Iowa City Police Traffic Study
Brief Summary

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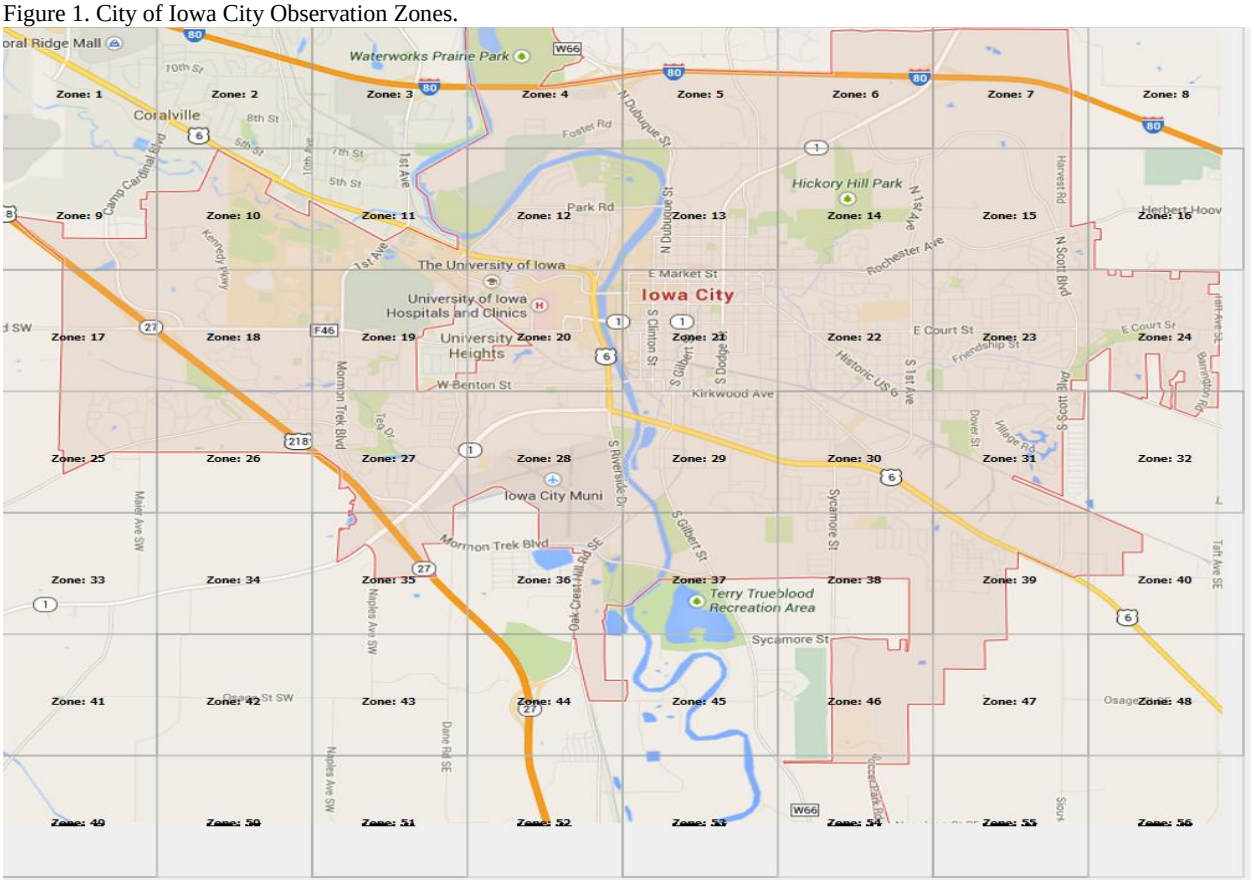
For several years now, the City of Iowa City has partnered with St. Ambrose University to develop and implement an analysis of the Iowa City Police Department's traffic stop activity. The current investigation focuses on evaluating stops made by the ICPD between January 1st, 2018 and December 31st 2018. These analyses center on evaluating two broad categories of discretionary police conduct: *(i)* racial disparity in vehicle stops—instantiated as racial differences in the likelihood of being stopped by the ICPD and *(ii)* dissimilarities across racial demographics in the outcome or disposition of a stop.

To evaluate the racial demographics of stops, our research team utilized driver-population *benchmarks* fashioned from roadside observations and census data. A benchmark should be thought of as the proportion of minority drivers on the roads in a given location. In plain terms, the benchmark is a standard that can be used to judge the percentage of minority drivers that should be stopped by the police when no bias is occurring. In Iowa City, the population characteristics of the city were divided up into one-square-mile units called *observation zones*' (see figure one below).

