IDOT Traffic Stops Dashboard: Q1 & Q2 2018

Introduction

Beginning in January 2004, Illinois police agencies have been required to collect and submit information about traffic stops to the Illinois Department of Transportation (IDOT) on a yearly basis.[1] The IDOT definition for a traffic stop is, "A *traffic stop* occurs when an officer stops a motor vehicle for a violation of the Illinois vehicle code, or for a local traffic violation. The Traffic Stop Study data does not include traffic citations arising from traffic crashes, or in cases in which an officer stops a vehicle that has been linked to a specific crime, such as a vehicle wanted in connection with a robbery."[2]

City council members and citizen groups have been interested in further analysis beyond what is presented in the yearly IDOT report, and UPD traffic stop data has been examined by multiple entities, including a committee established by City Council, the Urbana Traffic Stop Data Task Force committee. [3]

UPD hired a crime analyst in 2016, and the first comprehensive report prepared by the crime analyst examined a multitude of data points to the beginning of data collection in 2004. The 2017 annual report presented a comparison of key data points to the previous 10 years for context, and the previous 5-year average to compare change over time.

Regular updates are presented at city council meetings, which generally have included updates on several points of interest: The purpose of these updates are to present a dashboard

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[1] Public Act 096-0658

[2] Alexander Weiss Consulting. 2016. *Illinois Traffic Stop Study: 2015 Annual Report.* Springfield, IL: Illinois Department of Transportation.

[3] The final report from the Traffic Stop Data Task Force can be found here and the statistical tables here.

containing points of interest, which can be used to illustrate and monitor changes. The previous 6 months of data are compared to the 5-year average of the same quarters to account for seasonality (e.g., October 2017 – March 2018, compared to the previous 5-year average for the same time period). Standard deviations and z-scores are presented when appropriate.

Methodology

When a police officer makes the decision to initiate a traffic stop, from that moment on, data is collected that is required by IDOT (i.e., reason for stops, type of moving violation, result of stop, information on searches requested or performed, the outcome of the stop and the outcome of searches). Information is also collected for the citation or warning, including information on the driver of the vehicle, information about the vehicle, the location of the violation, and the type of violation. This information is collected on a traffic citation or warning sheet, then entered by Police Services Representatives (PSRs) into the Area-Wide Records Management (ARMS) program.

This information can be queried and extracted using the program DB2 by the stop, by the violation, or by the person. Unless otherwise noted, the unit of analysis is the traffic stop. Please note that some level of human error is possible at every point in the data – from individuals providing information to the officers, to officers reporting data, to representatives entering data, and to the crime analyst querying and analyzing the data. Every effort has been made to ensure the accuracy of this data.

The 5-year average is presented for comparison to the 6-month period of interest. The five-year average is quarter-specific to account for seasonality (for example, if Quarter 1 and Quarter 2 for 2018 were being compared to the 5-year average, the 5-year average would include Quarters 1 and 2 only for 2013-2017).

Because there will be variance in traffic stops in any given year, to consider whether this variance is within or outside of a normal range., the *standard deviations* and *z-scores* are presented to measure dispersion. The standard deviation statistic was determined using the variance from the mean. The z-score is the number of standard deviations that the period of interest is from the quarter-specific 5-year average. In a normal curve, about 68% of the values will fall within one standard deviation of the mean. About 95% of values will fall within two standard deviations of the mean, and about 99.7% within three standard deviations of the mean. For our purposes, the most meaningful z-scores are those that are greater than one, or less than negative one, which indicates that in those years, the most recent 6-months is more or less than would be expected based on the rolling 5-year average.

Section 1. Number of Stops

The number of stops conducted by Urbana Police Department fluctuates both seasonally and across years. This section presents both the number of stops, and the percentage of traffic stops conducted as part of the Selective Traffic Enforcement Program (STEP).

Most frequently, STEP patrols are focused on all traffic infractions that have the potential to lead to an accident, with one officer assigned to the specific area. However, this does vary. Sometimes multiple officers are assigned, and one officer will stand on the sidewalk in plainclothes and radio to an officer in a car when an infraction is identified. Sometimes STEP patrols are for specific infractions – seatbelts, speeding, cell phones in school zones, loud music, etc. STEP patrol areas are decided by a sergeant, and can be based on input from the Traffic Commission, citizens, traffic crash reports, departmental knowledge, and previous STEP details. More recently, spatial data from traffic accidents, including concentration and accidents with injury, have been utilized to inform decision-making about locations of patrol areas.

