



# ILLINOIS

## TRAFFIC AND PEDESTRIAN STOP STUDY

**2019** ANNUAL REPORT  
PEDESTRIAN STOP ANALYSIS

SUBMITTED BY THE MOUNTAIN-WHISPER-LIGHT STATISTICS



# Illinois Traffic and Pedestrian Stop Study

2019 ANNUAL REPORT: PEDESTRIAN STOP ANALYSIS

## Part I Executive Summary and Appendices

Prepared for the Illinois Department of Transportation

By

The Mountain-Whisper-Light Statistics



In Cooperation with SC-B Consulting, Inc.



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# Executive Summary

## I. Background

In October 2019, the Mountain-Whisper-Light Statistics (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 (IDOT), 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.

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, the Agency 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. On May 20, 2020, TMWL and SC-B, in cooperation with IDOT's Bureau of Data Collection (BDC), have provided copies of statistical tables to 797 jurisdictions in the state of Illinois, based on data collection provided by the respective law enforcement agencies on traffic and pedestrian stops.

We are pleased to submit this 2019 Annual Report for the Illinois Traffic and Pedestrian Stop Study.

## II. Introduction

### 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 all stops conducted in 2019). 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 Pedestrian Traffic Table and a Guide to Using Pedestrian Tables that 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 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 (ITSS) and the Illinois Pedestrian Stop Study (IPSS). 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 is an instruction manual that accompanies the traffic stops data collection form — available online at <http://www.idot.illinois.gov/Assets/uploads/files/Transportation-System/Pamphlets-&-Brochures/Safety/2012TrafficStopDataSheetInstructions.pdf> .

### **How were the data analyzed?**

The results of the data collection are that 796 agencies generated data on 2,483,904 traffic stops in 2019. A total of 353 agencies generated data on 172,160 pedestrian stops. Only 183 traffic stops (0.007% of stops) and only 3 pedestrian stops (0.002%) were missing the race designation. Further statistical analysis was carried out to provide data 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
- Reason for the stop
- Outcome of the stop
- Pat down/frisk or search activity and findings of contraband.

### 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 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 determine the possibility of racial profiling. The word “possibility” is very important, because racial profiling cannot be proved by the numeric results in this report. Some of the inherent uncertainties and limitations of the statistics are explained later.

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 2019 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 this 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 “benchmark,” a term that will be used repeatedly. For example, in Illinois in 2019 there were 36,919 stops of pedestrians whom the officer assigned to the category “Hispanic or Latino.” The estimated benchmark population of Hispanic or Latinos age 12-80 in Illinois in 2019 was 1,678,632. (As discussed later, individuals age 12-80 in Illinois are considered to have a non-

negligible risk of being stopped.) Dividing the 36,919 by 1,678,632 yields the stop rate of 0.022. That is, there was an average of 0.022 stops per member of the Hispanic or Latino population age 12-80. The decimal value 0.022 does not mean that 2.2% 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 2019 there were 22,861 stops of pedestrians whom the officer assigned to the category “White.” There were 7,733 of those stops with a pat down. The number of pat downs, 7,733, divided by the number of stops, 22,861, yields the decimal fraction 0.34. That fraction represented as a percentage is 34%. In Illinois in 2019, 34% 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. Following is a guide to each panel of the table.

**Panel 1** (shaded rows) presents the pedestrian stops, benchmark, and stop rate by racial group, and stop rate ratio for each minority group compared to White pedestrians. Ninety-five percent confidence intervals are shown (in parentheses) for rates and rate ratios. The 95% confidence interval 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 this] 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 interval (in parentheses) comparing each minority group to White pedestrians is shown for custodial arrests.

**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 2019 - ILLINOIS STATEWIDE RESULTS						
	White	Black or African American	Hispanic or Latino	Asian	American Indian or Alaska Native	Native Hawaiian or Other Pacific Islander
<b>Panel: 1 Summary of Pedestrian Stops, Rates, and Rate Ratios with 95% Confidence Intervals. Total stops: 172,160. Total benchmark population: 10,311,834.</b>						
Stops	22,861	110,055	36,919	1,702	241	382
Benchmark	6,569,957	1,466,907	1,678,632	580,304	13,350	2,684
Stop Rate (95% Confidence Interval)	0.00348 (0.00343 - 0.00353)	0.075 (0.0746 - 0.0755)	0.022 (0.0218 - 0.0222)	0.0029 (0.0028 - 0.0031)	0.018 (0.016 - 0.02)	0.14 (0.13 - 0.16)
Rate Ratio vs White (95% Confidence Interval)	1.0	<b>21.6 (21.3 - 21.9)</b>	<b>6.3 (6.2 - 6.4)</b>	0.84 (0.8 - 0.89)	<b>5.2 (4.6 - 5.9)</b>	<b>41 (37 - 45)</b>
<b>Panel: 2 Summary of Pat Down Events - Number (Percentage for the Racial Group) [95% Confidence Interval]</b>						
Pat Down (% of Stops)	7,733 (34%) [33% - 35%]	35,671 (32.4%) [32.1% - 32.8%]	10,449 (28.3%) [27.8% - 28.9%]	257 (15%) [13% - 17%]	44 (18%) [13% - 25%]	153 (40%) [34% - 47%]
Search Beyond Pat Down (% of Stops)	4,849 (21.2%) [20.6% - 21.8%]	34,715 (31.5%) [31.2% - 31.9%]	9,954 (27%) [26.4% - 27.5%]	295 (17%) [15% - 19%]	38 (16%) [11% - 22%]	76 (20%) [16% - 25%]
Contraband Found (% of Searches, preceding row)	1,076 (22%) [21% - 24%]	8,239 (23.7%) [23.2% - 24.3%]	2,239 (22.5%) [21.6% - 23.4%]	70 (24%) [18% - 30%]	5 (13%) [4.3% - 31%]	23 (30%) [19% - 45%]
Contraband Found Ratio vs White (95% Confidence Interval)	1.0	<b>1.07 (1 - 1.14)</b>	1 (0.94 - 1.1)	1.1 (0.83 - 1.4)	0.59 (0.19 - 1.4)	1.4 (0.86 - 2.1)
<b>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]</b>						
Warning/Citation	4,937 (21.6%) [21% - 22.2%]	11,246 (10.2%) [10% - 10.4%]	4,885 (13.2%) [12.9% - 13.6%]	296 (17%) [15% - 19%]	37 (15%) [11% - 21%]	93 (24%) [20% - 30%]
Custodial Arrest	2,205 (9.6%) [9.2% - 10%]	14,522 (13.2%) [13% - 13.4%]	2,989 (8.1%) [7.8% - 8.4%]	159 (9.3%) [7.9% - 11%]	12 (5%) [2.6% - 8.7%]	28 (7.3%) [4.9% - 11%]
Custodial Arrest Ratio vs White (95% Confidence Interval)	1.0	<b>1.37 (1.31 - 1.43)</b>	0.84 (0.79 - 0.89)	0.97 (0.82 - 1.1)	0.52 (0.27 - 0.9)	0.76 (0.5 - 1.1)

## IV. Interpretation of Pedestrian Tables

**95% Confidence Interval.** Table 1 presents a “95% confidence interval” for each rate, percentage or ratio. The 95% confidence interval reflects uncertainty in estimating the rate, percentage or ratio due to sampling variability. The 95% confidence interval provides a range of plausible values. The “95%” figure means that when various studies include such an interval, 95% of the studies, on the average, will include the *true* value in the interval. Because there is an element of chance involved in being stopped, being searched, etc. the true value of a rate or percentage or ratio is not known. The 95% confidence interval uses widely accepted methods and expresses some of the uncertainty in the estimated rate, percentage, or ratio. The uncertainty is often due to small numbers of stops or a small benchmark population in the geographic area used to calculate rates, percentages, or ratios.

