

# APD and ISU-PD Traffic Study

CR Research

February 10, 2022

# Focus of Review

- Disproportionality
  - 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.

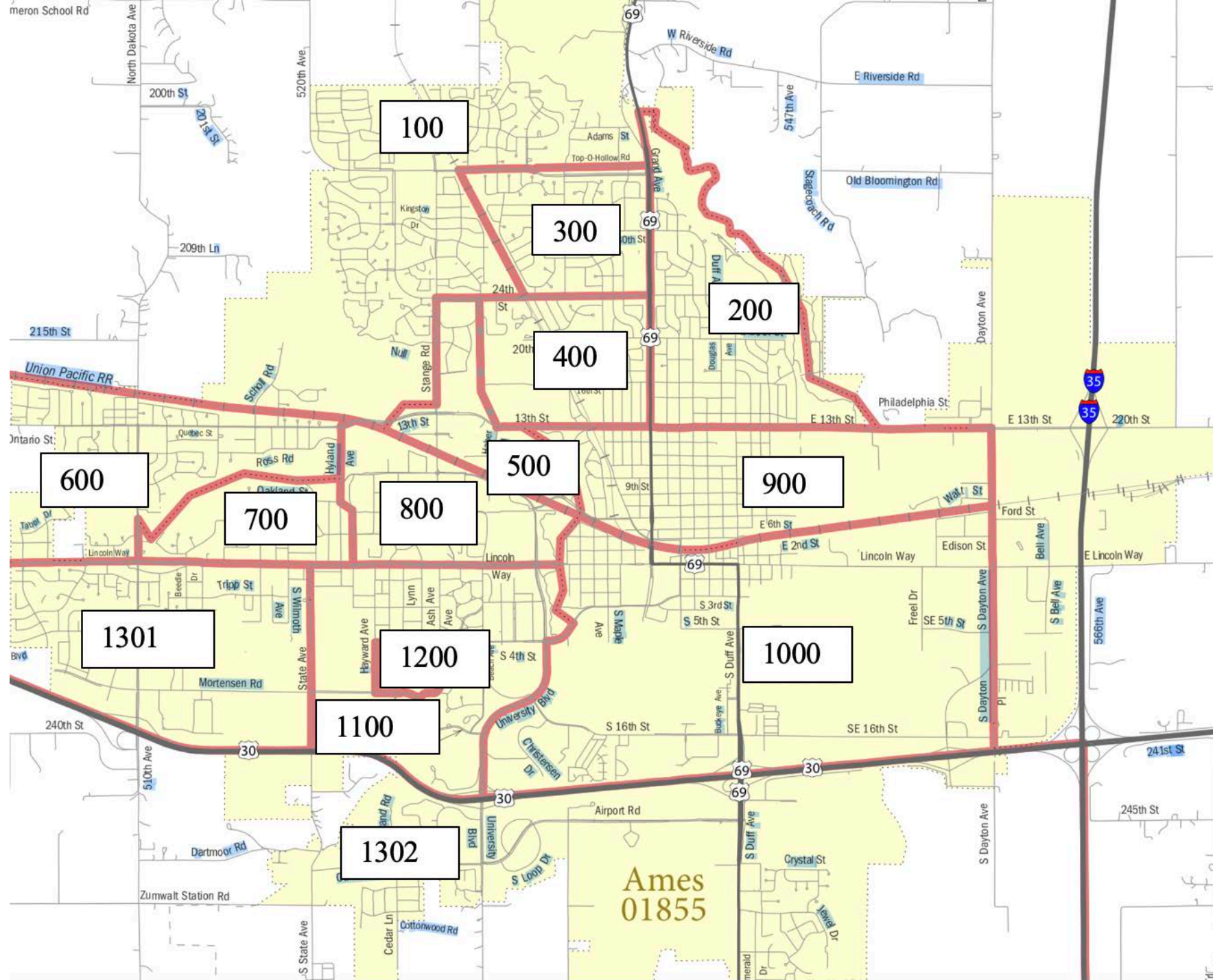
# Where do we look?

- Traffic Stop Decisions
  - A difference between police traffic stop percentages and a reliable benchmark
- Traffic Stop Outcomes
  - A difference between groups in traffic stop outcomes like Tickets, Warnings and Arrests

# Traffic Stop Benchmark

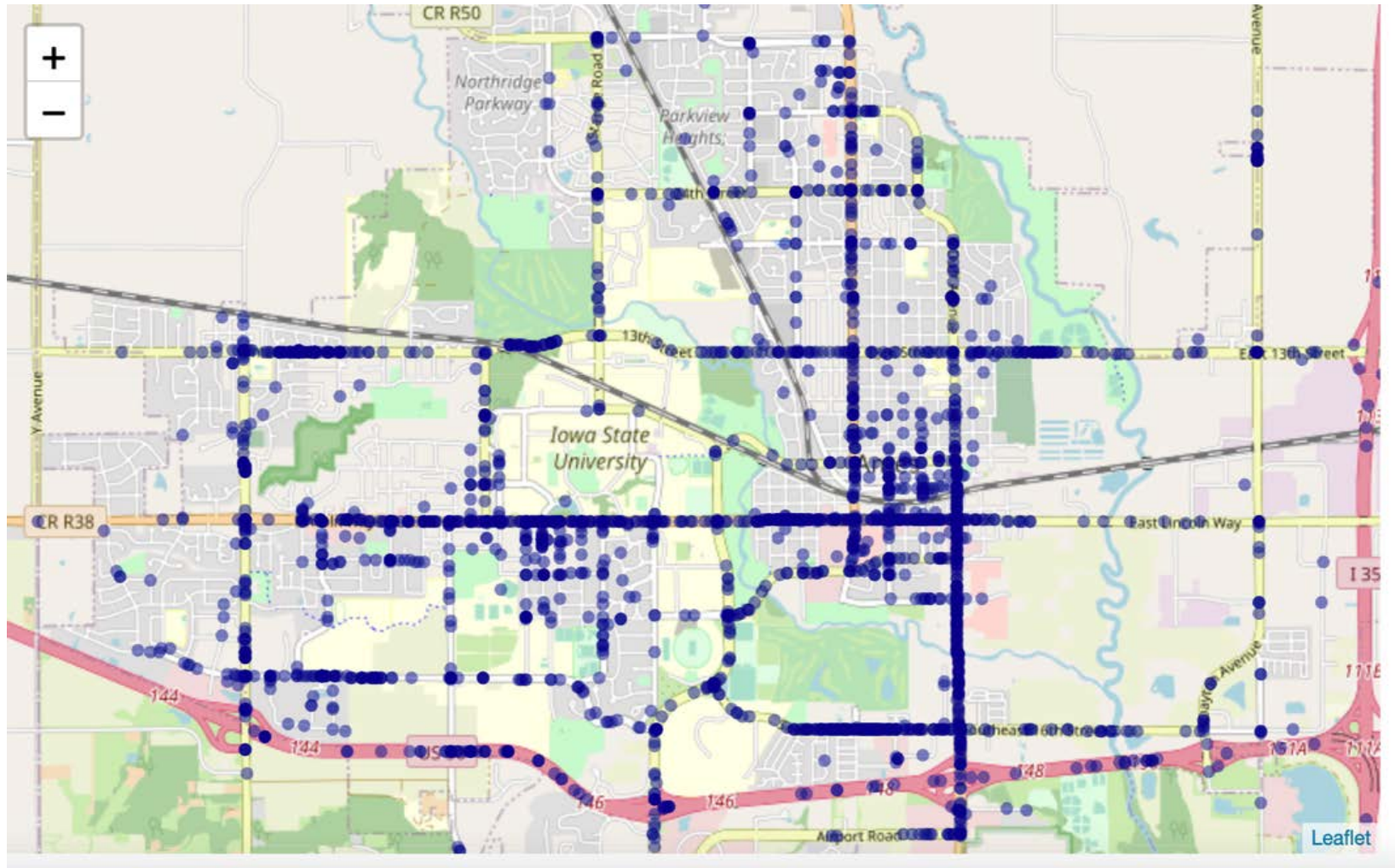
- Primarily roadside traffic observations
- Also, use internal benchmarking and census information