Figure 1. City of Iowa City Observation Zones.



Once the boundaries of the observation zones were determined, roadside surveyors were deployed to monitored traffic at several locales within selected zones. The observers watched traffic at various times of the day ranging from 7:00 am until 2:00 am. To date, observers have logged more than 110,000 observations from locations across the city. Results show a high degree of inter-rater consistency between observers across all zones. The observational benchmarks were updated 2018 with additional observations in several zones.

The process of comparing police data to benchmarks is straight forward. It centers on identifying differences between the demographic percentages from ICPD traffic stop data and benchmark information. Any positive difference between benchmark values and police data signifies ***disproportionality*** or an over representation of minority drivers in the data. Although, disproportionality can indicate bias or discrimination, it does not necessarily do so. It is possible for disproportionality to occur for a number of legitimate reasons, including differences between racial groups in driving behavior, vehicle condition, drivers' license status and so forth.

Our methodology makes it possible to track disproportionality by area, by time of day, by duty assignment and by individual officer. While this method serves as a useful tool in assessing disproportionality, please keep in mind that the method is only an *estimate* of disproportionality in police activity, not a certainty. This stems from the fact that the analyses are predicated on differences between stops and benchmarks, and that benchmarks are formed from *samples* of the drivers on the roads in a given area and time. Consequently, like any sample, a benchmark may be associated with a degree of sampling error.

2018 Analyses

Figures 2, 3 and 4 give the number of 2018 ICPD traffic stops by observation zone for the department as a whole, as well as for daytime and nighttime patrol assignments. The information indicates that for each grouping, most ICPD officers tended to make the lion's share of traffic stops in the downtown area of the city (zone 21) followed by the Broadway-Wetherby (zone 29) and surrounding areas (zones 28, 30 and 13).

Figure 2. Number of traffic Stops by Observation Zone for Officers Working During the Day

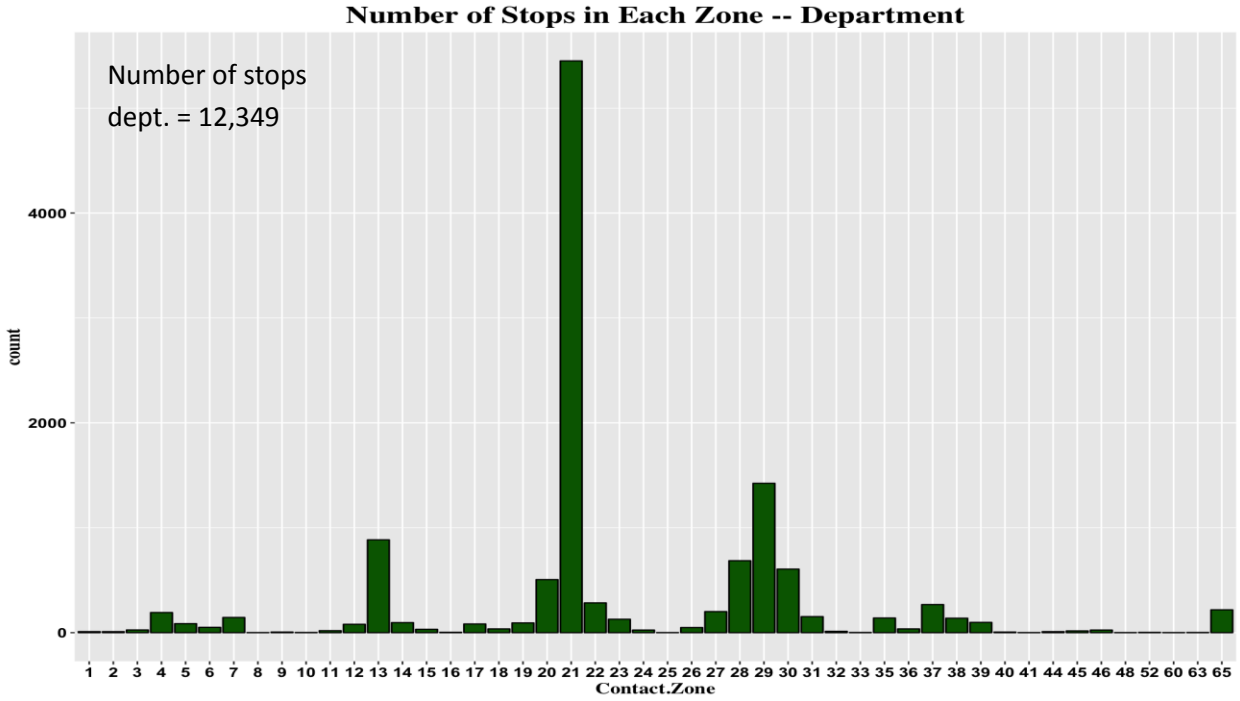


Figure 3. Number of traffic Stops by Observation Zone for Officers Working During the Day

