



Iowa State University Police Department
2519 Osborn Drive
Ames, IA 50011



Ames Police Department
515 Clark Avenue
Ames, IA 50010

February 10, 2022

Dear Mayor Haila, City Councilors and President Wintersteen,

Our departments partnered with CR Research Group LC to analyze data on discretionary traffic stops. We requested the review as a proactive step to evaluate whether or not racial disparities existed in traffic stops and outcomes, including written warnings, citations and arrests.

The independent review found “negligible evidence of racial bias” by Ames and Iowa State University police officers when conducting traffic stops. The report that follows provides greater detail, but here are a few important findings:

- There is little evidence that officers stopped a greater proportion of people of color compared to white drivers. The disproportionality index (the measurement used to assess racial disparity) for both departments was almost always lower than .05, which is described in the reports as a low confidence indicator of disproportionality.
- In 2017-2018, the Iowa State review (which included three years of data) found people of color were more likely to receive a citation during a traffic stop, while white drivers were more likely to receive a warning. In 2019, there were no differences based on race.
- In 2018, the Ames review (which included two years of data) found no differences between people of color and white drivers. In 2019, white drivers were more likely to receive a citation and people of color were more likely to receive a warning as the result of a traffic stop.
- There was racial disparity in arrests for both departments, but nearly all of the arrests were for nondiscretionary offenses, which means officers were required to make an arrest.

Disproportionality is one way to assess potential bias or discrimination, but as the researcher explains in the report it may also indicate differences in driver behavior, vehicle condition or driver-license status. We also note that many of the findings for citations and warnings were not statistically significant, and the study did not control for other factors that may influence traffic stops and outcomes.

As stated above, nearly all of the arrests were for nondiscretionary offenses, which means the officer is required to make an arrest. This includes arrests for operating while intoxicated, driving while barred or existing warrants. Arrests also include “cite and release” charges, such as driving under suspension, which did not require the driver to go to jail, but promise to appear for a later court date. For these reasons, it is difficult to make definitive conclusions about all outcomes of traffic stops.

As with any study, there are limitations, but this is one tool that allows us to evaluate our performance over time. We will continue to examine traffic stops as part of our internal reviews. Our departments also provide ongoing bias-based training for officers, publish monthly reports on police activity and engage in conversations within our departments and the community about race.

We are committed to strengthening the relationships we have within our communities and improving transparency and appreciate your partnership in this effort.