# Observation Zones



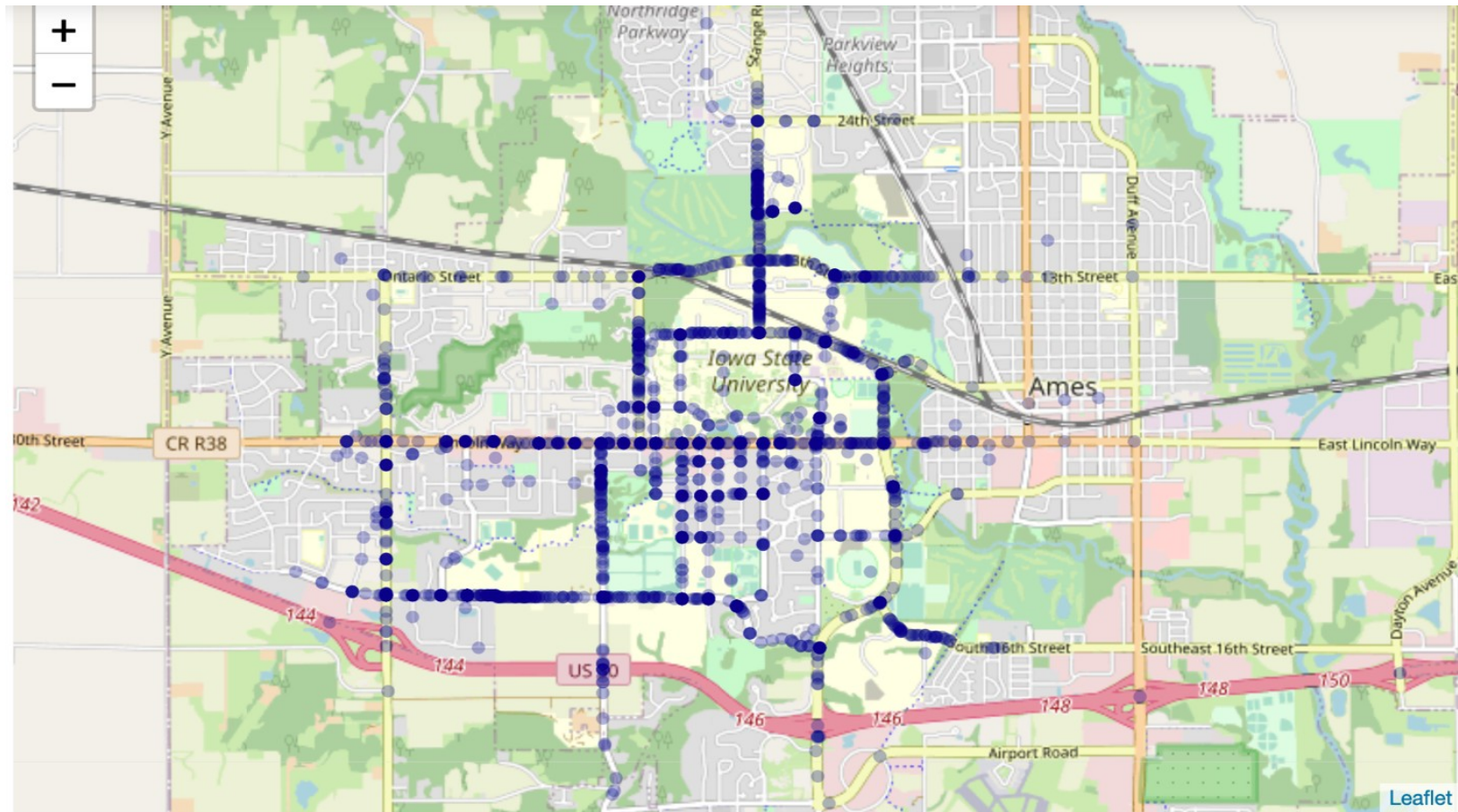
# Police Stop Information

## Ames PD Stops

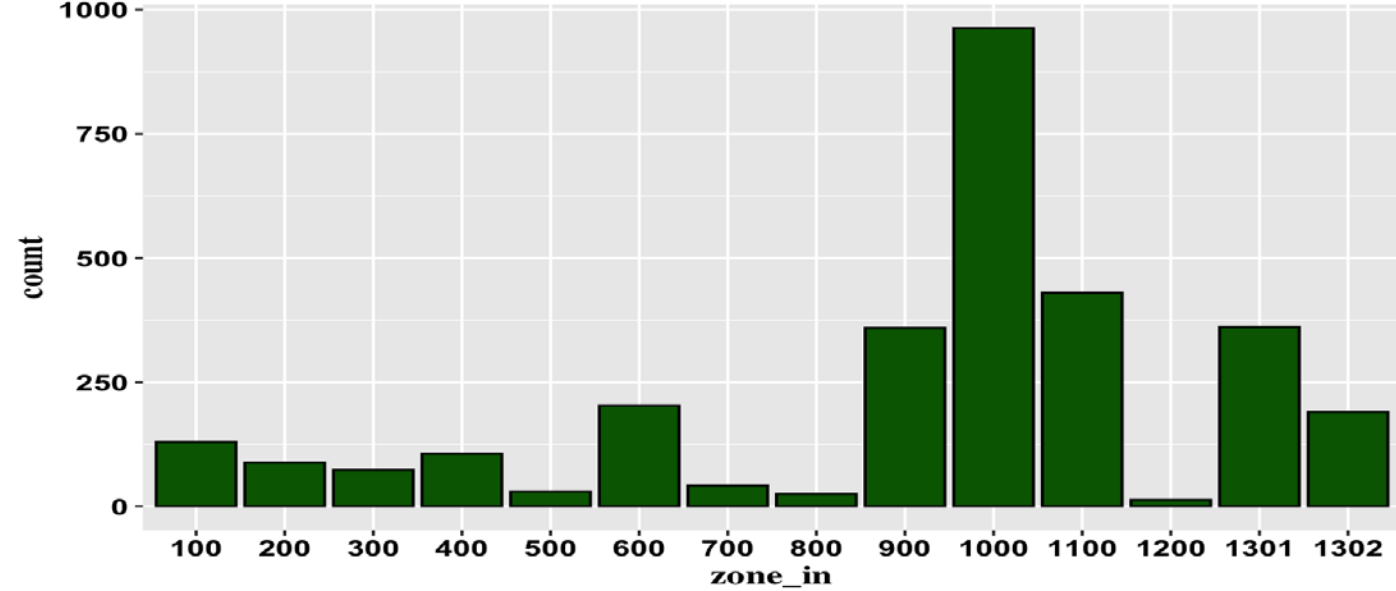




## ISU PD Stops

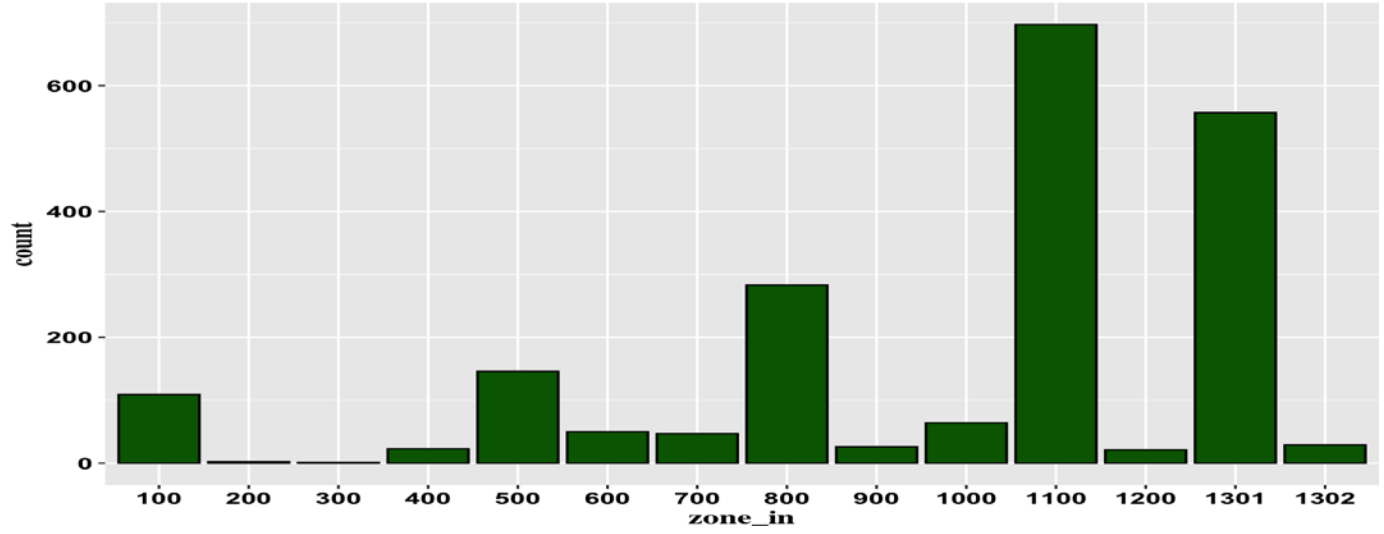


**Number of Stops by Zone**



Ames Stops

**Number of Stops by Zone**



ISU Stops

# Disproportionality Standards

- Two Benchmark Standards
  - ***Type I*** All Drivers Excluding Whites
  - ***Type II*** All Drivers Excluding Whites & Asians

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.

## Ames PD Disproportionality Indexes for 2019 & 2018

<b>Benchmark Type</b>	<b>Assignment</b>		
	<u>Department</u>	<u>Days</u>	<u>Nights</u>
<b><u>2019</u></b>			
Type I	0.01	-0.02	0.05
Type II	0.02	0.00	0.07
<b><u>2018</u></b>			
Type I	0.02	0.00	0.04
Type II	0.02	0.01	0.02

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 and index values greater than 0.10 as high confidence indicators of disproportionality