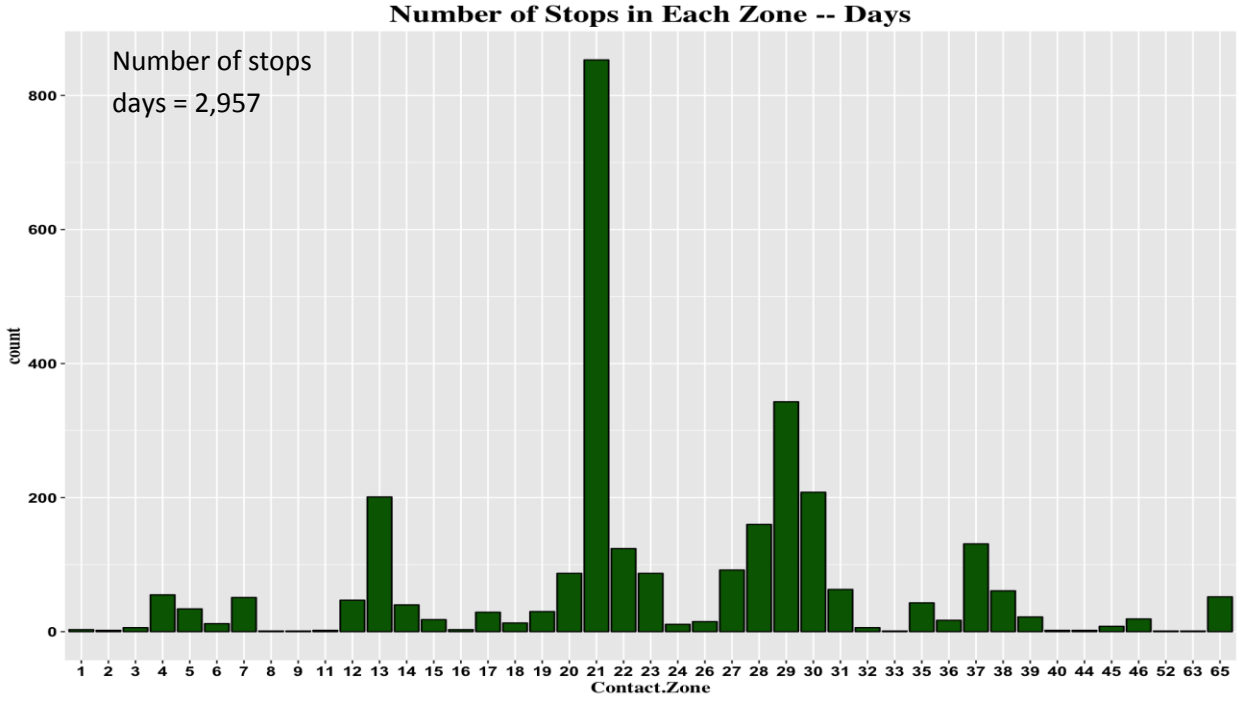
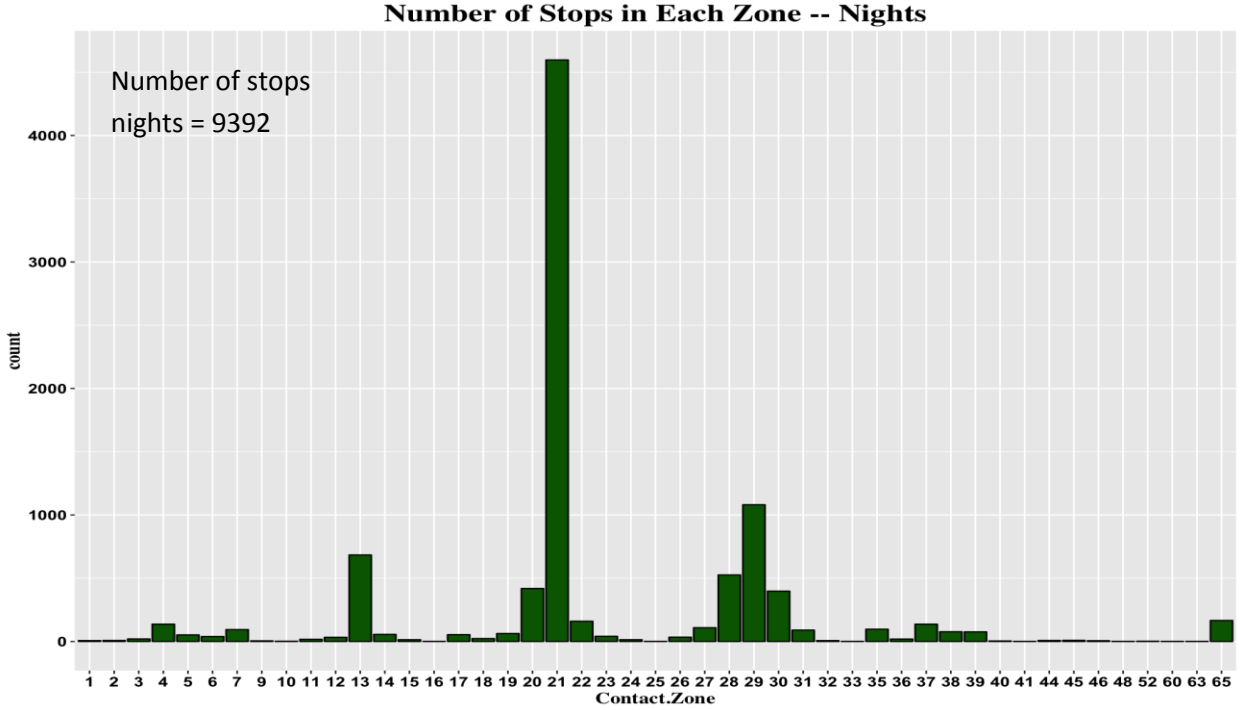