**Ratios.** A ratio of rates or percentages with a value of 1.0 (one) 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 pedestrians where the 95% confidence interval lies above 1.0 (one) are **bolded** in the stops 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.

**Limitations.** There is a limitation in the use of ratios to determine potential racial disparities. The 95% confidence intervals for stop rates and stop rate ratios do not consider the error in estimating the driver and pedestrian benchmark populations. (The population of drivers or pedestrians who are considered the source of the persons stopped in a given jurisdiction are a population, and that population is referred to as the “benchmark” for the jurisdiction.)

The statistical issue with the benchmarks is that the drivers and pedestrians include persons who reside in communities both inside and outside of the specific area of jurisdiction of an agency. For this study, the benchmark populations have been estimated based on the population located in cities and counties of Illinois. Those population counts are available from surveys carried out by the U.S. Census Bureau. The boundaries of the cities and counties may not closely fit the actual area of residence of drivers and pedestrians who might be encountered in a specific community.

Thus, the benchmarks have some error. If it were possible to estimate this error 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.)

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. 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 overlap of those beats to the residential area of each racial group. If there is higher (or lower) surveillance of an area with a high residential concentration of a racial group, then that can lead to a higher (or lower) stop rate for the racial group, compared to areas where surveillance is constant across all racial groups.

**Statistics based on stops only.** The percentages and ratios of percentages in the tables are based on stop counts and stop activity only. The percentages and ratios of percentages do not depend on the estimated benchmark population, and they do not have the potential benchmark error noted above. Percentages based on stops will 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 traffic tables, the percentage of searches for a racial group is a percentage of *stops* leading to a search. The percentage of contraband found in a vehicle is the percentage of *vehicle searches* 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 stop rates in this study differs from previous years. While the new methodology provides more accurate stop rates, the changes make it difficult to compare results from the 2019 analysis to the analyses in earlier years. As explained in other sections of this report, more recent population data have been used for benchmarks than in previous studies. The U.S. 2010 census, used for benchmarks in the previous stops studies, is nine years prior to the 2019 stops analyzed here. The more recent data from the U.S. Bureau of the Census surveys (2014-2018) are an average of only three years earlier than the data from 2019. A change from the 2010 census to more recent data is inevitable in a yearly series of studies. We have also decreased the lower age limit for the pedestrian benchmark population to age 12 in order to include some children who—based on other research (described below)—may be subject to a stop.

These and other changes have improved the estimate of the benchmark populations and the accuracy of stop rates. Thus, any difference in rates between 2018 and 2019 reports may be at least partly due to a change in methods rather than to a real change in stop rates. The new methods are intended to estimate the benchmark population more accurately.

Certain percentages will be comparable across years, because the percentages are based on stops data only, and percentages are calculated in the same manner as in previous years. However, to compare a percentage based on 2019 stops data to a percentage reported in a previous year, some additional calculations will be needed. This report presents results for each racial group, whereas previous reports combined five races into one group: all minorities. In order to calculate a

percentage for 2019 stops of all minorities, the user will need to add together (across the five minority racial groups) all of the numerators 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. A detailed technical discussion of benchmarks is provided in Appendix C, below. The benchmark provides an estimated population count of each of the six racial groups. Similar to past years, the benchmark for each agency is based on local population statistics of each racial group in associated cities or counties. However, there are several important changes in the methods for estimating benchmarks for 2019 stops compared to previous reports.

The primary data source is now the 2014-2018 5-year American Community Survey (ACS), which is an ongoing, annual survey conducted by the U.S. Census Bureau. In a series of stops reports from past years, the 2010 U.S. decennial census was used to estimate the benchmarks. This ACS survey provides more contemporary statistics to reflect recent demographic trends at the local level. Another important difference is that the benchmark is calculated for each individual racial group rather than for all non-White groups combined. See Appendix C, Technical Notes on Benchmarks, for a detailed description of how benchmarks were calculated.

## **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 2019.

### **Agency reporting status**

Among the 1002 agencies that could submit stops data to IDOT, 35% of the agencies had stops and provided complete stops data for 2019 to IDOT (Table 2, top numeric row). A total of 187 agencies had no traffic stops (19%) and 46% of agencies did not submit any stops data (“Non-compliant”). The fraction of agencies non-compliant with pedestrian stops submission was much larger than the corresponding percentage (12%) for traffic stops submission.

**Table 2. Agency status on reporting.** Illinois, all agencies, Pedestrian stops, 2019.

Status of Agency	Number of agencies	Percent of agencies
Complete reporting for 2019	353	35%
Zero stops*	187	19%
Incomplete**	1	0.1%
Non-compliant ***	461	46%
All agencies combined	1002	100%

KEY: \*Agency compliant but no stops occurred  
 \*\*Agency submitted some stops, but coverage for less than a full year  
 \*\*\*Agency made stops, but stops data not submitted

### **Number of stops**

Most agencies with pedestrian stops had very few stops—10 or fewer (70% of the 353 agencies with more than zero stops reported). The count of reported pedestrian stops (172,160) was approximately 7% of the count of reported traffic stops (2,482,904). The Chicago Police Department reported 92% of all the pedestrian stops.

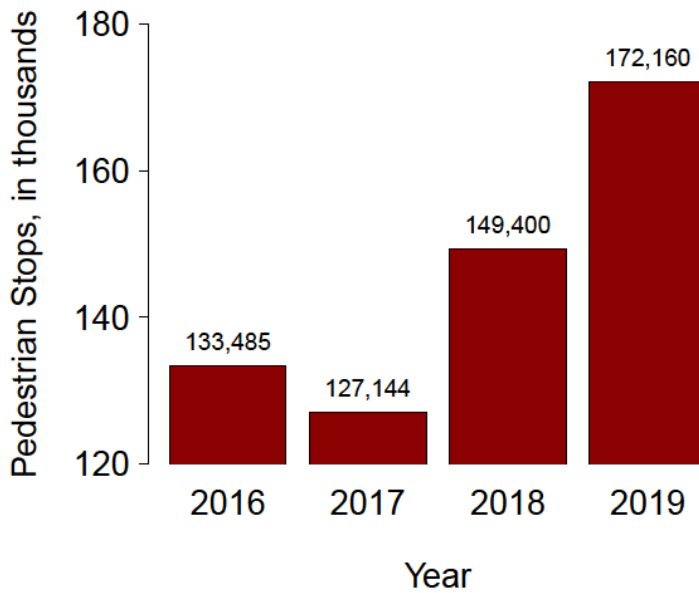
**Table 3. Number of Pedestrian stops for agencies with at least one stop.** Illinois, all agencies, Pedestrian stops, 2019.

Number of stops	Number of agencies	Percent of agencies
1-10	248	70.3%
11-100	88	24.9%
101-1,000	14	4%
1,001-10,000	2	0.6%
10,001-100,000	0	0%
More than 100,000	1	0.3%
All agencies combined	353	100%

Notes: (1) Includes only agencies with complete stops reporting for 2019.  
 (2) Chicago Police: **157,992** pedestrian stops.