## ISU PD Disproportionality Indexes for 2019 - 2017

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

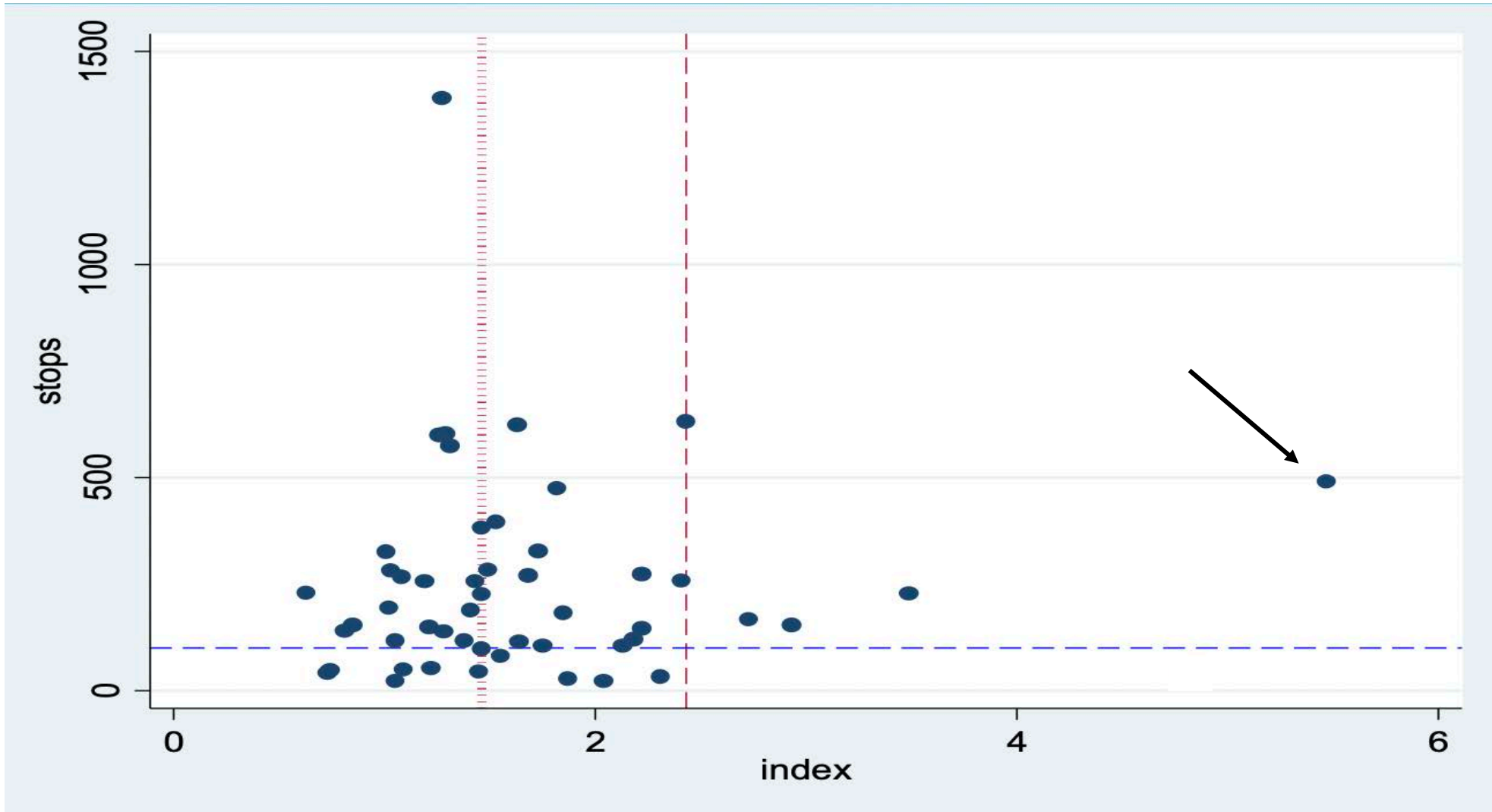
# Generalizations

- For both agencies, nearly all department-level indexes were less than 0.05 for all years of the study
  - Reader should have low confidence that these findings suggest significant levels of disproportionality
- Generally higher levels of disproportionality at night than during the day
- Levels of disproportionality are decreasing for ISU

# Individual Officer Index

- These charts are mainly useful qualitatively as an internal benchmarking instrument for comparing officers to one another. 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.

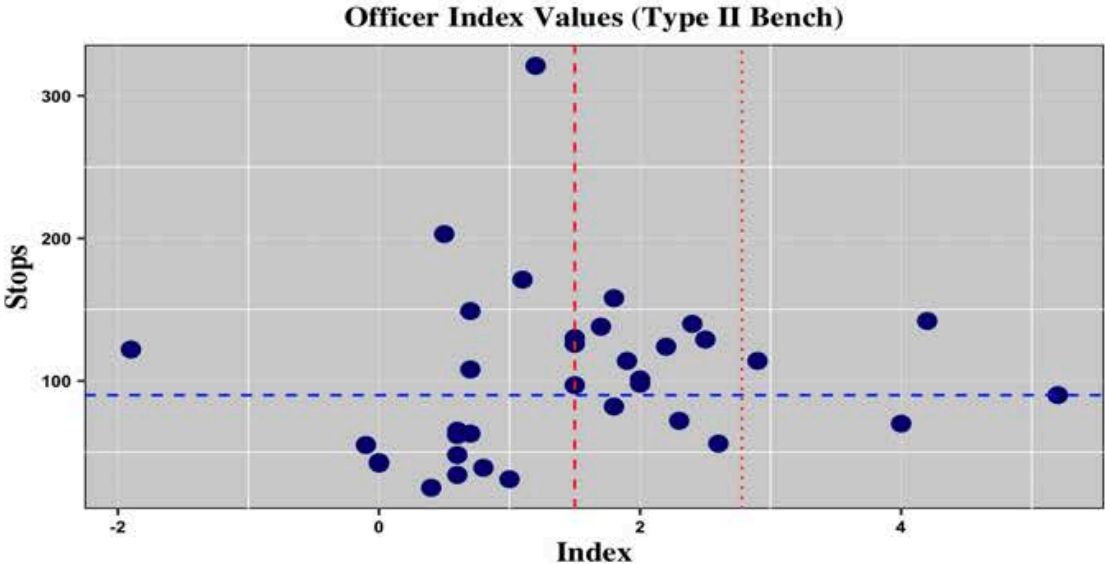
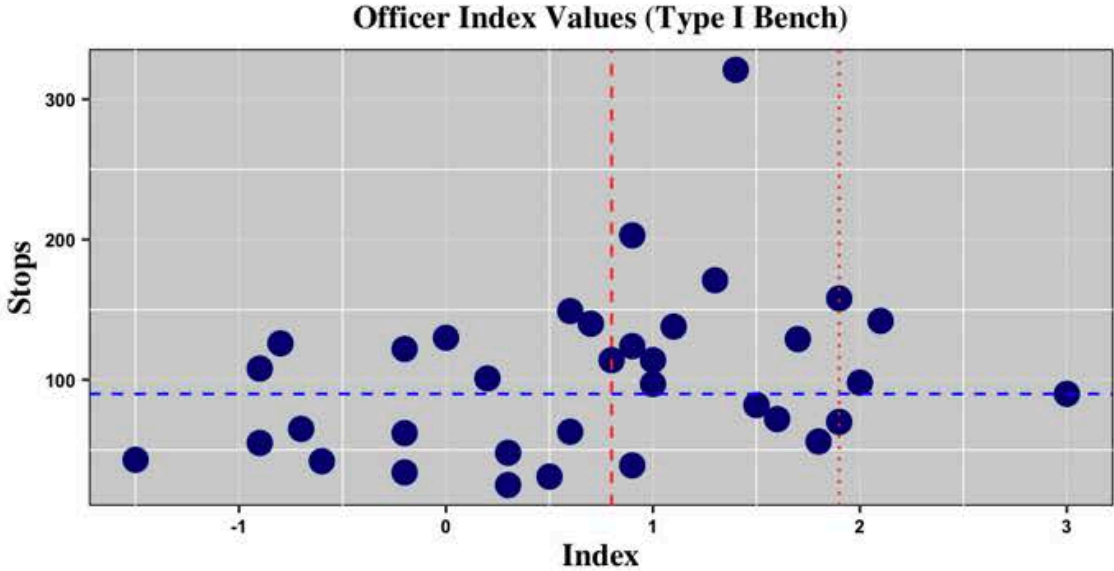
An example (NOT ISU or AMES DATA)