Figure 4. Number of traffic Stops by Observation Zone for Officers Working at Night



Disproportionality

The figures below show the percentage of minority drivers stopped by ICPD officers and corresponding benchmark values for select observation zones. The charts show information for department as a whole, as well as the day and night shifts. In each chart, any positive difference between the percentage of minority drivers stopped and benchmark values signifies *disproportionality*. In general, the information suggests that levels of disproportionality tended to be lowest in areas where the most stops were made, and highest in areas were the fewest stops were made.

Figure 5. Comparison of Minority Stop percentages to Benchmarks for All ICPD Officers

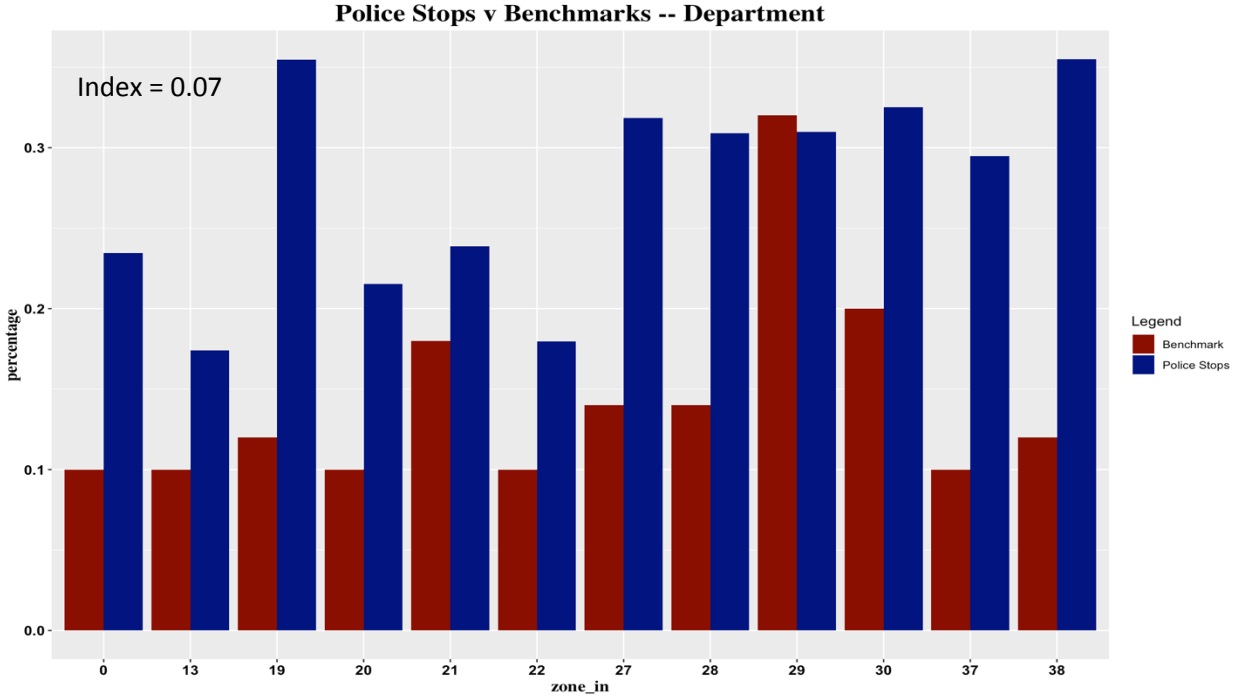


Figure 6. Comparison of Minority Stop percentages to Benchmarks for Officers Working During the Day