Sincerely,

Chief Geoff Huff, Ames Police Department

Chief Michael Newton, Iowa State University Police Department

**ISU Police Traffic Study 2017-2019
Report**

**Prepared by:
Chris Barnum**

CR Research Group LC

February 1st, 2022

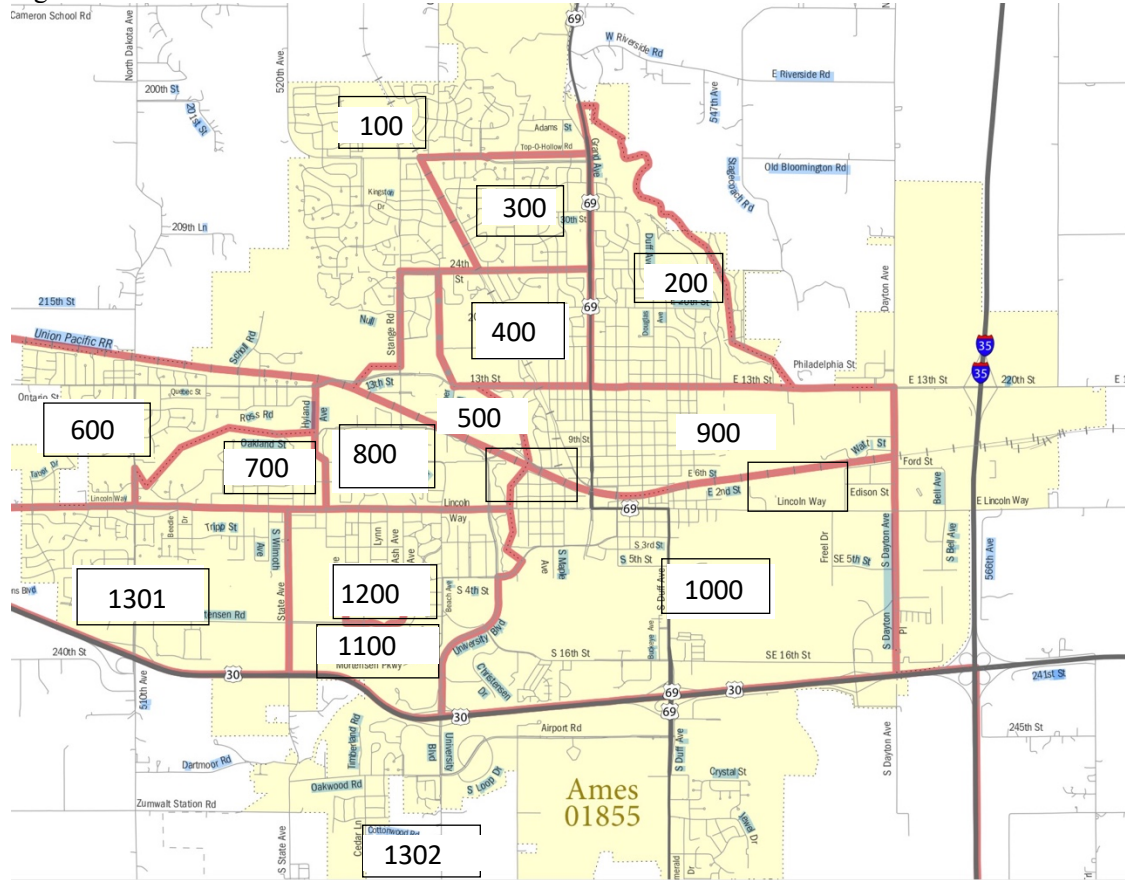
Final

ISU Police Traffic Study

Iowa State University partnered with CR Research Group LC to evaluate potential disproportionality in the ISU Police Department’s discretionary traffic stop activity. The review focused on assessing stops made by the department between January 1st, 2017 and December 31st 2019, and centered on evaluating two broad categories of discretionary police conduct: (i) racial disparity in vehicle stops—expressed as racial differences in the likelihood of being stopped by the police and (ii) dissimilarities across racial demographics in the outcome or disposition of a stop. This report provides distinct information for the years 2017, 2018 and 2019 and as will be explained in more detail below, its overall findings offer negligible evidence of racial disproportionality for outcomes measuring discretionary police behavior, especially for the most recent years.

To evaluate the likelihood of being stopped, our research team utilized driver-population *benchmarks* fashioned from roadside observations and census data. A benchmark should be thought of as the racial proportion of drivers on the roads in a given location. At its best, the benchmark is a standard that can be used to judge the percentage of drivers that should be stopped by the police when no bias is occurring. In Ames, the population characteristics of the city were divided up into several observation zones (see figure one below).

Figure 1. Ames observation zones



Once the boundaries of the observation zones were determined, roadside surveyors were deployed to monitor traffic at several locales within selected zones. The observers watched traffic at various times of the day ranging from 9:00 am until 2:00 am, and logged more than 88,000 observations from locations across the city.

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

This methodology makes it possible to track disproportionality by area of town, by time of day, by duty assignment and by individual officer. While the method serves as a useful tool in assessing disproportionality, please keep in mind that the process produces only *estimates* of disproportionality. As noted, analyses are predicated on benchmark information and the 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 uncertainty or indeterminacy. This means that numerical estimates of disproportionality are likely associated with some error and the true population parameter may be larger or smaller than the estimate.¹ In what follows, we present a summary measure of disproportionality. This index can take on both positive and negative values, with zero signifying no disproportionality. However, given sampling error, smaller index values do not necessarily indicate disproportionality because such values could be due to chance alone. In general, the reader should interpret larger index values with greater confidence as an indicator of disproportionality than smaller values. As a rule of thumb, it is best to consider index values less than 0.05 as low confidence indicators of disproportionality, and index values greater than 0.10 as high confidence indicators.

¹ Sources of variation and sampling error include: variability of the traffic flow within observation zones, variability between roadside surveyors, variability of racial proportions of residents within observation zones, choice of locations to record traffic characteristics within a zone, and variability associated with assigning stops made on observation zone boarders. Observational benchmark information was gathered from locations that were predicated police traffic stop activity rather than from a random sample of locations throughout each zone. Consequently, computations of exact margin of errors would likely result in margins that are too narrow.

Analyses for 2017 -2019

Department Level Analysis

Stop Locations

Figures 2 and 3 below give information related to the location and number of stops made by the ISU PD. In figure 2, each blue dot on the map represents an individual traffic stop and the darker areas on the map represent locations where multiple stops occurred in the same spot (here, the dots are stacked on top of each other). Figure 3 gives the number of traffic stops by observation zone. The information below shows stops made for 2019. The traffic-stop patterns for 2018 and 2017 are very similar to 2019 and the corresponding figures for these years are given in the appendix.