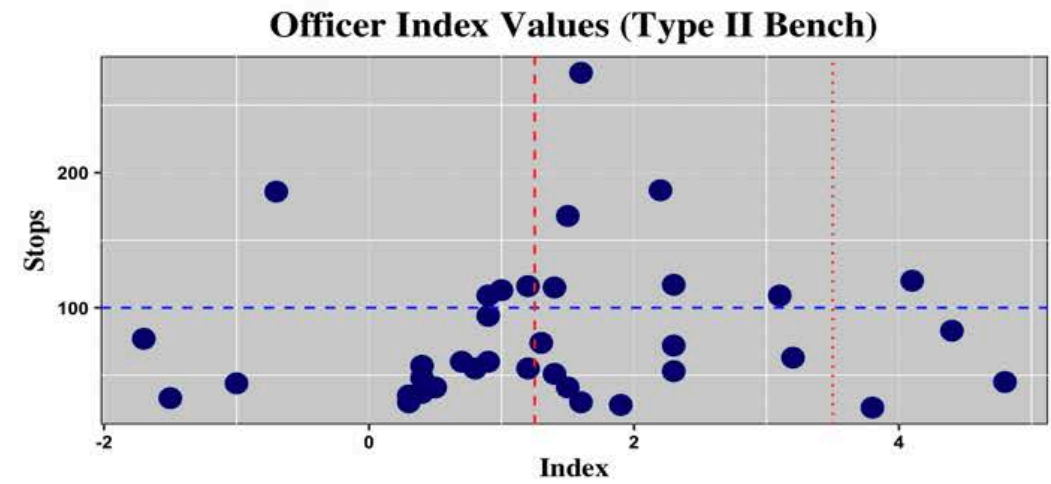
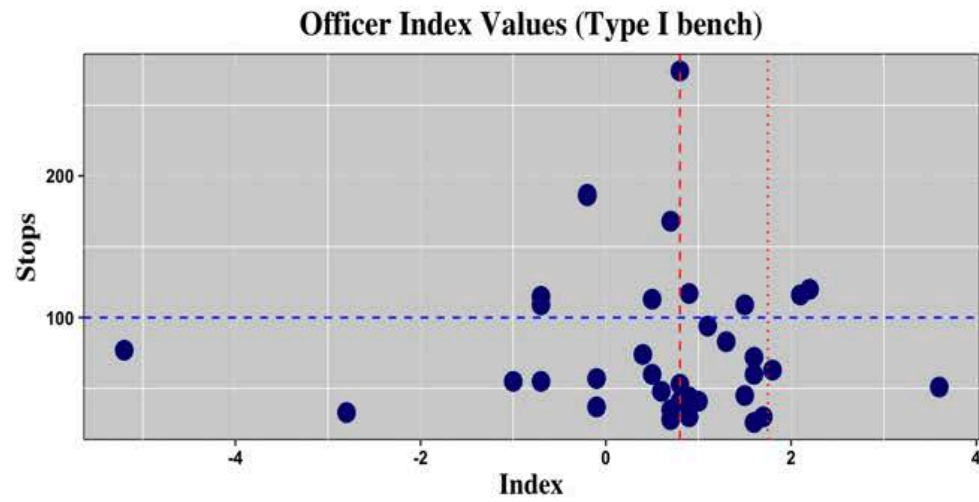


Ames PD Officers

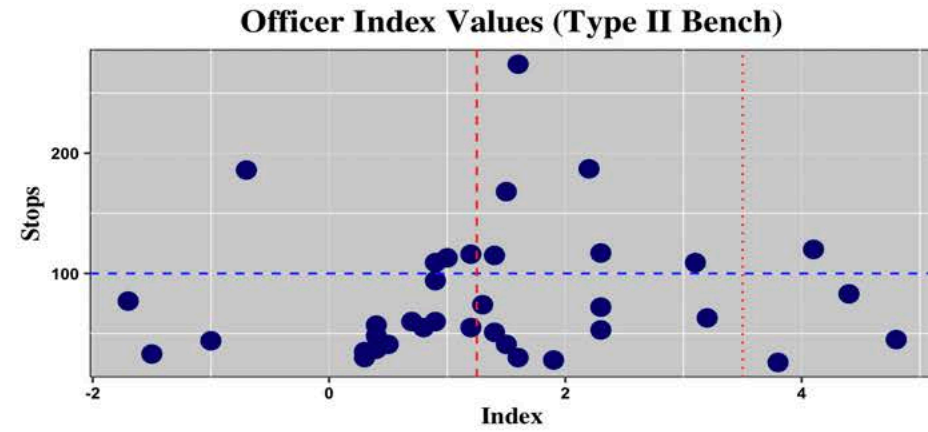
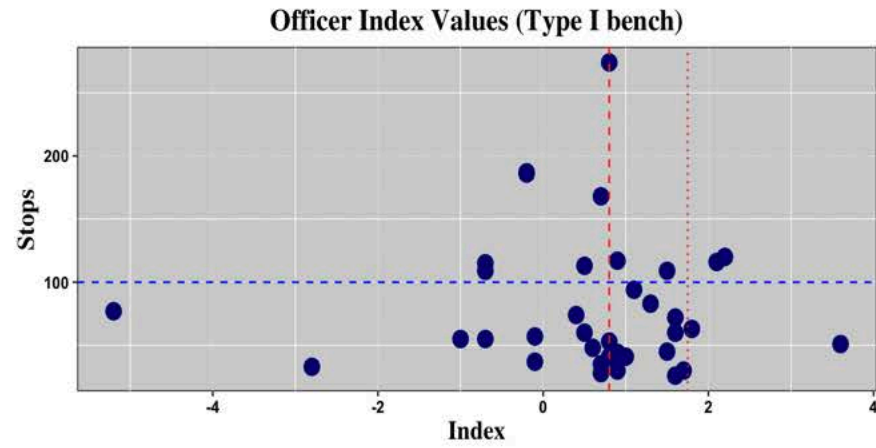
# Charts for 2018