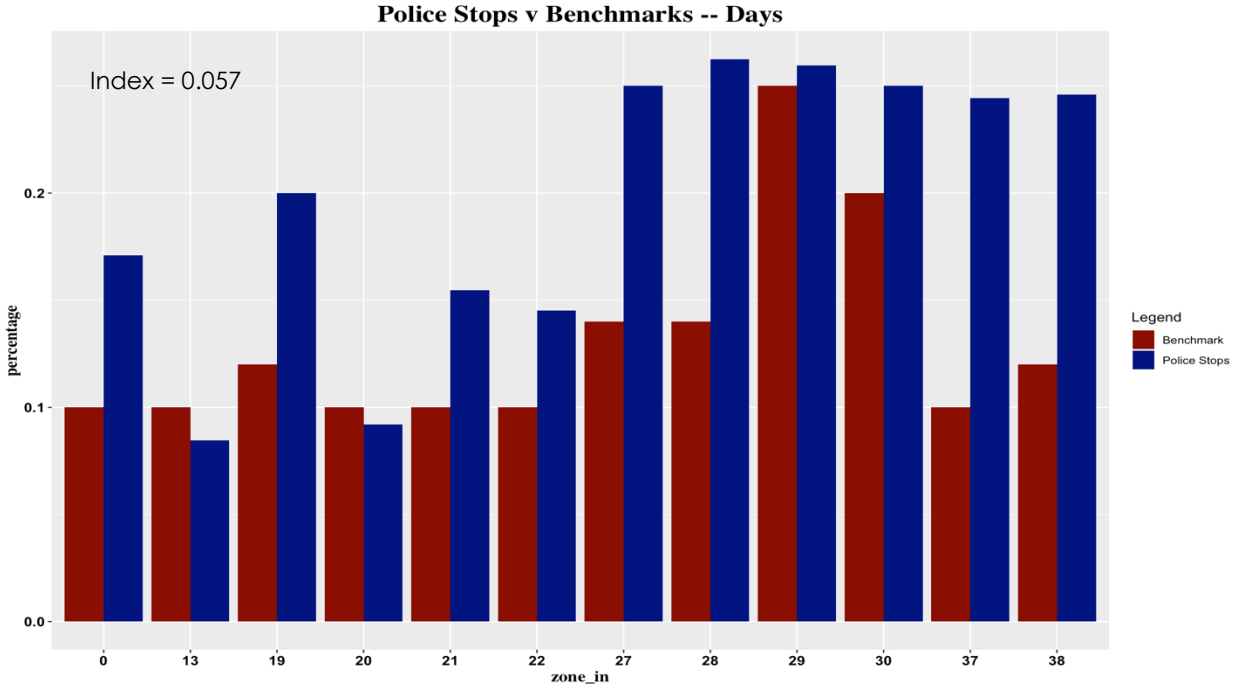
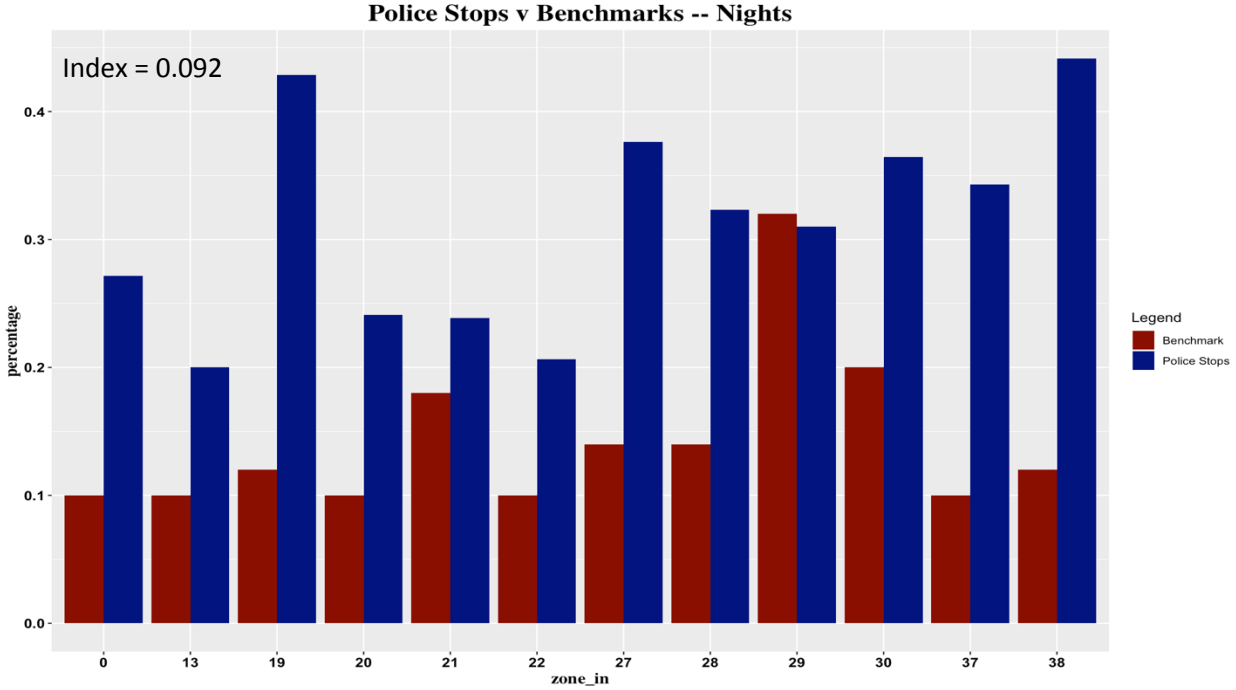