Section 2. Motivation for Stops

The unit of analysis for the following information is the *stop* to capture the motivation of each time an officer makes the decision to initiate a traffic stop. UPD officers began consistently tracking the motivation for stops in January 2016.

The motivations for stop categories are as follows:

Traffic Problem – With the motivation of reducing the number and severity of motor vehicle crashes, an officer conducts a static patrol in an area with a disproportionate number of crashes.

Targeted Patrol – With the motivation of investigating a specific incident, an officer conducts a targeted stop.

Community Caretaking – With the motivation of educating a driver, an officer stops a vehicle.

A pretextual stop can be defined as a stop conducted for a lawful reason (observed violation) for the purpose of investigating further suspected criminal activity. In a clear-cut traffic stop, such as the below example, targeted patrol was marked.

OFFENDER WAS TRAVELING EASTBOUND ON UNIVERSITY WITHOUT HEADLIGHTS WHEN REQUIRED. OFFENDER TURNED SOUTHBOUND ONTO VINE AND DROVE ACROSS THE RAISED MEDIAN AND DROVE IN THE WRONG LANE. OFFENDER SMELLED OF ALCOHOLIC BEVERAGE, HAD BLOODSHOT EYES, AND TROUBLE MAINTAINING BALANCE.

The driver was stopped for Illinois Vehicle Code violations for the purpose of investigating a possible DUI. The driver was subsequently arrested for driving under the influence of alcohol.

The above is an example of a purely pretextual stop, which would be objectively defined as a targeted patrol. However, not all pretextual stops are so clear, so it's possible that pretextual stops may be marked as community caretaking or traffic issues, and not targeted patrol. In either case, if the officer questioned the driver beyond the scope of the traffic stop, regardless of the motivation, UPD officers now indicate this on the ticket. This data collection is still in the pilot phase.

Section 3. Reason for Stops

For each traffic citation or warning, an officer must indicate not only his or her motivation for initiating the stop, but also the reason for the stop. These reasons include moving violations, equipment violations, license/registration violations, and commercial violations.

Section 4. Racial Disparities

Racial disparities are calculated by dividing the percentage of stops of drivers of a race by the percentage of the estimated driving population of that race on Urbana city streets. Ratios larger than one indicate that a given racial group is stopped at higher rate than would be expected based on the estimated population of drivers, and ratios less than one indicate that drivers of that racial group are stopped at a lower rate than would be expected.

The IDOT study published by the state of Illinois utilizes Census data to establish an adjusted baseline (benchmark), which is simply the racial makeup of the population of individuals aged 14 and over residing in Urbana as counted in the Census. There is questionable reliability for utilizing an adjusted census figure as the baseline, as over half of the individuals stopped in Urbana do not reside in Urbana. Therefore, after extensive discussions in 2016 and 2017, the benchmark utilized by UPD in subsequent analyses is the racial breakdown of drivers involved in traffic accidents for the previous 3 years.

Traffic accident information is not a perfect indicator of drivers on all Urbana streets. Some people, in their commute to work, home, or leisure activities, may be more likely to travel on accident-prone roadways. There is no discretion on the part of officers on which accidents get reported; however, accidents are likely concentrated by location, so still should be interpreted with caution. While this is a fair representation of all drivers involved in accidents, it is not without error. However, it is a suitable proxy measure for the driving population and favorable over the Census population.

Section 5. Outcomes of Traffic Stops

The final outcome of a traffic stop can be the issuance of a citation or a warning, or an outcome more serious than a traffic violation alone (e.g., warrant, drugs, etc.) In calculating racial disparity ratios for this, the denominator is the percentage of all traffic stops that drivers of that racial group represent for the period of interest.
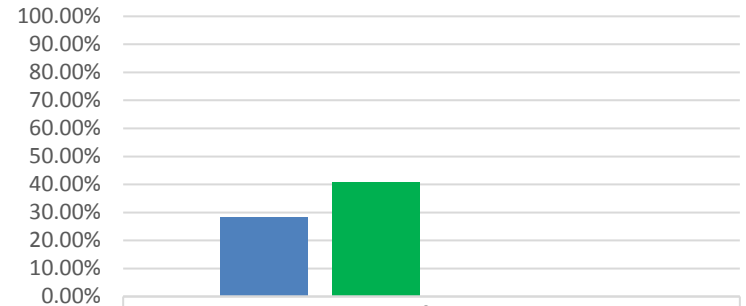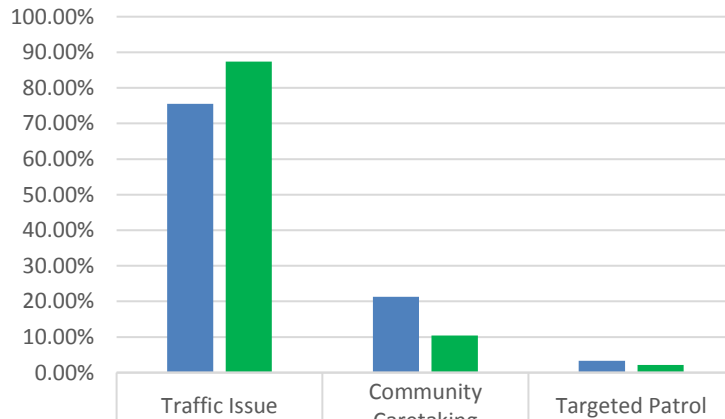
Dashboard: Q1 & Q2 2018