The counts in Figure 1 show that the number of pedestrian stops increased by 30% from 2016 to 2019 (with a dip in 2017). The corresponding increase in traffic stops (2016 to 2019) was 14%.

**Figure 1. Number of Pedestrian stops, 2016-2019. Illinois, Pedestrian stops, 2019.**



### **Distribution of stop rate ratios**

Table 4 shows the numbers of comparisons of stops 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” restricts the comparisons to those based on at least 20 White stops and 20 stops of the minority group compared. The 20 stops would provide a more precise rate ratio than a smaller number of stops.

First, the tabled numbers show that there is a drastic reduction — approximately 31-fold from panel A to panel B — in the total number of rate ratios, from 1,119 (all comparisons) down to 36 (more precise comparisons). Second, the smallest and largest rate ratio categories: “<1.0” and “5.0 or larger,” have reductions larger than 3 of the four intervening categories. There is a 96-fold reduction in the “<1.0” category and a -fold reduction in the “5.0 or larger” category. The table shows that less precise rates and ratios are more commonly found in the extreme high or extreme low ratios. 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.

**Table 4. Distribution of Pedestrian stop rate ratios**

(Each non-White racial group compared to Whites for an agency). Illinois, Pedestrian stops, 2019.

A. All agencies and racial groups*			B. Agencies and the racial groups with at least 20 stops**	
Rate ratios	Number of agency/racial group combinations	Percent of agency/racial group combinations	Number of agency/racial group combinations	Percent of agency/racial group combinations
<1.0	864	77.2%	9	25%
1.0 to <2.0	47	4.2%	9	25%
2.0 to <3.0	39	3.5%	2	5.6%
3.0 to <4.0	25	2.2%	3	8.3%
4.0 to <5.0	19	1.7%	5	13.9%
5.0 or larger	125	11.2%	8	22.2%
All ratios	1119	100%	36	100%

A. \*All comparisons of Whites and a racial group for all agencies. Excludes ratios where either Whites or the compared racial group have zero stops.

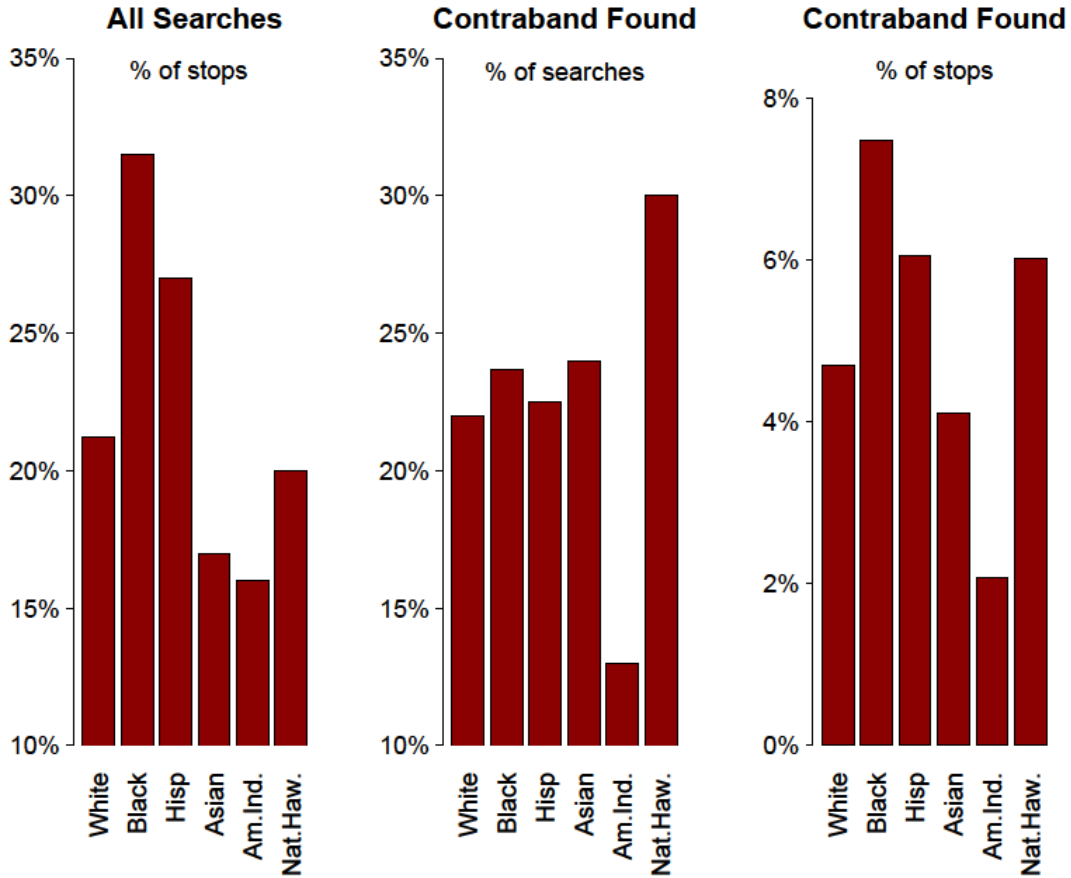
B. \*\*All comparisons of Whites and a racial group for all agencies; all comparisons must have at least 20 stops of Whites and 20 stops of the compared racial group. Excludes ratios where either Whites or the compared racial group have less than 20 stops.

### **Searches and Contraband**

Figure 2 shows that the rate of search beyond a pat down is substantial for all of the racial groups (approximately 16% to 32%, left panel), and, given a search beyond pat down, the yield of contraband is also substantial (13%-30%, middle panel). The net yield of contraband per stop is moderately low (approximately 2% to 7%, rounded, right panel). There is marked diversity among the races' percentages in all three of the panels.



**Figure 2. Percentage of Pedestrian stops with a search beyond pat down (left panel); percentage of searches beyond pat down with contraband found (middle panel); percentage of stops with contraband found (right panel). Illinois, Pedestrian stops, 2019.**



Abbreviations for racial groups: Black = “Black or African American”, Hisp = “Hispanic or Latino”, Am.Ind. = “American Indian or Alaska Native”, Nat.Haw.= “Native Hawaiian or Other Pacific Islander”.

## VII. Some General Comments

A considerable number of agencies have a relatively small number of stops of one or more of the racial groups. The limited stop counts yield a wide 95% confidence interval, which means high uncertainty in the corresponding rate, percentage or ratio. 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.

If a ratio is not bolded, it usually 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 reasonably 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 very similar to an actual agency result.) That is, 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.

# Appendix A. Pedestrian Stop Data Collection Form in use during 2019



Illinois Department of Transportation

## Pedestrian Stop Data Sheet



Agency Code

Date of Stop (MM/DD/YYYY)	Time of Stop (Military Time)	Officer Name
<input type="text"/>	<input type="text"/>	<input type="text"/>
Officer Badge Number	Location of Stop	Beat Location of Stop
<input type="text"/>	<input type="text"/>	<input type="text"/>

**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**

## **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 that appear in Part II of this report. We explain how comparisons of each minority group to White drivers or pedestrians are carried out. We also explain how the confidence interval is calculated based on known sources of uncertainty in the data<sup>1</sup>. 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 benchmark populations is included in Appendix C.)