Figure 7. Comparison of Minority Stop percentages to Benchmarks for Officers Working at Night



The index values shown in each chart give a weighted average of the difference between stop percentages and benchmark values. The higher the index the greater the disproportionality.

Officer Level Analysis:

We calculated a disparity index for each officer making more than twenty-four stops during 2018. The index consists of two ratios and was calculated by comparing the percentage of minority stops to minority benchmarks divided by the percentage of whites stops to white benchmark values. A disparity index value equaling 1.00 indicates no disproportionality in stops, while values greater than 1.00 suggest disparity. The disparity index values can be interpreted as a comparison of fractions or ratios. Accordingly, an officer's disparity index value equaling 2.0 indicates that the officer was twice as likely to stop a minority driver as a non-minority driver, given the benchmark values. And other values can be interpreted similarly. Below we show two figures, one for 2018 and a second for 2017. In each, the blue horizontal lines indicate 100 stops, the thick dashed lines show the median index values for the department and the thin dashed lines give the 90th percentile index value for the department. The blue or black dots represent officers.

Figure 8. Officer Index Values 2018.

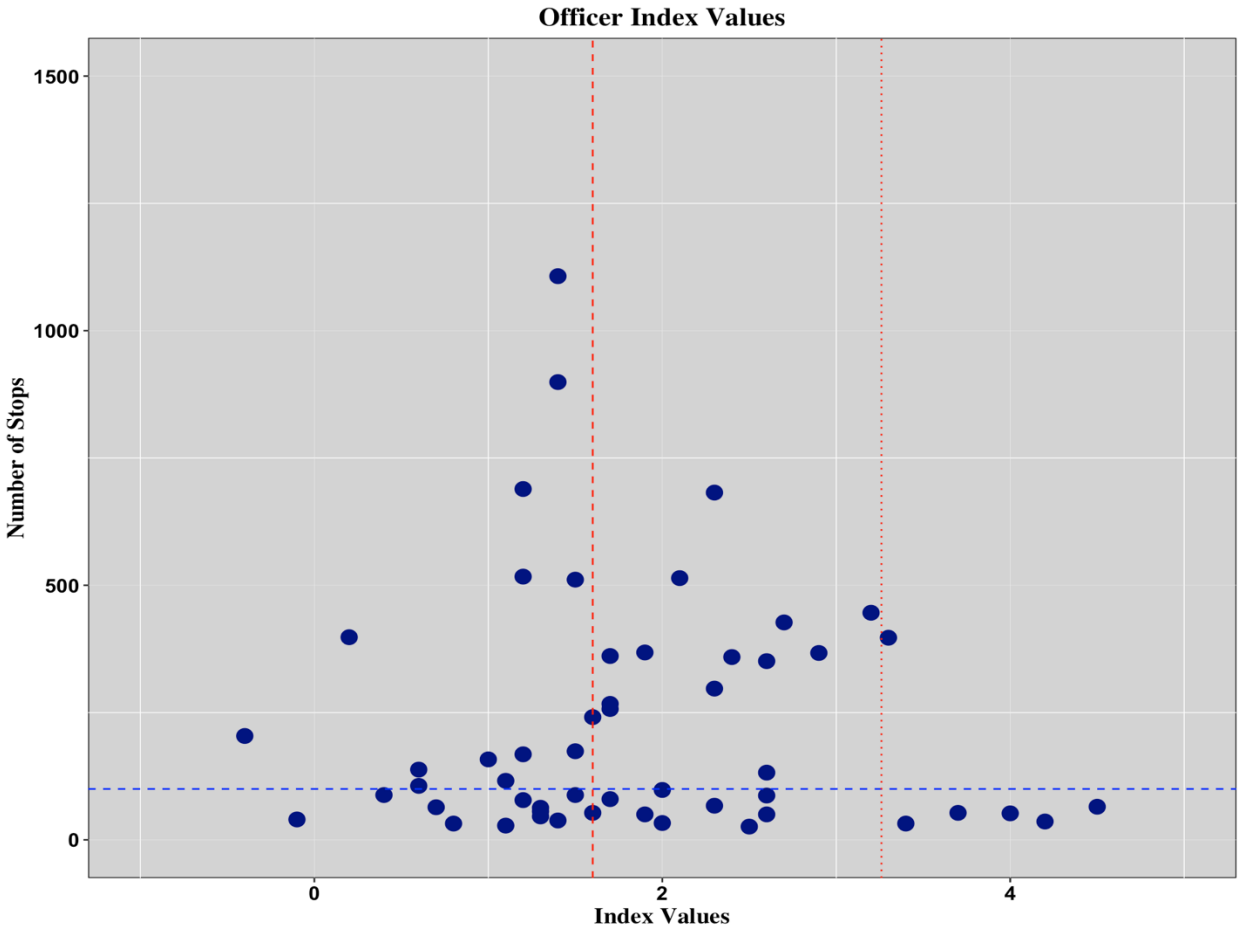
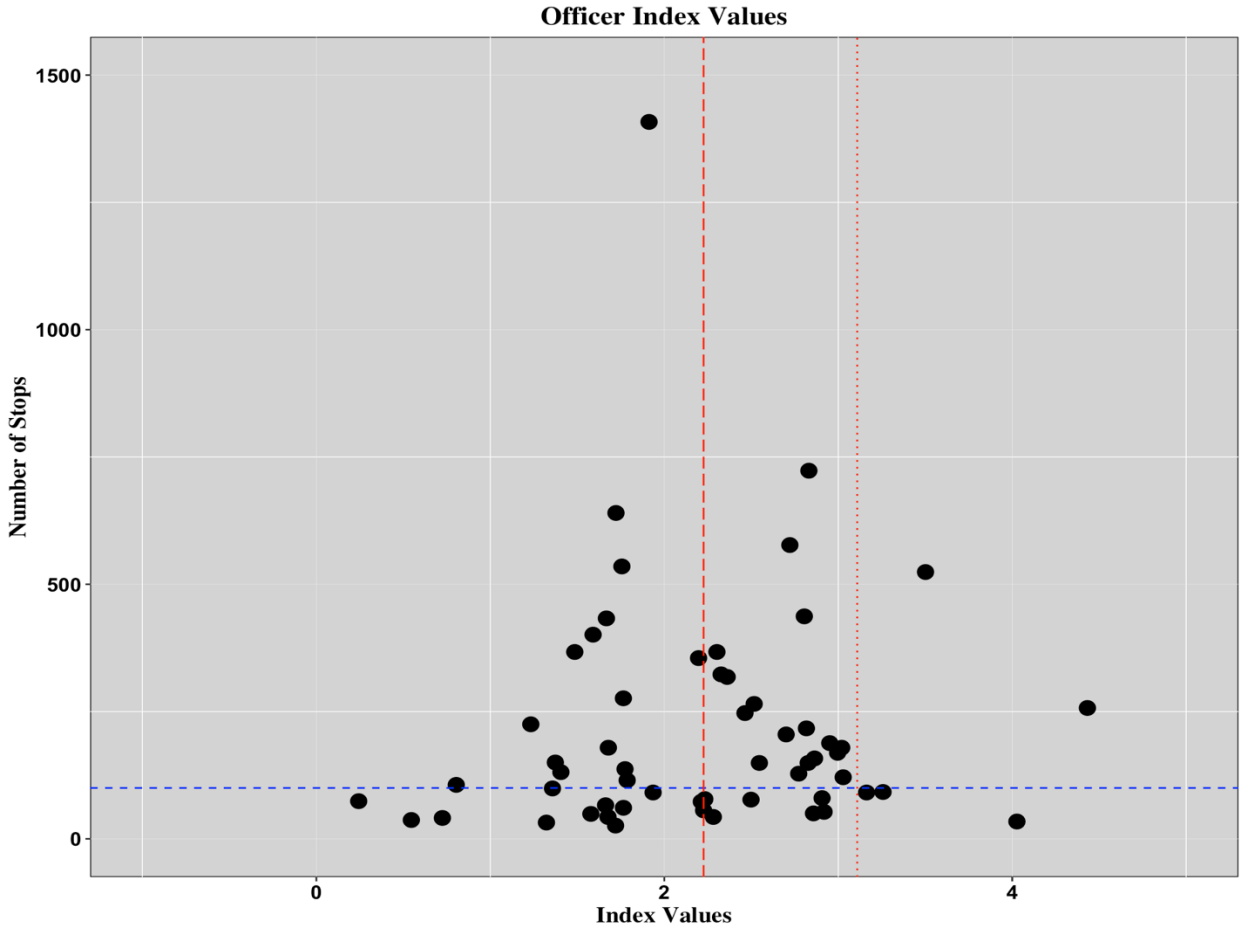