1. Number of Stops
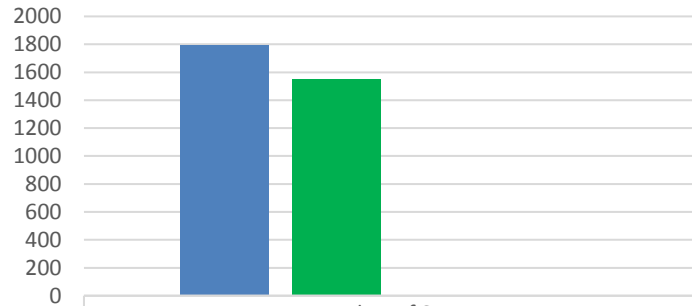
	Number of Stops
■ Q1 & Q2 5-year average	1796.8
■ Q1 & Q2 2018	1550
Standard Deviation	217.24
z-score	-1.14

1. Percent of STEP Stops

	Percent of Step Stops
■ Q1 & Q2 5-year average	28.28%
■ Q1 & Q2 2018	40.70%
Standard Deviation	10.07%
z-score	1.23

2. Motivation for Stop

	Traffic Issue	Community Caretaking	Targeted Patrol
■ Q1 & Q2 2016 & 2017 Avg	75.51%	21.30%	3.32%
■ Q1 & Q2 2018	87.42%	10.45%	2.13%

3. Reason for Stop
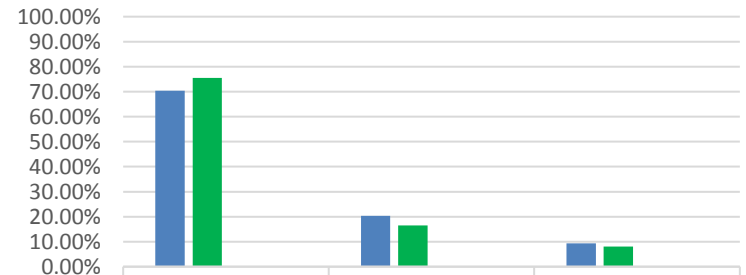
	Moving Violation	Equipment Violation	License/Registration Violation
■ Q1 & Q2 5-year average	70.38%	20.35%	9.32%
■ Q1 & Q2 2018	75.48%	16.52%	8.00%
Standard Deviation	3.07%	2.19%	1.08%
z-score	1.66	-1.75	-1.21