Figure 2. Location and density of ISU traffic stops 2019

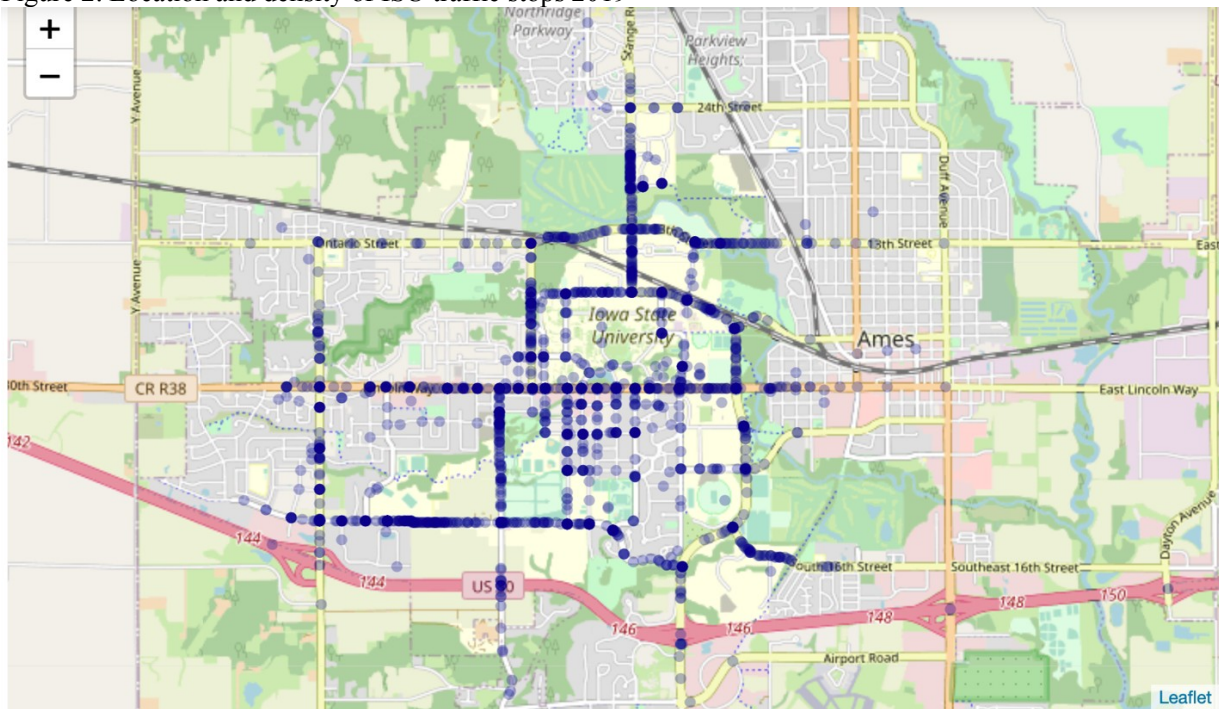
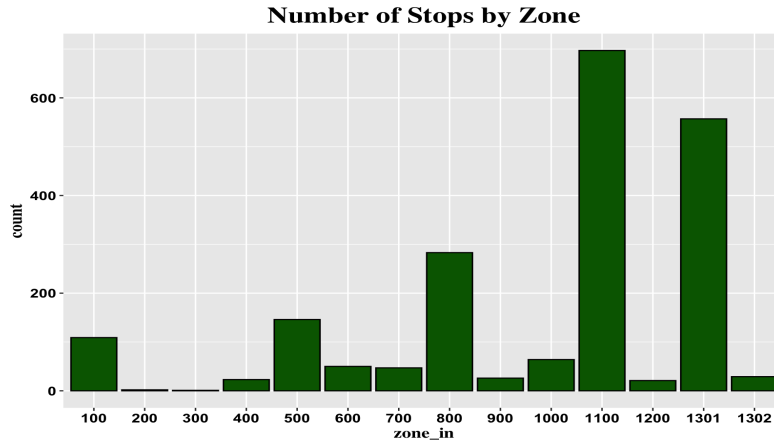


Figure 3. Number of stops per zone 2019



Benchmark Comparisons

We utilized two benchmark standards for this study, called *Type I* and *Type II*. Applying multiple benchmarks is a useful statistical technique for inspecting and isolating the variation of disproportionality across demographic categories. Prior analyses conducted in other cities suggest that certain non-white racial categories may be stopped or sanctioned at lower rates than their actual percentages in the population of interest. When this is the case, classifying all people of color together as a single unit could mask disproportionality, but grouping a given non-white racial category with both nonwhite and whites and then comparing values between these classifications can help to isolate distinct levels of disproportionality. For this study, the Type I classification is comprised of all drivers who were identified as people of color on the roads, and the Type II grouping consists of these drivers, but excluding Asians. These classifications were chosen for statistical purposes only.

