a distant location, drive into the jurisdiction, park the vehicle there, walk around for a while, then return to the car and drive outside of the jurisdiction and end the trip there. Only the streets segment associated with the walking part of this total trip will be used in calculating this driver's contribution to the pedestrian benchmark of their particular race group.

Appendix E. Additional Notes on Illinois Law Concerning the Stop Study

The Illinois General Assembly has promulgated laws that require the collection and analysis of data on traffic and pedestrian stops by Illinois law enforcement agencies. See the Compiled Statutes of the Illinois General Assembly, 625 ILCS 5/11-212, effective 6/21/2019. See also Public Act 101-0024.

Section 11-212 of the Illinois statute authorizes the "Traffic and Pedestrian Stop Statistical Study." This section also requires that when a police officer stops an individual, a specific set of information is to be recorded. This information includes name, address, gender, race (six specific categories: White, Black or African American, Hispanic or Latino, Asian, American Indian or Alaska Native, and Native Hawaiian or Other Pacific Islander), the violation, vehicle information, date, time, location, search information, whether contraband was found, disposition of the stop (warning, citation or arrest—arrest recorded only for pedestrian stops[6]) and the name and badge number of the officer. This information is to be obtained whether the police officer makes a traffic stop or a pedestrian stop and either issues a citation or a warning (or arrest for a pedestrian stop). In addition, the length of the contact in minutes is to be recorded for traffic stops. These data items are recorded using the data collection form included in

[6] The pedestrian stop data collection form in use during 2024 has a provision for recording an arrest. The traffic stop data collection form in use during 2024 does not provide a means of recording an arrest.

Appendix A. The law further specifies that the collected data are to be sent to the Illinois Department of Transportation by a specific date each year for the stop data collected in the preceding year.

The Illinois Department of Transportation is further directed by statute to analyze the data and submit summary reports to the governor, the General Assembly and the racial profiling agency. IDOT is authorized to contract with an outside entity for the analysis of the data. That analysis is the purpose of this report. Moreover, the reporting entity is directed to scrutinize the data for evidence of "statistically significant aberrations." An illustrative list of possible aberrations recorded in the statute include: (1) a higher-than-expected number of minorities stopped, (2) a higher-than-expected number of citations issued to Minorities, (3) a higher-than-expected number of minorities stopped by a specific police agency and (4) a higher-than-expected number of searches conducted on Minority drivers or pedestrians.