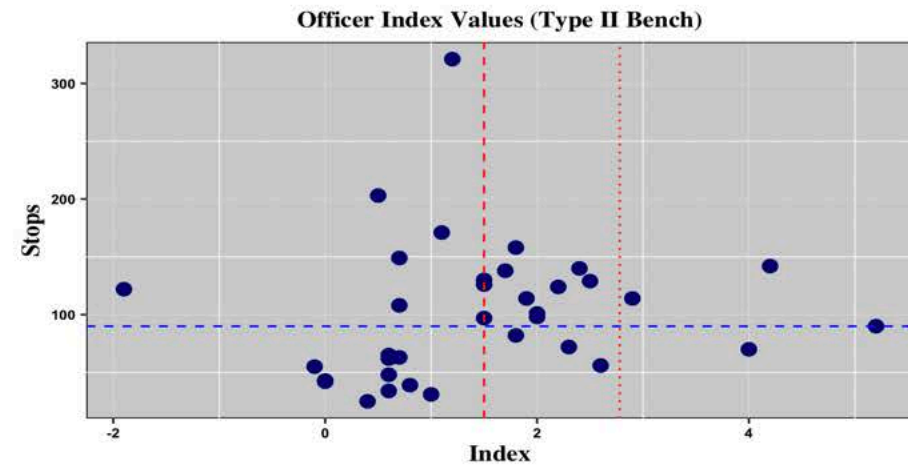
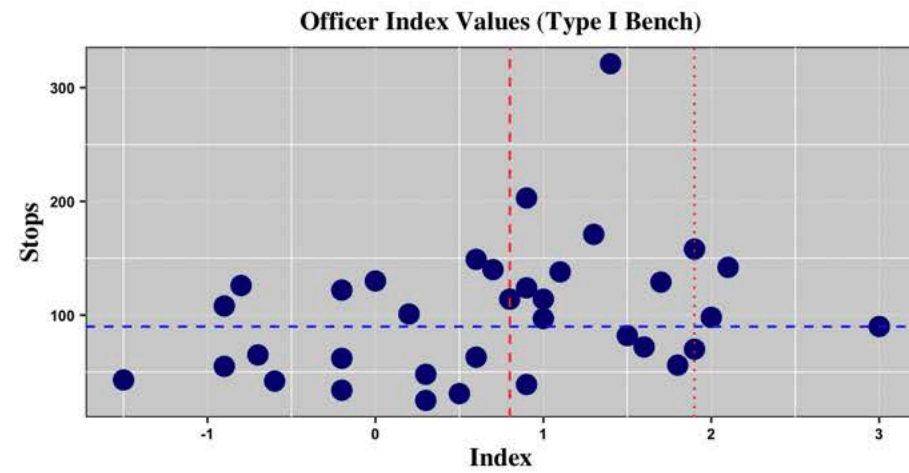
## Charts for 2019



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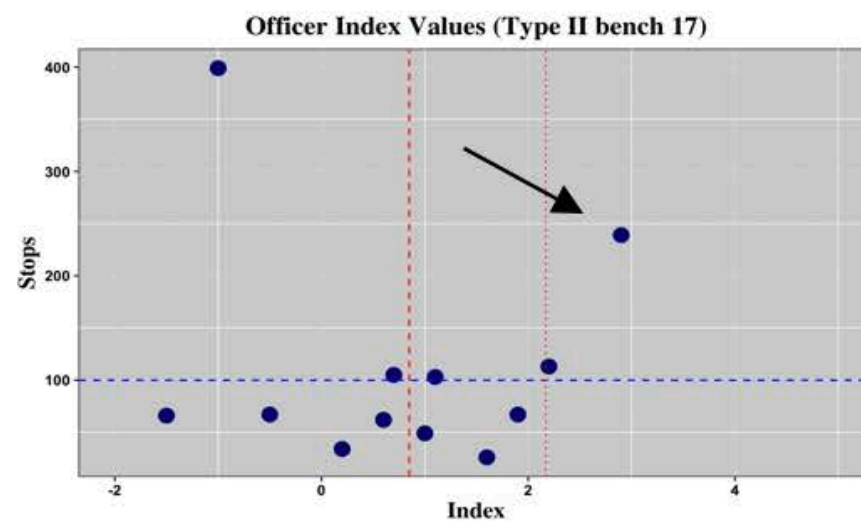
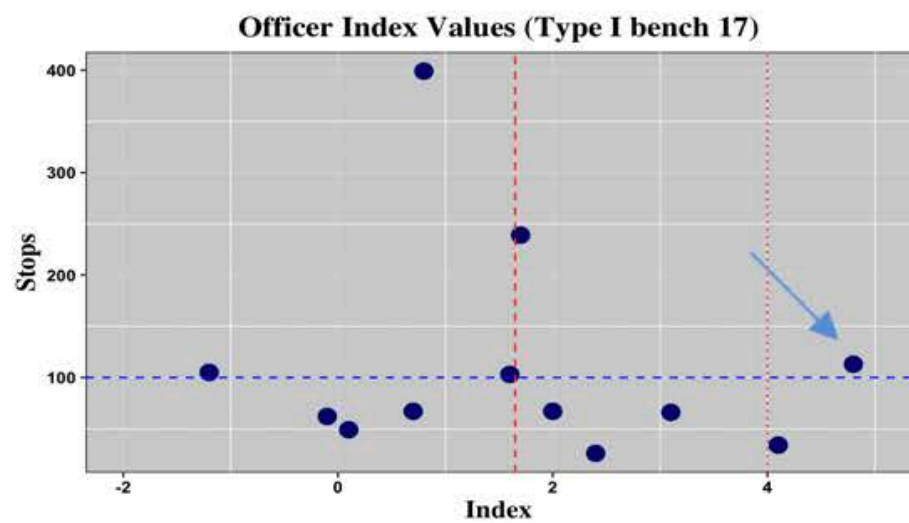