Disproportionality Index Values

Table 1 below gives information for the summary disparity index values by year for each type of classification broken out in three ways, for: (i) all officers, (ii) officers working days and (iii) officers working nights. The index gives an estimate of disproportionality using a weighted average. The index is computed by summing the weighted difference between percentage of police stops involving nonwhite drivers for a given observation zone and corresponding benchmark values. Weights consist of the number of stops made in each zone. As noted, readers should interpret higher index values with more confidence as an indicator of disproportionality than lower values and should consider index values less than 0.05 as dubious indicators of disproportionality.

Table 1. Disproportionality Index Values 2017 - 2019

Benchmark Type	Assignment		
	<u>Department</u>	<u>Days</u>	<u>Nights</u>
<u>2019</u>			
Type I	0.034	0.036	0.032
Type II	0.023	0.007	0.035
<u>2018</u>			
Type I	0.041	0.026	0.054
Type II	0.026	0.000	0.045
<u>2017</u>			
Type I	0.065	0.045	0.084
Type II	0.024	-0.012	0.057

The information in table 1 generally shows negligible levels of disproportionality for both Type I and Type II groupings for the agency. As noted, index values less than 0.05 should be interpreted as low confidence indicators of disproportionality. Given this, the reader should have low confidence that the information in table 1 suggests statistically significant disproportionality for the agency.

Type I Grouping

The information in table 1 shows disparity index for the department decreased by roughly three percentage points between 2017 and 2019. However, in nearly all years, the values were less than 0.05, and given sampling error, the reader should have low confidence that this suggests statistically significant disproportionality greater than zero for any of these values. Additionally, for all years, index values tended to be lower for officers working during daytime hours than for officers working at night. However, like the departmental index, the Type I index for officers working at night decreased each year since 2017. By 2019 the day and night indexes were roughly similar and less than 0.05.

Type II Grouping

The departmental index for the Type II grouping was similar for all years of the study with a mean value of roughly 0.024. But as noted, given sampling error, the reader should have low confidence that this result suggests statistically significant disproportionality. As before, index values were lower for officers working during daytime hours than at night. However, also as before, differences between shifts decreased each year of analyses and nighttime values were less than 0.05 for the most recent years.²

The information in table 1 also indicates that disproportionality values for the Type I index were generally higher than values for the Type II index. However, the difference between these types decreased each year of the study and by 2019, the values were similar. This suggests that disproportionality in traffic stops across non-white racial categories became largely comparable for all classifications for the most recent year of this report.

² For both types of groupings, comparatively more stops were made during nighttime hours than during the day. In 2019, roughly 44% of stops occurred during daytime hours. In 2018, roughly 42% of stops occurred during the day and in 2017, roughly 48% of all stops were made during the day.

Comparison with Other Departments in Iowa

In recent years, our research team has used a similar methodology to analyze the police traffic stop data for a number of law enforcement agencies in Iowa. When compared to these departments, the index values for the ISU Police Department are generally lower or on par with corresponding values for these other departments.³

Officer Level Analysis.

We calculated a disparity index for each officer making more than twenty-five stops during each year of the study. The index consists of two ratios and is computed by comparing the fraction of stops involving nonwhite drivers to corresponding benchmarks divided by the proportion of stops involving white drivers to their corresponding benchmarks. These values are weighted by the number of stops and summed across all zones.⁴ Higher absolute values suggest more disproportionality.

The charts below give the disparity index values and number of stops for officers making at least twenty-five traffic stops in each year of the study. For each chart, the index values are given along the horizontal axis and the number of stops on the vertical axis. The blue horizontal line indicates 100 stops made, the thick red dashed line shows the median disparity index value for all officers making at least twenty-five stops and the thin red dashed line gives the index 90th percentile value for all officers making twenty-five stops.