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 drivers or 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

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<sup>1</sup> The estimated benchmark population is an example of a component of the methodology that has uncertainty that could not be quantified for this study.

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 drivers or 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 drivers or pedestrians where the 95% confidence lies below 1.0 (one) are not bolded because the intent of this study is to identify potential racial profiling that discriminates against minority drivers or pedestrians.

For all calculations, we assumed the benchmark accurately captured the population of drivers or pedestrians. The benchmark used to calculate each rate is itself an estimate of the population of drivers or pedestrians for a racial group. Confidence intervals of rates and rate ratios assumed only sampling error and thus do not account for this additional source of error in benchmark estimates. Accounting for benchmark error 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**

Category	Outcome	Numerator	Denominator
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
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 Durations**

We calculated the median durations of stops separately for each racial group. The median represents the value such that about half of stops have a shorter duration than the median and half of stops have a longer duration than the median.

### **B.4 Limitations**

For all calculations, we assumed that the driver or pedestrian was assigned to the correct racial group. However, an officer's assessment of the race of a driver may be in error. Because police officers made the racial group assignment, there is a potential misclassification bias of drivers or pedestrians. If misclassification resulted in a minority driver or 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 traffic and 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<sup>2</sup>. 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 drivers or 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.

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<sup>2</sup> 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.

## References (for Appendix B)

Garwood, F (1936). Fiducial limits for the Poisson distribution. *Biometrika*, Vol. 28, No. 3/4: 437-442.

Gelman, A, Fagan, J, and Kiss, A (2007). An analysis of the New York City Police Department's 'stop-and-frisk' policy in the context of claims of racial bias. *Journal of the American Statistical Association*, Vol. 102, No. 479, 813–823.

Lehmann, EL, and Romano, JP (2005). *Testing Statistical Hypotheses*, Third edition. Springer: New York.

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](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.

## **Appendix C. Technical Notes on Benchmarks**

### **C.1. Overview**

In the analysis to detect racial profiling, the number of stops by each agency of each racial group is compared to a “benchmark” population of the racial group. The rate of stops per benchmark population for the racial group can be compared to the same rate for Whites. The benchmark provides an expected racial distribution of the population and would be an expected racial distribution of the stops, if the stops were conducted in a uniform way across races. That is, the stop rates would be approximately constant across all racial groups if there were no profiling.

Similar to past years, the benchmark for each agency is based on local population statistics of each racial group in associated cities or counties. However, there are a number of important changes compared to previous reports, as described in the sections below and summarized in Section C.7. While this methodology has some limitations (described further in Section C.8.), it provides a transparent, standardized approach to developing benchmarks for the nearly 1,000 police agencies in Illinois.

### **C.2. Data Sources**

Multiple data sources were combined to calculate benchmarks, including multiple datasets provided by the American Community Survey (ACS).

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<sup>3</sup>. 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.

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<sup>3</sup> <https://www.census.gov/programs-surveys/acs>. Last accessed 3/1/20.



For this report, five years of ACS releases were used, all corresponding to 2018 as the most recent year of data available. The first was the 2018 1Y PUMS<sup>4</sup>, which was used to estimate the age distribution of the entire population of Illinois in 2018. The second release used was the 2014-2018 5Y PUMS<sup>5</sup>, which was used to estimate the state-level age distribution for each racial group. The 5Y release was used instead of the 1Y release to achieve a larger sample size for those racial groups that had fewer individuals in Illinois. The third release used was the 2014-2018 5Y detailed table of race and ethnicity for each Illinois county<sup>6</sup>. This table provided an estimated population count of each ACS racial group and ethnicity combination, separately for each Illinois county. The PUMS dataset could not be used for this purpose because — due to privacy concerns — geographic localization in the PUMS is limited to public use microdata areas (PUMAs), which have a minimum of 100,000 individuals, greater than most counties in Illinois. The fourth release used was the 2014-2018 5Y detailed table of race and ethnicity by Illinois place (city, town or village, referred to simply as city hereafter)<sup>7</sup>. Lastly, the 2014-2018 5Y detailed table of race and ethnicity for the whole state of Illinois<sup>8</sup> was used for some statewide jurisdictions.

As a final note, comparing the U.S. 2010 census to the ACS as a source of population data, the U.S. census has the advantage of virtually complete coverage of Illinois, while the ACS has the advantage of recency. Because the U.S. population is quite mobile, recency was the more important factor. Relative to 2019 the 2010 census was nine years old, while the ACS data from 2014-2018 was an average of three years old.

### C.3. Racial Categories

The ACS collects self-identified race and ethnicity information based on the U.S. Census Bureau’s definitions. The primary racial categories provided by the census are White alone, Black or African American alone, American Indian and Alaska Native alone, Asian alone, Native Hawaiian and Other Pacific Islander alone, some other race alone, and two or more races. The primary ethnicity categories provided by the census are “Hispanic or Latino” and “Not Hispanic or Latino.” Race and ethnicity are collected using two separate questions and the respondent can select any racial group along with any ethnicity.

From Illinois Public Act 101-0024, the law enabling this study, the following racial categories are collected based on the police officer’s subjective determination of the race of the person

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<sup>4</sup> [https://www2.census.gov/programs-surveys/acs/data/pums/2018/1-Year/csv\\_pil.zip](https://www2.census.gov/programs-surveys/acs/data/pums/2018/1-Year/csv_pil.zip). Last accessed 1/12/20.

<sup>5</sup> [https://www2.census.gov/programs-surveys/acs/data/pums/2018/5-Year/csv\\_pil.zip](https://www2.census.gov/programs-surveys/acs/data/pums/2018/5-Year/csv_pil.zip). Last accessed 2/23/20.

<sup>6</sup> <https://data.census.gov/cedsci/table?q=&table=B03002&tid=ACSDT5Y2018.B03002&lastDisplayedRow=20&vintage=2018&hidePreview=true&g=0400000US17.050000>. Last accessed 1/1/20.

<sup>7</sup> <https://data.census.gov/cedsci/table?q=&table=B03002&tid=ACSDT5Y2018.B03002&lastDisplayedRow=20&vintage=2018&hidePreview=true&g=0400000US17.160000>. Last accessed 1/1/20.

<sup>8</sup> <https://data.census.gov/cedsci/table?table=B03002&tid=ACSDT5Y2018.B03002&lastDisplayedRow=20&vintage=2018&hidePreview=true&g=0400000US17>. Last accessed 1/29/20.

being stopped. These include American Indian and Alaska Native, Asian, Black or African American, Hispanic or Latino, Native Hawaiian or Other Pacific Islander, or White. Only a single race may be selected.

Besides the difference between the ACS's self-identified race and the Illinois law's officer-identified race, there are other differences between the ACS and Illinois law's categories. The primary differences are 1) in the ACS, Hispanic or Latino is an ethnicity instead of the Illinois law's designation of Hispanic or Latino as a race; 2) the ACS allows for multiple races to be selected while the Illinois law does not; and 3) the ACS allows the "some other race" option while the Illinois law does not.