## Charts for 2018

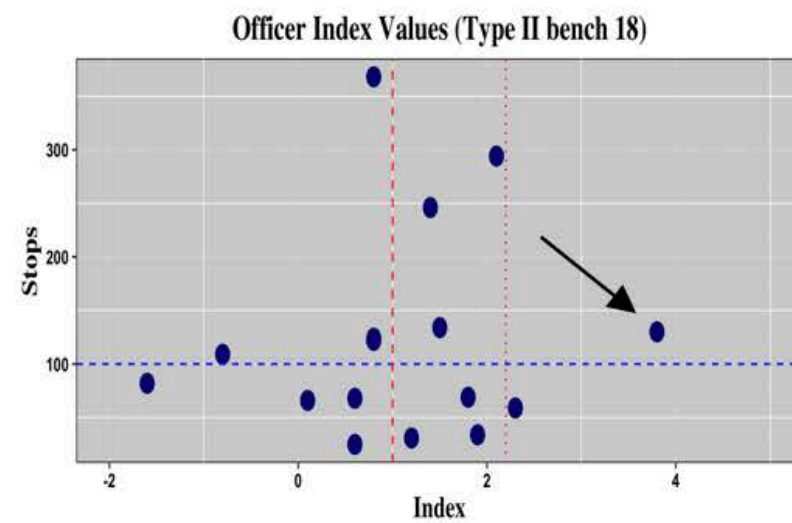
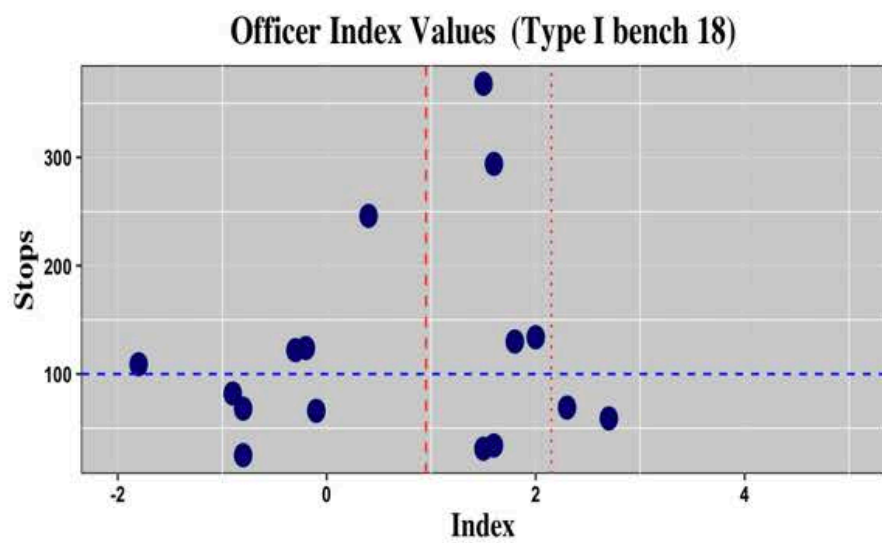


ISU PD Officers

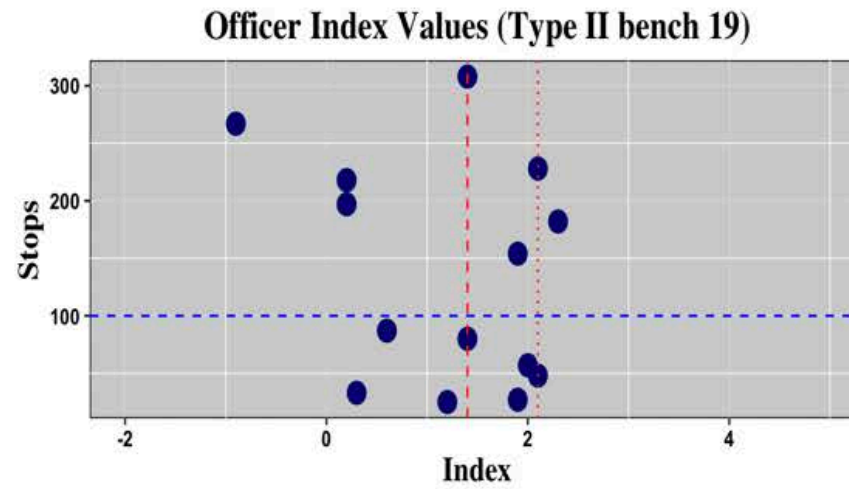
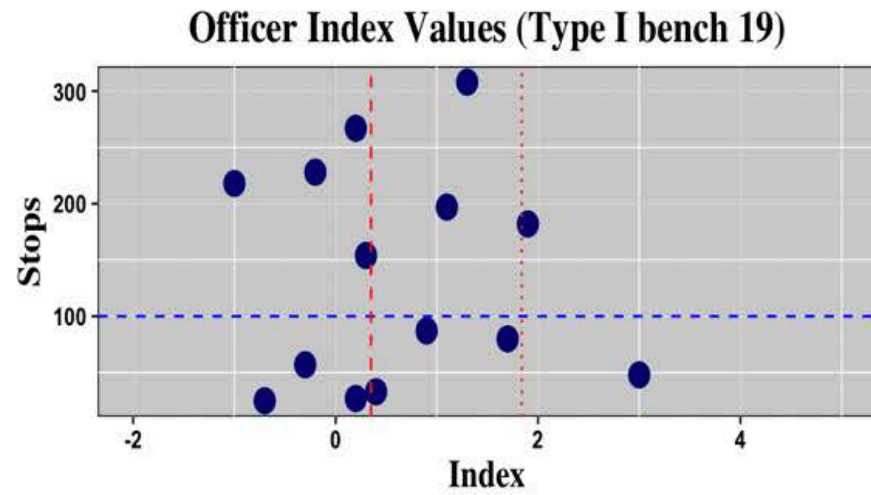
## Charts for 2017