These charts are mainly useful qualitatively as an internal benchmarking instrument for comparing officers to one another.⁵ The charts facilitate identifying officers with comparatively high and dissimilar index values. Such officers would show up as a solitary dot, located above the blue dashed line and on the extreme right side of a chart. It is important to use caution when interpreting index values calculated from a relatively low number of stops (especially, fewer than one-hundred stops). Index calculations predicated on comparatively few stops can be quite unstable and change significantly with the addition or subtraction of only a couple of stops. The stability of the index increases as the number of stops increase. Additionally, we suggest police managers should use additional internal benchmarking techniques to supplement interpretations of index results, especially for any officers identified with high index values. For instance, managers should compare these officers to similarly situated officers, including those who work the same shifts, beats, duty assignments, special projects and so forth in order to gain additional insight into index interpretations. Finally, it is important to recognize that an individual index value reflects a single snapshot in time. And given the indeterminacy associated with computing the index, it is important to interpret outcomes by looking for trends through time.

The information below suggests that for the most recent charts, officers' index values are generally clustered together with no outliers. However, this is not true for earlier charts. Both

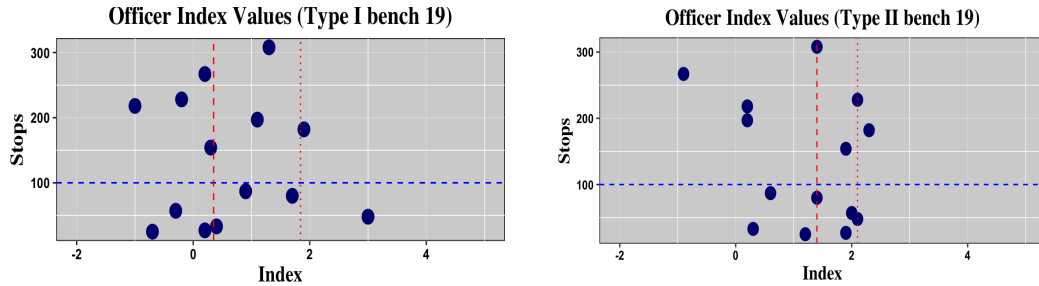
³ For instance, the average index for three communities in Iowa with comparable (or slightly larger) population sizes to Ames, equaled roughly 0.07 (using a Type II grouping), 0.08 (Type I grouping) and 0.02 (Type II grouping).

⁴ Initial index values can range solely between zero and positive infinity. However, in computing reported index scores, the values between zero and one in each zone are converted to their negative reciprocal and all scores are then weighted and summed. Please note there are at least two sources of indeterminacy in computing index values. The first is the previously mentioned potential sampling error associated with benchmark estimates. The second source of indeterminacy is that the index is undefined when the denominator equals zero. This generally occurs when very few stops are made in a given zone. In these circumstances the index is made to generate a unit value.

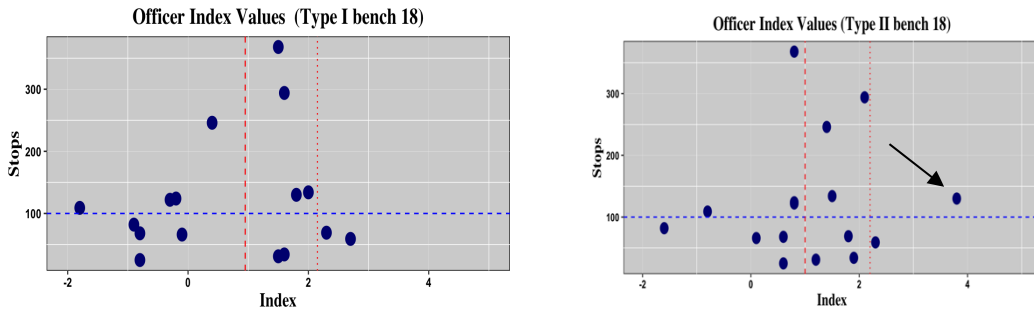
⁵ Walker, 2003. <https://samuelwalker.net/wp-content/uploads/2010/06/InternalBenchmarking.pdf>

charts in 2017 and the Type II chart in 2018, each contain a single officer (marked with an arrow) that has a conspicuously higher index value than other officers. The black arrows are pointing to the same single officer in 2017 and 2018. The officer indicated by the blue arrow in 2017 does not show up as noticeably dissimilar from other officers in any other charts. As noted, the information for 2019 suggests that officers' index values are generally clustered together with no outliers, and this indicates that the officers denoted by arrows in previous years no longer appear as outliers in 2019.