To make the different racial categories compatible between the ACS data used for benchmarks and the stops data using the Illinois racial categories, we took the same approach employed in previous IPSS reports<sup>9</sup>. This involved two major adjustments. The first adjustment was to use Hispanic or Latino as the assigned race for benchmarking if the ACS ethnicity was listed as Hispanic or Latino. The second adjustment was that those individuals listing some other race alone or multiple races in the ACS data were excluded from the process of defining a benchmark population. In the 2014-2018 5Y ACS sample, this impact involved less than 2% of individuals.

#### **C.4. Adjusting for Age**

Population counts by race from the ACS were adjusted to reflect the number of potential pedestrians with at least some real risk of being stopped. This was done by estimating the proportion of the Illinois state population of each race who were 12-80 years of age using the 2014-2018 5Y ACS PUMS. While those younger than age 12 or older than 80 are technically at risk of being stopped, the risk is expected to be very low, so they were excluded from the benchmark estimates. Illinois pedestrian stop records do not contain age information, so we examined data from the New York City "Stop, Question and Frisk" program<sup>10</sup>. Between 2016-2019, when the number of stops per year were relatively stable, stops of suspect-reported ages outside of the 12-80 year ranged represented <0.2% of stops performed. Note that the New York City data were used only to determine that age 12 is a reasonable minimum age to define a population of persons with non-trivial risk of being stopped. There is no implication that the stop rates are similar between Illinois and New York City. **Table C.1** shows the estimated proportion of population included in the pedestrian benchmark counts.

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<sup>9</sup> Illinois Traffic Stop Statistics Act Report for the Year 2004. July 1, 2005. Available at <http://www.idot.illinois.gov/Assets/uploads/files/Transportation-System/Reports/Safety/Traffic-Stop-Studies/2004/2004%20Illinois%20Traffic%20Stop%20Summary.pdf> . Last accessed 3/1/20.

<sup>10</sup> <https://www1.nyc.gov/site/nypd/stats/reports-analysis/stopfrisk.page>. Last accessed 3/7/20.

**Table C.1.** Estimated proportion of the population included in the pedestrian benchmark based on ACS data.

<b>Race</b>	<b>Proportion*</b>
White	0.83
Black or African American	0.82
Hispanic or Latino	0.77
Asian	0.85
American Indian and Alaska Native	0.89
Native Hawaiian or Other Pacific Islander	0.87

\*Proportion of population 12-80 years of age.

### **C.5. Estimating Regional Population Sizes**

The starting point for estimate regional population sizes were the 2014-2018 5Y ACS race and ethnicity tables for the cities, counties and state of Illinois, as described in **Section C.2**. The 5Y ACS estimates were used because this release provides data for all areas, even with small populations, while the 1Y releases provide data only for areas with populations of 65,000 or more (20,000 or more in the supplemental estimates). More than 90% of the cities in Illinois and 44% of the counties have total populations less than 20,000. Thus, using the combination of 5 years of ACS sampling was important in order to use a consistent data source for all agencies. Furthermore, the population sizes of individual racial groups were small in many areas, necessitating combining years to get better estimates of the true population size.

As described in **Section C.4**, these population sizes for the cities, counties and state of Illinois were adjusted for age by multiplying by a factor derived for each racial group. The adjusted counts formed the building blocks for the agency benchmark calculations, described in the next section.

### **C.6. Calculating Agency Benchmarks**

The regional population sizes calculated and adjusted in Section C.5 were used and potentially combined to derive a benchmark for each agency. There was a standard approach used for most agencies with a number of adjustments made for certain cases. Each situation is covered below.

#### **C.6.1. Standard Approach**

The standard approach, similar to past years of the IPSS, was to use the city as representing an approximate radius for pedestrians<sup>11</sup>. Based on this, the city population and its racial sub-populations serve the as the “default” benchmark populations for combining with the count of pedestrian stops per racial group for the purpose of

<sup>11</sup> Illinois Traffic and Pedestrian Stop Study 2018 Annual Report. Pedestrian Stop Analysis. Available at <http://www.idot.illinois.gov/Assets/uploads/files/Transportation-System/Reports/Safety/Traffic-Stop-Studies/2018/2018%20IPSS%20Executive%20Summary.pdf> . Last accessed 3/8/20.

calculating stops rates. As described later, this approach has a number of weaknesses, though the approach also has some practical advantages.

### **C.6.2. Agencies Covering Multiple Cities or Counties**

When an agency covered multiple cities or counties or was situated near the county border, the populations of these areas were combined. The law enforcement officers may have frequent contact with residents from each of the nearby areas.

### **C.6.3. Cook County**

Similar to past years of the IPSS<sup>12</sup>, we subdivided Cook County into regions due to its substantial population and spatially heterogeneous racial distribution. The subdivisions corresponded to the six districts of the Circuit Court of Cook County<sup>13</sup>. These districts correspond to the City of Chicago (First Municipal District) and the northern (Second Municipal District; Skokie), northwestern (Third Municipal District; Rolling Meadows), western (Fourth Municipal District; Maywood), southwestern (Fifth Municipal District; Bridgeview), and southern (Sixth Municipal District; Markham) suburbs of Cook County. For computational purposes, these districts were treated as analogous to counties.

### **C.6.4. Other Situations**

There were several other types of agencies which were handled somewhat differently than the standard cases. City benchmarks were used whenever possible for agencies associated with a park district, college, or university, to better correspond to the local population. County benchmarks were used for county sheriffs and other agencies, with the entire county as the nominal jurisdiction. Similarly, state benchmarks were used for the Illinois State Police and other agencies with statewide jurisdiction. For airport, railroad and other transit agencies, the associated county or counties were used for benchmarks. These adjustments are similar to the method used in previous reports.

### **C.6.5. Example of Detailed Calculation**

To help illustrate the benchmark method, the calculations for one agency, Oak Park Police, will be worked out in detail for the White and Black/African American benchmarks.

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<sup>12</sup> Illinois Traffic Stop Statistics Act Report for the Year 2004. July 1, 2005. Available at <http://www.idot.illinois.gov/Assets/uploads/files/Transportation-System/Reports/Safety/Traffic-Stop-Studies/2004/2004%20Illinois%20Traffic%20Stop%20Summary.pdf> . Last accessed 3/1/20.

<sup>13</sup> State of Illinois Circuit Court of Cook County. <http://www.cookcountycourt.org/ABOUTTHECOURT/OrganizationoftheCircuitCourt.aspx>. Last accessed 3/8/20.

Based on the 2014-2018 5Y ACS, the city of Oak Park district has 33,206 White residents and 9,356 Black/African American residents after applying the racial categories explained in **Section C.3**. The two population counts were adjusted for age using the factors in **Table C.1**, namely 0.83224 and 0.8167, respectively (the values in the **Table C.1** are rounded, so differ slightly from the values stated here). This produced adjusted populations for White and Black/African American residents of 27,635 and 7,641, respectively, corresponding to potential pedestrians at risk of being stopped, which were used for the benchmark.

The geographic regions chosen for each agency are listed at the end of this appendix in **Table C.2**.

### **C.7. Methodological Differences with Past Reports**

While the methodology used for this report has some similarities with past reports, including using adjusted population counts of associated cities and counties to define the benchmark population, there are a number of important differences. These must be considered when comparing this report to past reports.