4. Racial Disparities in Traffic Stops
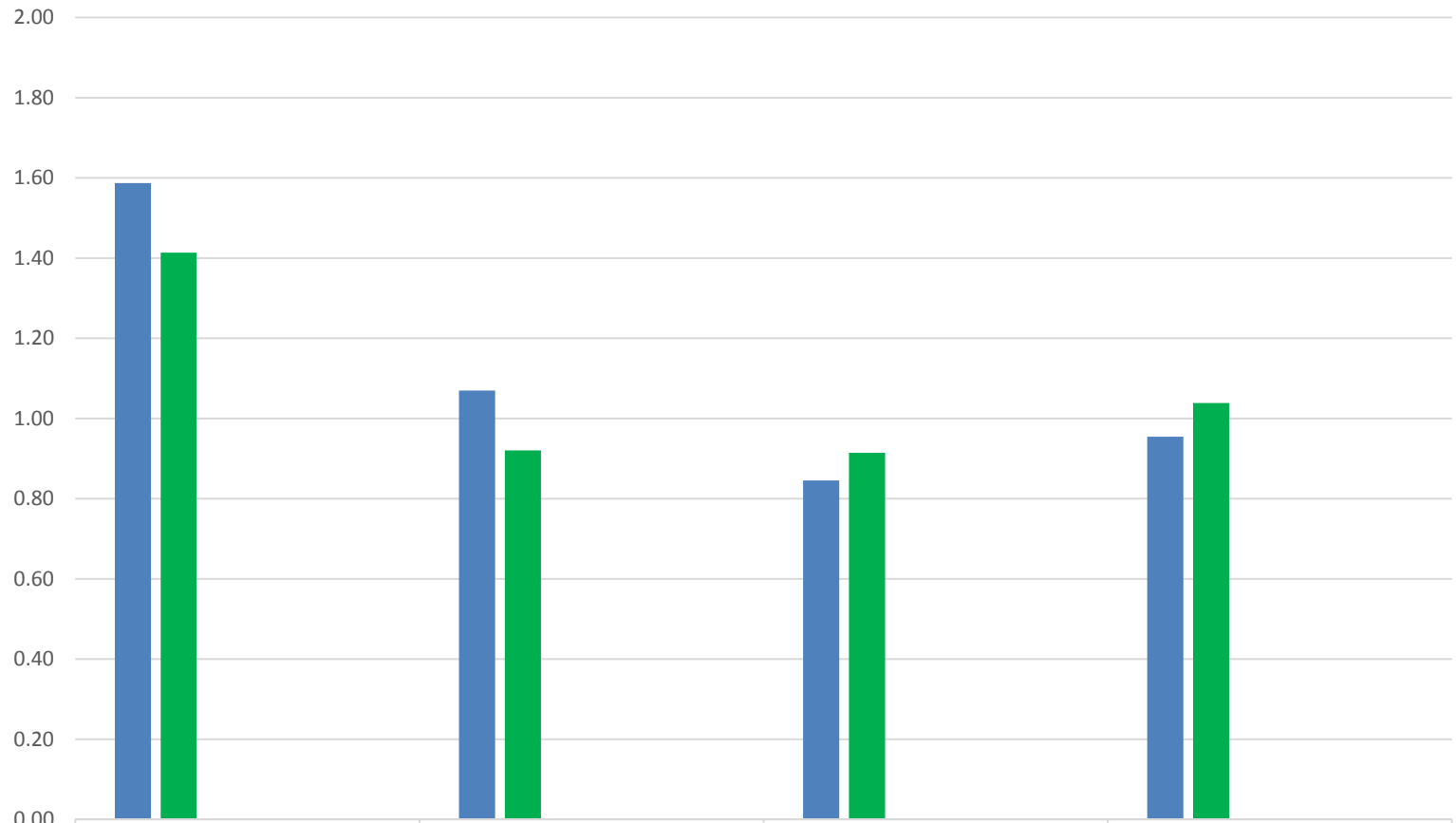
	African American	Asian	Caucasian	Hispanic
■ Q1 & Q2 5-year average	1.59	1.07	0.85	0.95
■ Q1 & Q2 2018	1.41	0.92	0.91	1.04
Standard Deviation	0.11	0.05	0.04	0.09
z-score	-1.54	-3.31	1.83	0.97
Q1 & Q2 5-year Average Total Stops	553	184	983	73
Q1 & Q2 2018 Total Stops	431	135	910	70

5. Outcome of Traffic Stops

	Q1 & Q2 2018 Outcomes					
	Citation (59.48% of Q1 & Q2 2018 stops)		More Serious Outcome (3.03% of Q1 & Q2 2018 stops)		Warning Only (37.29% of Q1 & Q2 2018 stops)	
	Number of Stops	Disparity Ratio	Number of Stops	Disparity Ratio	Number of Stops	Disparity Ratio
African American	223	0.87	30	2.30	176	1.10
Asian	78	0.97	0		57	1.13
Caucasian	573	1.06	15	0.54	321	0.95
Hispanic	48	1.15	2		20	0.77

	Citation				More Serious Outcome				Warning Only			
	Q1 & Q2 5-year average	Q1 & Q2 2018	Std Dev	z-score	Q1 & Q2 5-year average	Q1 & Q2 2018	Std Dev	z-score	Q1 & Q2 5-year average	Q1 & Q2 2018	Std Dev	z-score
African American	0.93	0.87	0.03	-1.98	1.86	2.30	0.03	15.38	0.98	1.10	0.04	2.84
Asian	1.00	0.97	0.08	-0.35					1.11	1.13	0.08	0.29
Caucasian	1.03	1.06	0.02	2.14	0.62	0.54	0.05	-1.62	1.01	0.95	0.03	-2.14
Hispanic	1.17	1.15	0.05	-0.35					0.72	0.77	0.07	0.72