Figure 9. 2017 Officer Index Values.



A comparison of the charts suggests that extreme index values for officers decreased in 2018. Likewise, in comparison to 2017, the median index value for all officers was lower in 2018 than in 2017.

Stop Outcomes Results

We used an examination of stop *outcomes* to assess disproportionality in citations, warnings, arrests, consent searches and probable cause searches. As the name implies, a stop outcome gives information about the consequence or disposition of a stop. A good example is whether or not a driver received a ticket as a result of the stop. In what follows, we measure disproportionality using an estimator called an *odds ratio*. This estimator is a measure of effect size and association. It is useful when comparing two distinct groups and it summarizes the odds of something happening to one group to the odds of it happening to another group.

The values shown in table 1 give odds ratios for various stop outcomes over time. The information for 2018 shows ICPD officers were: *(i) less* likely to issue a citation to minority drivers than others; *(ii)* but, were more likely to arrest minority drivers than others; and *(iii)* were more likely to initiate probable cause searches for minority drivers compared to others. Looking more closely at arrests, supplemental analyses indicate that the odds favoring minority driver arrests decreased in circumstances where officers made highly discretionary arrests. In these situations, officers have a great deal of choice about whether or not to make an arrest. Although

high discretionary arrests occurred rarely (only 74 happened in 2018), when they did occur, the odds favoring minority arrests fell to 1.38 from 2.04 for non-discretionary arrests. This is an important finding which suggests officers' arrest patterns are less disparate against minority drivers in conditions where they have a great deal of choice or discretion.

Table 1. Department Outcomes and Univariate Odds Ratios by Year

Odds Ratio												
	2005	2006	2007	2010	2011	2012	2013	2014	2015	2016	2017	2018
Citations	-1.4	-1.5	-1.2	1.2	1.4	1.4	1.6	1.5	1.3	1.4	1.07	1.0
Arrests	2.5	2.8	2.6	3.1	3.2	2.5	2.3	2.1	1.9	1.5	1.82	1.98
Search	2.5	3.4	5.6	2.7	3.9	2.4	1.9	1.5	1.9	2.1	----	---
Hits	-1.6	1.2	-2.9	-2.3	-1.3	-1.2	1.1	-1.1	1.1	1.1	----	---

In 2018 ICPD officers initiated only a single consent search. Consequently, we could not calculate odds ratios for this outcome. Also, please note that in 2018 we began analyzing the number of probable cause searches conducted by ICPD officers. Results from the analyses show disproportionality. Of the 272 *pc* searches performed by ICPD officers in 2018, 119 involved minority drivers. The odds ratio for this outcome equals 2.45, indicating that the odds an ICPD officer would *pc* search a minority driver was about two-and-half times that of a nonminority driver. However, hit rates or seizures resulting from *pc* searches of minority drivers actually occurred less frequently than seizures involving nonminority drivers. In simple terms, when officers conducted a *pc* search, they were more likely to find contraband or evidence from nonminority drivers than from minority drivers—even though the odds were greater that the police would *pc* search minority drivers than others.

Conclusions

This study examined the traffic stop behavior of the Iowa City Police Department using traffic stop data from 2018, roughly 12,000 stops. The investigation focused on two broad categories of discretionary police conduct: *(i)* racial disparity in vehicle stops and *(ii)* disparity in the outcome or disposition of a stop. Findings from the examination of disproportionality in vehicle stops show stable or decreasing levels of disproportionality for stops made in 2018 compared to previous years. Additionally, the results of the analyses for stop outcomes indicate some racial disproportionality in certain outcomes—including moderate amounts in arrests and probable cause searches.