## Charts for 2018

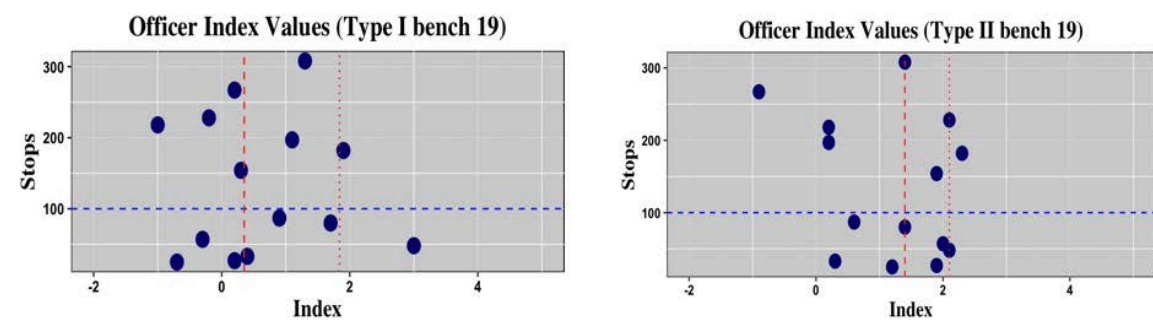


## Charts for 2019

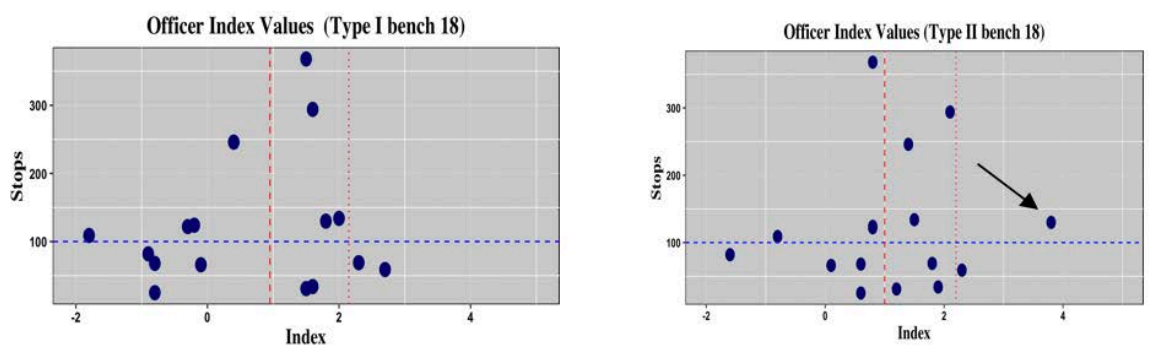




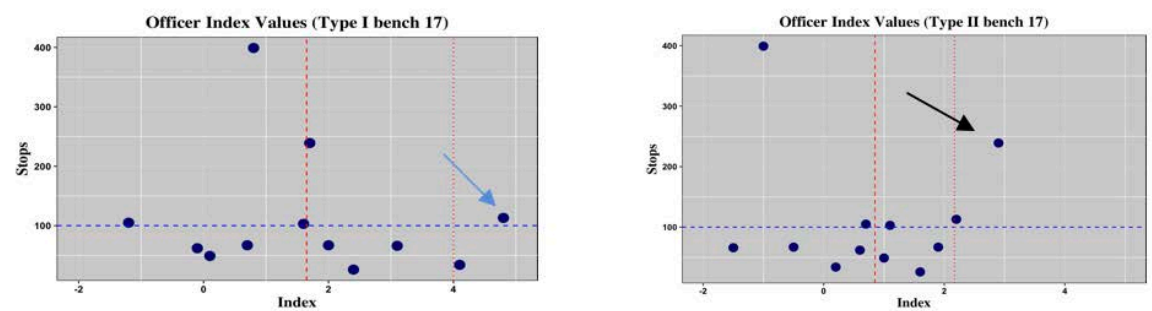
Charts for 2019



Charts for 2018



Charts for 2017



# Generalizations

- For both departments, in the most recent charts, officers' index values are generally clustered together with no outliers.
- ISU-PD earlier years: charts in 2017 and the Type II chart in 2018, each contain a single officer that has a conspicuously higher index value than other officers
- ISU-PD: officers denoted by arrows in previous years no longer appear as outliers in 2019

# Stop Outcomes

# Types of outcomes

- Tickets or citations
- Warnings
- Arrests

# A word about arrests

- Nearly all of the arrests made in all years of the analysis—for both types of benchmarks—were for *nondiscretionary* charges.
  - Officer has little or no discretion in deciding to arrest. Essentially, the officer must make an arrest.
  - Some arrests were ‘cite and release,’ meaning the driver was issued a summons in lieu of being taken to jail.

# A word about odds-ratios

- 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.

Ames PD Type I

<b>2019</b>	<b>Odds Ratio</b>	<b>Probability &lt;</b>
Citations	0.75 (1.33)	0.08*
Warnings	1.17 (1.26)	NS
Arrests	1.46	0.05
<b>2018</b>	<b>Odds Ratio</b>	<b>Probability &lt;</b>
Citations	0.95	NS
Warnings	0.95	NS
Arrests	1.25	NS

\* NS indicates not statistically significant.



Ames PD Type II

<b>2019</b>	<b>Odds Ratio</b>	<b>Probability &lt;</b>
Citations	0.635 (1.57)	0.01
Warnings	1.12	NS*
Arrests	2.33	0.001
<b>2018</b>	<b>Odds Ratio</b>	<b>Probability &lt;</b>
Citations	0.77 (1.29)	0.05
Warnings	0.95 (1.05)	NS
Arrests	1.85	0.001

\* NS indicates not statistically significant.

# Ames PD Stop Outcomes Summary

- **Citations and warnings**: The information suggests that when compared to 2018, nonwhite-driver disproportionality in citations decreased in 2019 for both types of odds ratios. Results suggest white drivers were more likely to receive ticket than others
- **Arrests**: Disproportionality in arrests increased in 2019 for both types of odds ratios. Taken together, the findings suggest greater disproportionality in arrests involving African American drivers than in other people of color.
- As noted, 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.

ISU-PD Type I

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

\* NS indicates not statistically significant.

ISU-PD Type II

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

\* NS indicates not statistically significant.

# ISU PD Stop Outcomes Summary

- **Citations and warnings**: Results suggest that for type I, when compared to earlier years, nonwhite-driver disproportionality in citations and warnings decreased in 2019. The information for Type II is substantively similar. When compared to earlier years, nonwhite-driver disproportionality in citations and warnings decreased in 2019
- **Arrests**: Disproportionality for both Type I and Type II odds ratios increased in 2019. Taken together, the findings suggest greater disproportionality in African American arrests than in others.
- As noted, 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.



# Conclusions

- 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 for both departments
- Individual officer analysis suggests no clear outlier officers in disproportionality for 2019.
- The results for the analyses of stop outcomes indicate decreasing and comparatively low levels of disproportionality in stop outcomes for citations and warnings.
- 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.

# Limitations of the study

- 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. Consequently, some important information was not available.
- The classifications for the reason for the stop were in some cases ambiguous.
- Some nondiscretionary stop information resulting from traffic accidents may have been included in the data.