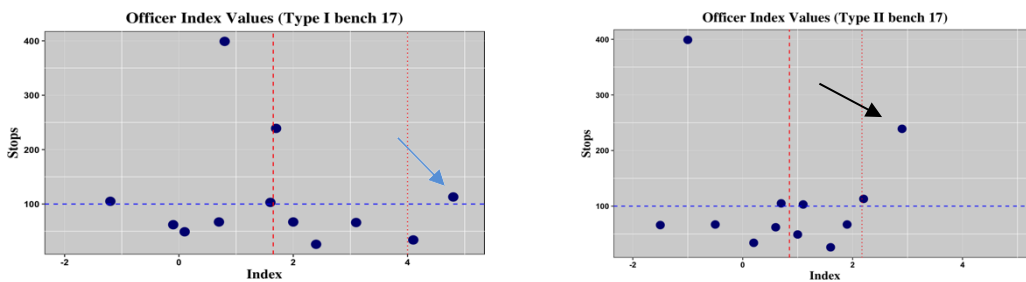
Charts for 2019



Charts for 2018



Charts for 2017



Stop Outcome Results

We used an examination of stop outcomes to assess disproportionality in citations, warnings and arrests. As the name implies, a stop outcome gives information about the consequence of a stop. An example of an outcome is whether a driver received a ticket as a result of the stop. In what follows we measure disproportionality using a statistic called an *odds ratio*. This estimator is a measure of effect size and association. It is useful when comparing two distinct groups and summarizes the odds of something happening to one group to the odds of it happening to another group. An odds ratio value greater than one indicates an increased occurrence of an outcome for a nonwhite driver. Analyses of odds ratios are an excellent way to identify trends in the data. Tables 2 and 3 below give the odds ratios for stop outcomes for 2017 – 2019. For clarity of presentation, we first present information for Type I classifications here and then the table for Type II groupings immediately below.⁶

In what follows, it is important to note that nearly all of the arrests made in all years of the analysis—for both types of benchmarks—were for *nondiscretionary* charges. These are offenses that owing to state law or departmental policy, leave officers with very little or no choice in deciding whether to make an arrest. Officers are in essence required to arrest, and would in fact, be subject to departmental discipline if they chose not to arrest.

Table 2. Type I Outcomes

2019	Odds Ratio	Probability <
Citations	0.84 (1.19)	NS*
Warnings	0.79 (1.26)	NS
Arrests	2.15	0.001
2018	Odds Ratio	Probability <
Citations	1.34	0.05
Warnings	0.66 (1.51)	0.01
Arrests	1.11	NS
2017	Odds Ratio	Probability <
Citations	1.38	0.05
Warnings	0.58 (1.72)	0.001
Arrests	1.24	NS

* NS indicates not statistically significant.

The information in table 2 suggests that when compared to earlier years, nonwhite-driver disproportionality in citations and warnings decreased in 2019, but disproportionality in arrests increased. Prior to 2019, people of color were on average approximately 36% more likely to receive a citation in comparison to other drivers, while white drivers were about 62% more likely on average to receive a warning as the result of traffic stop. However, in 2019 each of these outcomes became statistically insignificant signifying no difference between racial classifications for these outcomes.

⁶ We used a ‘seriousness of offense’ methodology to classify outcomes. For instance, if a person was arrested and also cited on a single stop (for separate offenses), we classified this as an arrest but not as a citation. Likewise, a person who received both a ticket and a warning on a stop was classified as being cited but not warned.

The results for arrests were reversed. In years prior to 2019, when compared to white drivers, people of color did not statistically differ in the likelihood of being arrested as the result of a traffic stop for this type of classification. This changed in 2019. In that year, in comparison to white drivers, a person of color driver was more than two times as likely to be arrested during a traffic stop. It is unclear what the reasons are for this change. As noted above, the vast majority of arrests were for nondiscretionary charges.

With the exception of arrests, the results using Type II information are substantively similar. These findings are shown in table 3. When compared to earlier years, nonwhite-driver disproportionality in citations and warnings decreased in 2019. Like before, disproportionality in arrests increased, but here in table 3 (and unlike table 2) the arrest odds ratios are significant for all years, and the 2019 odds ratio is also notably higher.

Table 3 Type II outcomes.

2019	Odds Ratio	Probability <
Citations	0.635 (1.57)	0.01
Warnings	0.746 (1.34)	NS*
Arrests	3.54	0.001
2018	Odds Ratio	Probability <
Citations	1.23	NS
Warnings	0.59 (1.69)	0.01
Arrests	1.56	0.05
2017 Outcome	Odds Ratio	Probability <
Citations	1.13	NS
Warnings	0.59 (1.69)	0.05
Arrests	1.68	0.05

* NS indicates not statistically significant.