One important difference is that past reports used the most recent U.S. census estimates for population counts while this report used more recent estimates from the ACS, which is conducted annually by the U.S. Census Bureau. We primarily used the 2014-2018 5Y estimates. The principal advantage of this approach is that the demographic information is more current than the census, which is conducted decennially. The decennial census may not reflect current demographic composition in some areas, given the mobility of the U.S. population and population growth. One disadvantage of the ACS compared to the census is that the ACS is based on a random sample while the census attempts to enumerate the entire population; the ACS estimates are subject to more sampling variability than the census. The recency of the ACS data compared to the census was the deciding factor in favor of the ACS.

Another notable difference from previous reports is that in this report, rates and other statistics are provided for each minority group separately instead of for all minorities combined into a single all-minority group.

## C.8. Limitations

The use of the census or ACS to compute benchmarks has a number of known limitations<sup>14,15</sup>. The benchmarks are constructed to correspond to the racial distribution of a city or county, but people from outside the designated benchmark area travel through and may be stopped. On the average, different groups may spend different amounts of time on the road or on the street, and the time of day of their activities may vary, potentially leading to different levels of exposure to being stopped than reflected by local population estimates. There may also be seasonal variation in the population, due to festivals, holidays, etc. which cannot be captured in static population estimates. In order to address some of the limitations several alternative benchmarking methods have been proposed. One benchmark method is to carry out observational studies where people and their race are counted by sight at different times and places to estimate the population composition. Another benchmark method is to analyze traffic accident data (crashes) and use the race of the not-at-fault driver to estimate the relevant racial composition of drivers. Yet another method is to mathematically model traffic flows between different cities and regions to merge their racial distributions to better reflect the racial distribution encountered by law enforcement officers.

Despite these limitations, the benchmarking method we have used has a number of strengths, primarily feasibility and transparency. There are close to 1,000 police agencies in Illinois, many with small jurisdictions. The ACS provides relatively contemporary data in a uniform fashion across the state, while alternative methods would require a tremendous amount of resources to acquire specialized data to construct a customized benchmark for each agency. The method used for this report is also transparent in that the concept of using local population data is easy to understand, and all of our adjustments are relatively straightforward and can be itemized. The ACS is conducted annually, so the underlying data for all agencies are able to remain relatively current and reflect demographic composition.

Besides the general limitations of the methodology described above, there are some other important limitations to consider when interpreting the benchmarks and stop rate ratios. Most importantly, the benchmarks are based on ACS tabulations of race, which are provided by the respondent. Illinois stop data used race as recorded by the police officer, which may differ from what the individual being stopped would report. Therefore, some differences between the racial distribution of the stop data and the corresponding benchmark racial distribution may be due to racial misclassification.

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<sup>14</sup> Fridell, L. A. (2004). By the numbers: A guide for analyzing race data from vehicle stops. Washington, DC: Police Executive Research Forum. <https://www.ncjrs.gov/App/Publications/abstract.aspx?ID=209827> . Last accessed 5/31/20.

<sup>15</sup> Alpert G.P., Dunham R.G., Smith M.R. (2007). Investigating Racial Profiling by the Miami-Dade Police Department: A Multimethod Approach. *Criminology & Public Policy*;6(1):25-56. <https://www.ncjrs.gov/App/Publications/abstract.aspx?ID=239772> . Last accessed 5/31/20.

Another challenge is that the ACS collects race in a different way than defined by the Illinois state law for the stops study, so some adjustments had to be made for compatibility, as described in Section C.3, above. This approach may have induced some differences in racial distributions between the stops (with race assigned by the officer) and corresponding benchmarks (based on self-assigned race). Lastly, the ACS data is based on a survey that takes a random sample of the population. There is some error in survey estimates due simply to sampling variability. In particular, this can impact estimates of population counts of smaller groups. For example, the number of American Indian or Alaska Native and Native Hawaiian or Other Pacific Islanders were relatively small in a number of regions, so these counts may be more uncertain for some jurisdictions. Thus, while the study has strengths, there are some limitations as well. That is why the narrative in this report emphasizes that if a ratio comparing a racial group to Whites differs substantially from 1.0 (that is, differs from racial equality), that may be the basis for further inquiry but does not prove that there is racial profiling.

**Table C.2.** Geographic region or regions used in the Pedestrian Study for each agency. All regions are either one or more cities, one or more counties (or county subdivisions), or the state. As described in section C.6.3, Cook County was divided into subdivisions based on the six districts of the Circuit Court of Cook County, notated as Cook-D1 (District 1), Cook-D2 (District 2), etc. As described in the text, the populations of these regions were adjusted in multiple ways to better match the pedestrian population.