Taken together, the findings in tables 2 and 3 suggest greater disproportionality in African American arrests than in other people of color. Given that Type I classifications compare whites to all people of color and Type II categories compare whites plus Asians to all others, an increase in an odds ratio when Asians are no longer grouped with African Americans is an indicator of increased disproportionality for African Americans.⁷

It is important to reiterate here, that nearly all the arrests made in all years of the analysis, for both types of benchmarks, were for nondiscretionary charges. In these circumstances, officers have very little discretion in deciding whether to make an arrest. These types of charges include offenses like bench warrants, driving while barred and operating while intoxicated. *Analyses show that in nearly all instances where an arrest was made, officers had little choice in the matter.* Additionally, for all years of the study, between 25-40% of all arrests were “cite and release” types of charges. These arrests generally involve driving while under suspension violations. For these offenses, drivers are allowed to sign a promise to appear in lieu of being taken to jail for the violation. It is noteworthy that in 2019 over 60% of all

⁷ African Americans and Asians make up the lions’ share of nonwhite drivers stopped. See the appendix for a breakdown of stops by race.

African American arrests were cite and release. Tables showing information for nondiscretionary arrests as well as cite and release information are provided in the appendix.

Conclusions

This study examined the traffic stop behavior of the ISU Police Department using data from 2017, 2018 and 2019. The investigation focused on two broad categories of police conduct, racial disproportionality in vehicle stops (at both the agency level and officer level) and disproportionality in the outcome or disposition of a stop. Findings from the examination of disproportionality in vehicle stops show that at the department level, index values were nearly always less than 0.05 for all years of the study. Given sampling error, these results provide negligible evidence of statistically significant disproportionality in stops for the agency. Analyses of officer level data indicated that although officers' index values were generally clustered together with similar index values for the most recent year, there were three earlier occasions that showed officers with conspicuously high disparity index values. The findings from all years, however, do not suggest that these officers continued clear disproportionality into 2019. Finally, the results for the analyses of stop outcomes indicate decreasing and comparatively low levels of disproportionality in stop outcomes for citations and warnings. In 2019, we found no disproportionality in citations or warnings for nonwhite drivers. However, the findings show increasing levels disproportionality in arrests. Even so, it is important to note that almost all arrests were made for nondiscretionary offenses, meaning officers were required to make an arrest and had little or no choice in the matter. Moreover, many drivers who were arrested were allowed to sign a promise to appear in lieu of jail.

Limitations of the Study

It is important to note several limitations of this study. First, the data for this study came from sources that were not initially or primarily intended for the examination of disproportionality in traffic stop decisions or outcomes. These sources consisted of data from the ISU Police Department's record management systems "OSSI" and "TraCS." These systems are principally intended for managing information from calls for service and traffic accidents rather than discretionary traffic stop information. Consequently, some important information was not available. Non-available data included: (i) information about stops resulting solely in verbal warnings, (ii) information about requests for voluntary searches of vehicles or occupants, (iii) information about the drivers age, (iv) information about occupants of the vehicle, (v) information about "Terry Frisks" or pat-downs of the driver or occupants, (vi) information regarding whether occupants were asked to step out of the vehicle, (vii) information about whether arrests were made for discretionary or nondiscretionary charges (viii) information about officer characteristics. Second, the classifications for the reason for the stop were in some cases ambiguous. This made it impossible to assess if a stop occurred because of a moving or equipment violation. Third, some nondiscretionary stop information resulting from traffic accidents may have been included in the data. These shortcomings limited the types of analyses that could be conducted. Some analyses such as logistic regression and other comparable techniques were not appropriate because several suitable and necessary control variables were not available.

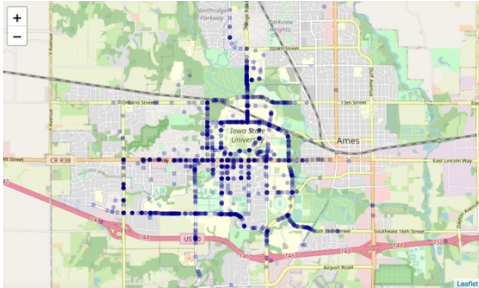
Recommendations

We recommend the following. First if possible, the ISU Police Department should develop a dedicated ‘racial disparity’ traffic stops data collection system that would generate a dataset that is more amenable to analyses that are capable of identifying and evaluating disproportionality in stops and outcomes. This however is dependent on the State of Iowa including driver’s race information on Iowa driver’s licenses. Currently, the state is phasing out this information on state DLs and consequently, accurate assessment of race based off license information may not be possible in the near future.