Agency	ID	Regions	Agency	ID	Regions	Agency	ID	Regions
Addison Police	13245	City: Addison	Cary Police	13564	City: Cary	East Peoria Police	13874	City: East Peoria
Aledo Police	13664	City: Aledo	Cass County Sheriff	13096	County: Cass	Eastern Illinois University Police	13141	City: Charleston
Algonquin Police	13566	City: Algonquin	Centralia Police	13633	City: Centralia	Edwards County Sheriff	13283	County: Edwards
Alsip Police	13213	City: Alsip	Champaign County Sheriff	13112	County: Champaign	Edwardsville Police	13622	City: Edwardsville
Alton and Southern Railway Police	14143	City: East St. Louis	Champaign Police	13111	City: Champaign	Effingham County Sheriff	13287	County: Effingham
Alton Police	13626	City: Alton	Channahon Police	13953	City: Channahon	Effingham Police	13286	City: Effingham
Anna Police	13883	City: Anna	Charleston Police	13143	City: Charleston	Elburn Police	13417	City: Elburn
Antioch Police	13463	City: Antioch	Chester Police	13751	City: Chester	Elgin Police	13419	City: Elgin
Arcola Police	13243	City: Arcola	Chicago Heights Police	13196	City: Chicago Heights	Elk Grove Village Police	13180	City: Elk Grove Village
Arlington Heights Police	13212	City: Arlington Heights	Chicago Metra Police	13195	City: Chicago	Elmhurst Police	13256	City: Elmhurst
Auburn Police	13829	City: Auburn	Chicago Police	13194	City: Chicago	Elmwood Park Police	13179	City: Elmwood Park
Barrington Police	13465	City: Barrington	Chillicothe Police	13710	City: Chillicothe	Elmwood Police	13709	City: Elmwood
Bartlett Police	13211	City: Bartlett	Chrisman Police	13281	City: Chrisman	Elwood Police	13950	City: Elwood
Bartonville Police	13712	City: Bartonville	Cicero Police	13191	City: Cicero	Energy Police	13965	City: Energy
Batavia Police	13414	City: Batavia	Clarendon Hills Police	13251	City: Clarendon Hills	Evanston Police	13178	City: Evanston
Bedford Park Police	13210	City: Bedford Park	Coal Valley Police	13766	City: Coal Valley	Fairfield Police	13913	City: Fairfield
Belleville Police	13795	City: Belleville	Cobden Police	13882	City: Cobden	Fairmont City Police	13786	City: Fairmont City
Bellwood Police	13209	City: Bellwood	Colchester Police	13543	City: Colchester	Fairview Heights Police	13785	City: Fairview Heights
Belvidere Police	13069	City: Belvidere	Coles County Sheriff	13142	County: Coles	Fairview Police	13318	City: Fairview
Bensenville Police	13247	City: Bensenville	Colona Police	13363	City: Colona	Farmer City Police	13235	City: Farmer City
Berkeley Police	13208	City: Berkeley	Columbia Police	13670	City: Columbia	Flora Police	13127	City: Flora
Berwyn Police	13207	City: Berwyn	Cook County Forest Preserve Police	13189	County: Cook	Flossmoor Police	13176	City: Flossmoor
Bethalto Police	13625	City: Bethalto	Countryside Police	13186	City: Countryside	Forest Park Police	13174	City: Forest Park
Bethany Police	13695	City: Bethany	Cowden Police	13843	City: Cowden	Fox Lake Police	13470	City: Fox Lake
Bloomington Police	13248	City: Bloomington	Crainville Police	13968	City: Crainville	Frankfort Police	13949	City: Frankfort
Bloomington Police	13581	City: Bloomington	Crest Hill Police	13952	City: Crest Hill	Franklin Park Police	13172	City: Franklin Park
Blue Island Police	13206	City: Blue Island	Crestwood Police	13185	City: Crestwood	Freeburg Police	13783	City: Freeburg
Bluffs Police	13836	City: Bluffs	Crete Police	14000	City: Crete	Freeport Police	13852	City: Freeport
BNSF Railroad Police	13205	City: Chicago	Crystal Lake Park District Police	14010	City: Crystal Lake	Geneva Police	13421	City: Geneva
Bolingbrook Police	13955	City: Bolingbrook	Crystal Lake Police	13563	City: Crystal Lake	Genoa Police	13232	City: Genoa
Bradley Police	13446	City: Bradley	Danville Police	13897	City: Danville	Gibson City Police	13299	City: Gibson City
Bradley University Police	13711	City: Peoria	Darien Police	13253	City: Darien	Gillespie Police	13599	City: Gillespie
Braidwood Police	13954	City: Braidwood	Davis Police	13855	City: Davis	Glen Ellyn Police	13258	City: Glen Ellyn
Bridgeview Police	13204	City: Bridgeview	Decatur Park District Police	13589	City: Decatur	Glencoe Dept. of Public Safety	13171	City: Glencoe
Brighton Police	13592	City: Brighton	Deerfield Police	13469	City: Deerfield	Glenview Police	13170	City: Glenview
Brocton Police	14109	City: Brocton	DeKalb Police	13233	City: DeKalb	Granite City Police	13620	City: Granite City
Brookport Police	13652	City: Brookport	Delavan Police	13875	City: Delavan	Grayslake Police	13471	City: Grayslake
Buffalo Grove Police	13467	City: Buffalo Grove	Des Plaines Police	13184	City: Des Plaines	Greenup Police	13220	City: Greenup
Burnham Police	13199	City: Burnham	Dixon Police	13526	City: Dixon	Gurnee Police	13473	City: Gurnee
Burr Ridge Police	13249	City: Burr Ridge	Dolton Police	10011	City: Dolton	Hanover Park Police	13168	City: Hanover Park
Cahokia Police	13793	City: Cahokia	Du Quoin Police	13715	City: Du Quoin	Hartford Police	13618	City: Hartford
Cambridge Police	13364	City: Cambridge	DuPage County Forest Preserve Police	14043	County: DuPage	Harvard Police	13561	City: Harvard
Campton Hills Police	14114	City: Campton Hills	East Alton Police	13623	City: East Alton	Harwood Heights Police	13165	City: Harwood Heights
Canton Park District Police	14018	City: Canton	East Carondelet Police	13789	City: East Carondelet	Henry County Sheriff	13360	County: Henry
Carbondale Police	13387	City: Carbondale	East Dundee Police	13416	City: East Dundee	Herrin Police	13963	City: Herrin
Carol Stream Police	13250	City: Carol Stream	East Moline Police	13764	City: East Moline	Heyworth Police	13575	City: Heyworth



Agency	ID	Regions	Agency	ID	Regions	Agency	ID	Regions
Hickory Hills Police	13163	City: Hickory Hills	Marquette Heights Police	13869	City: Marquette Heights	O'Fallon Police	13776	City: O'Fallon
Highland Park Police	13474	City: Highland Park	Marshall Police	13124	City: Marshall	Oregon Police	13698	City: Oregon
Highland Police	13617	City: Highland	Mason County Sheriff	13641	County: Mason	Orland Park Police	13011	City: Orland Park
Hinsdale Police	13260	City: Hinsdale	Mattoon Police	13139	City: Mattoon	Oswego Police	13451	City: Oswego
Homewood Police	13046	City: Homewood	Mazon Police	13337	City: Mazon	Palatine Police	13010	City: Palatine
Hoopeston Police	13892	City: Hoopeston	McCook Police	13034	City: McCook	Palos Heights Police	13009	City: Palos Heights
Huntley Police	13558	City: Huntley	McHenry County College Police	14127	County: McHenry	Palos Park Police	13007	City: Palos Park
Illinois Central College Police	13871	City: East Peoria	McHenry County Conservation District Police	14004	County: McHenry	Park City Police	13490	City: Park City
Illinois Commerce Commission Police	13995	State	McHenry County Sheriff	13553	County: McHenry	Park Forest Police	13006	City: Park Forest
Illinois Department of Natural Resources Police	13823	State	McHenry Police	13552	City: McHenry	Park Ridge Police	13005	City: Park Ridge
Illinois State Police	13991	State	McLean County Sheriff	13570	County: McLean	Parkland College Police	13105	City: Champaign
Illinois State University Police	13573	City: Normal	McLeansboro Police	13340	City: McLeansboro	Pawnee Police	13814	City: Pawnee
Itasca Police	13261	City: Itasca	Melrose Park Police	13033	City: Melrose Park	Pekin Police	13864	City: Pekin
Jackson County Sheriff	13383	County: Jackson	Mendota Police	13510	City: Mendota	Peoria Heights Police	13706	City: Peoria Heights
Jacksonville Police	13687	City: Jacksonville	Metro Water Reclamation District Police	13031	County: Cook	Peoria Police	13704	City: Peoria
Jersey County Sheriff	13395	County: Jersey	Metropolitan Airport Authority	13760	City: Moline	Phoenix Police	13004	City: Phoenix
Johnsburg Police	13557	City: Johnsburg	Midlothian Police	13030	City: Midlothian	Pittsfield Police	13722	City: Pittsfield
Joliet Junior College Police	13946	City: Joliet	Minooka Police	13336	City: Minooka	Plainfield Police	13937	City: Plainfield
Joliet Police	13945	City: Joliet	Mokena Police	13941	City: Mokena	Plano Police	13450	City: Plano
Kane County Forest Preserve Police	13424	County: Kane	Moline Police	13759	City: Moline	Pontiac Police	13529	City: Pontiac
Kankakee County Sheriff	13441	County: Kankakee	Momence Police	13438	City: Momence	Posen Police	13003	City: Posen
Kankakee Police	13440	City: Kankakee	Monee Police	13940	City: Monee	Prospect Heights Police	13002	City: Prospect Heights
Kendall County Sheriff	13453	County: Kendall	Monmouth Police	13903	City: Monmouth	Quincy Police	13058	City: Quincy
Kenilworth Police	13044	City: Kenilworth	Monroe County Sheriff	13668	County: Monroe	Rantoul Police	13104	City: Rantoul
KEWANEE POLICE	13359	City: Kewanee	Montgomery Police	13436	City: Montgomery	Raymond Police	13682	City: Raymond
Kildeer Police	13477	City: Kildeer	Moraine Valley Community College Police	13029	City: Palos Hills	Richton Park Police	13001	City: Richton Park
Kincaid Police	13117	City: Kincaid	Morton Grove Police	13027	City: Morton Grove	River Forest Police	13000	City: River Forest
Lake County Forest Preserve Police	13479	County: Lake	Morton Police	13867	City: Morton Grove	Riverdale Police	12998	City: Riverdale
Lake County Sheriff	13480	County: Lake	Mounds Police	13730	City: Mounds	Riverside Police	12997	City: Riverside
Lake Forest Police	13481	City: Lake Forest	Mount Carmel Police	13901	City: Mount Carmel	Rochelle Police	13696	City: Rochelle
Lake Zurich Police	13483	City: Lake Zurich	Mount Prospect Police	13026	City: Mount Prospect	Rock Falls Police	13923	City: Rock Falls
Lawrenceville Police	13520	City: Lawrenceville	Mount Sterling Police	13070	City: Mount Sterling	Rock Island County Sheriff	13757	County: Rock Island
Lebanon Police	13782	City: Lebanon	Moweaqua Police	13841	City: Moweaqua	Rock Island Police	13756	City: Rock Island
Lemont Police	13944	City: Lemont	Mundelein Police	13488	City: Mundelein	Rockdale Police	13936	City: Rockdale
Lenzburg Police	13781	City: Lenzburg	Murphysboro Police	13382	City: Murphysboro	Rockford Metro Centre Police	14148	City: Rockford
Lexington Police	13571	City: Lexington	Naperville Police	13264	City: Naperville	Rockford Police	13975	City: Rockford
Lincolnshire Police	13486	City: Lincolnshire	Nashville Police	13908	City: Nashville	Rockton Police	13974	City: Rockton
Lincolnwood Police	13040	City: Lincolnwood	New Lenox Police	13939	City: New Lenox	Rolling Meadows Police	12995	City: Rolling Meadows
Lockport Park District Police	14087	City: Lockport	Niles Police	13025	City: Niles	Romeoville Police	13935	City: Romeoville
Loves Park Police	13979	City: Loves Park	Nokomis Police	13672	City: Nokomis	Roselle Police	13267	City: Roselle
Loyola University Police	13039	City: Chicago	Normal Police	13568	City: Normal	Rosemont Police	12994	City: Rosemont
Lynwood Police	13358	City: Lynwood	North Chicago Police	13489	City: North Chicago	Round Lake Beach Police	13492	City: Round Lake Beach
Lyons Police	13038	City: Lyons	North Pekin Police	13866	City: North Pekin	Ruma Police	13743	City: Ruma
Macomb Police	13542	City: Macomb	Northeastern Illinois University Police	13021	City: Chicago	Rushville Police	13833	City: Rushville
Macoupin County Sheriff	13597	County: Macoupin	Northfield Police	13020	City: Northfield	Salem Police	13628	City: Salem
Madison Police	13614	City: Madison	Northlake Police	13019	City: Northlake	Savanna Police	13088	City: Savanna
Mahomet Police	13106	City: Mahomet	Northwestern University Police	13018	City: Evanston	Schaumburg Police	12992	City: Schaumburg
Manhattan Police	13942	City: Manhattan	Oak Brook Police	13265	City: Oak Brook	Schiller Park Police	12991	City: Schiller Park
Maple Park Police	13426	City: Maple Park	Oak Forest Police	13016	City: Oak Forest	Secretary of State Police	13809	State
Marengo Police	13554	City: Marengo	Oak Lawn Police	13015	City: Oak Lawn	Shelby County Sheriff	13840	County: Shelby
Marissa Police	13780	City: Marissa	Oak Park Police	13014	City: Oak Park	Sheldon Police	13369	City: Sheldon

Agency	ID	Regions	Agency	ID	Regions	Agency	ID	Regions
Shiloh Police	13775	City: Shiloh	Tuscola Police	13239	City: Tuscola	Westchester Police	13150	City: Westchester
Shorewood Police	13934	City: Shorewood	Union County Sheriff	13879	County: Union	Western Illinois University Police	13540	City: Macomb
Skokie Police	12990	City: Skokie	Union Pacific Railroad-Central Police	14053	City: Chicago	Western Springs Police	13149	City: Western Springs
South Barrington Police	13061	City: South Barrington	University of Chicago Police	14057	City: Chicago	Westmont Police	13272	City: Westmont
South Beloit Police	14070	City: South Beloit	University of Illinois Chicago Police	13152	City: Chicago	Wheaton Police	13273	City: Wheaton
South Holland Police	12988	City: South Holland	University of Illinois Springfield Police	13803	City: Springfield	Wheeling Police	13148	City: Wheeling
Southern Illinois University Carbondale Police	13381	City: Carbondale	University of Illinois Urbana Police	13101	Cities: Champaign, Urbana	Will County Sheriff	13931	County: Will
Sparta Police	13742	City: Sparta	Urbana Police	13100	City: Urbana	Williamson County Sheriff	13957	County: Williamson
Springfield Police	13805	City: Springfield	VA Medical Center Police	13886	City: Danville	Willowbrook Police	13274	City: Willowbrook
St. Clair County Sheriff	13772	County: St. Clair	Valmeyer Police	13667	City: Valmeyer	Wilmette Police	13146	City: Wilmette
Steger Police	13161	City: Steger	Venice Police	13606	City: Venice	Winfield Police	13275	City: Winfield
Sterling Police	13922	City: Sterling	Vermilion County Sheriff	13885	County: Vermilion	Winnebago County Sheriff	13972	County: Winnebago
Stone Park Police	13159	City: Stone Park	Vernon Hills Police	13497	City: Vernon Hills	Winnetka Police	13145	City: Winnetka
Stonington Police	13121	City: Stonington	Vienna Police	13408	City: Vienna	Wood Dale Police	13276	City: Wood Dale
Streamwood Police	13158	City: Streamwood	Villa Park Police	13268	City: Villa Park	Wood River Police	13605	City: Wood River
Sugar Grove Police	13431	City: Sugar Grove	Wamac Police	13906	City: Wamac	Woodridge Police	13277	City: Woodridge
Swansea Police	13771	City: Swansea	Warren Police	13399	City: Warren	Woodstock Police	13546	City: Woodstock
Sycamore Police	14015	City: Sycamore	Warrenville Police	13269	City: Warrenville	Worth Police	13144	City: Worth
Tinley Park Police	13155	City: Tinley Park	West Chicago Police	13271	City: West Chicago	Yorkville Police	13449	City: Yorkville
Toluca Police	13636	City: Toluca	West Dundee Police	13433	City: West Dundee	Zion Police	13501	City: Zion
Troy Police	13607	City: Troy	West Frankfort Police	13302	City: West Frankfort			

## **Appendix D. Additional Notes on the Law**

The Illinois General Assembly has promulgated laws that require the collection and analysis of data on traffic stops by law enforcement agencies in the state. The statutes relating to the statistical analysis of traffic and pedestrian stops are found in 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) 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 contact 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 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 stops 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. The Illinois Department of Transportation 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.

The relevant statute, 625 ILCS 5/11-212 and subsection (a) provides that the law enforcement officer “...shall record at least the following...”. The statute seems to suggest the current data collection form includes a minimum level of information, and leaves open the possibility of gathering additional information in the future.