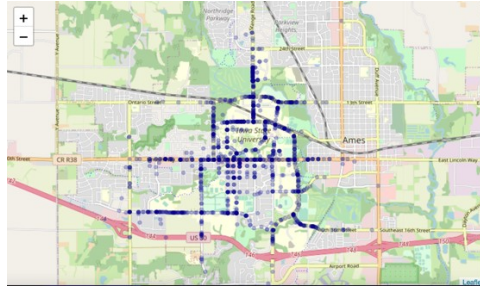
However, if the state reverses course, in addition to data that is already available, this new collecting system should include the following pieces of information: *(i)* the reason for the stop (at a minimum the classification of stops as moving or nonmoving violations), *(ii)* complete demographic information about driver and occupants of the vehicle, *(iii)* information about voluntary search requests, *(iv)* information about vehicle and occupant searches (and the reason for the searches), *(v)* documentation of items seized in searches, *(vi)* a record of whether pat-downs were conducted, *(vii)* documentation of field interviews, *(viii)* a log of requests for driver or occupants to exit the vehicle, *(ix)* a record of warrant and registration requests (for both vehicle and occupants) and *(x)* complete officer demographics, including age, gender, race, years of service and duty assignment. Second, police managers should use the information from disproportionality analyses to look closely at disproportionality found at the officer level. Supervisors should use ‘internal benchmarking’ techniques to compare an officer to similarly situated officers (e. g., other officers working the same time, duty assignment, beat and so forth) to determine if these structural factors may account for some or all of the observed disproportionality. Third, if possible, the ISU Police Department should continue assessing disproportionality yearly at both the individual and aggregate level. These analyses could be conducted internally and in-house. This assessment should focus on looking for trends in the data.

Appendix

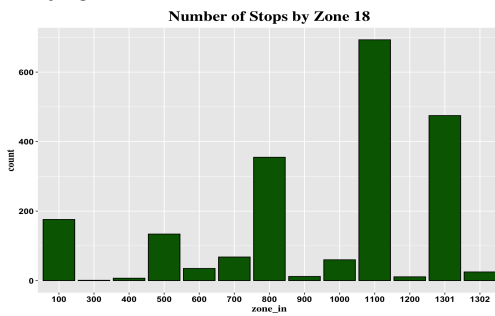
2018



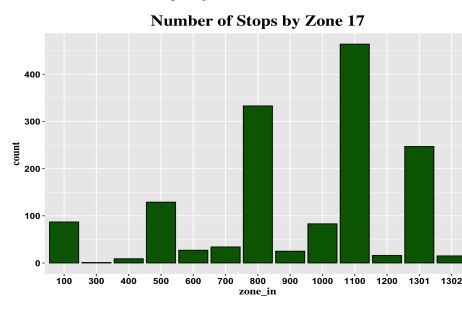
2017



2018



2017



Stop and arrest information (no unknowns)*									
	2017			2018			2019		
	<u>Tot Arr</u>	<u>Mand.</u>	<u>Stops</u>	<u>Tot Arr</u>	<u>Mand.</u>	<u>Stops</u>	<u>Tot Arr</u>	<u>Mand.</u>	<u>Stops</u>
Asian	17	15	167	11	11	177	12	12	166
A-A	25	25	117	27	27	189	52	51	201
N-A	0	0	28	0	0	20	0	0	7
White	129	127	1158	149	147	1666	147	145	1681
Total	171	167	1470	187	185	2052	211	208	2055

*Used 'complaint' column in data provided by ISU to compile total arrest information. Mand. indicates nondiscretionary arrests.

Stop and arrest information for stops with unknown race values									
	2017			2018			2019		
	<u>Tot Arr</u>	<u>Mand.</u>	<u>Stops</u>	<u>Tot Arr</u>	<u>Mand.</u>	<u>Stops</u>	<u>Tot Arr</u>	<u>Mand.</u>	<u>Stops</u>
Race U	8	8	156	4	4	217	24	23	403
GT	179	175	1626	191	189	2269	235	231	2458

Tables showing disposition of arrest by race (excluding unknown race arrests)

2017					
	Asian	African American	Native-American	White	Total
Cite & Release	10	10	0	23	43
In Custody	6	15	0	105	126
Warrant Request	1	0	0	1	2
Grand Total	17	25	0	129	171

2018					
	Asian	African American	Native-American	White	Total
Cite & Release	6	11	0	39	56
In Custody	5	16	0	106	127
Warrant Request	0	0	0	4	4
Grand Total	11	27	0	149	187

2019					
	Asian	African American	Native-American	White	Total
Cite & Release	8	31	0	46	85
In Custody	4	20	0	98	122
Warrant Request	0	1	0	3	4
Grand Total	12	52	0	147	211