Summary of Results ICPD Traffic Study 2015

In recent years some residents of Iowa City, Iowa have expressed concern over the potential for racial bias in the City's police department's traffic stop activity. In response, the City retained our research team to analyze the Iowa City Police Department's traffic stop data. The focus of our investigation was an assessment of racial disparity in traffic stops, with a goal of evaluating two broad categories of discretionary police traffic stop conduct: *(i)* a comparison of the demographic information of drivers stopped by the ICPD to a valid benchmark and *(ii)* an analysis of racial disparity in the outcome or disposition of a stop.

To evaluate traffic stop demographics our team utilized a driver-population *benchmark* fashioned from roadside observations and census data. In Iowa City, the population characteristics of some neighborhoods vary across areas of the city. Consequently, the benchmark consists of several observation zones corresponding to one square mile areas in Iowa City (see the map at the end of this document). The traffic observers watched traffic both day and night. The observers surveyed traffic in multiple waves of observations that occurred between 2007 and 2015 and made more than 55,000 total observations. A large portion of these were completed during a survey that was conducted from September 2015 through February 2016 (more than 27,000 observations). During this time, the observers concentrated their efforts on surveying the sections of the community where the ICPD made most of their traffic stops. Figure 1, below gives percentages of stops made by the ICPD across all one square mile zones of the city.

Figure 1. The percent of traffic stops made by the ICPD by zone.
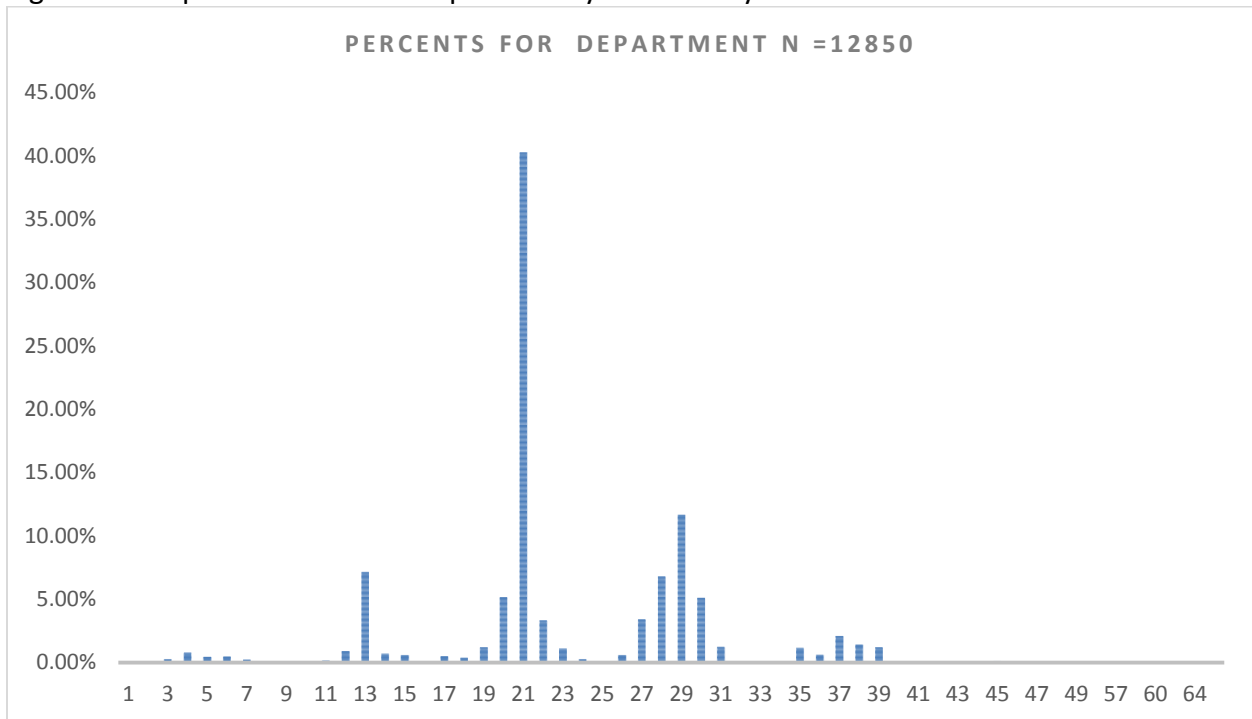
Figure 1 shows that ICPD officers made by far the most stops in zone 21 (the downtown area) followed by zone 29 (which roughly corresponds to the Broadway-Cross Park area of town). The traffic observations and census data used to construct the benchmarks suggests that most sections of Iowa City are relatively uniform in terms of the percentage of minority drivers on the roads. In most areas, the benchmark information indicates that minority members comprise about ten percent of the drivers on the roads. However, in zones 21, 28, 29 and 30 the benchmark percentage of minority drivers was found to be higher than in other areas of the city. Table 1 below gives the benchmark values for all areas of town.

Table 1. The percentage of minority drivers on the road in selected zones

Zone	Days		Nights	
	White & Asian	Minority	White & Asian	Minority
21	93%	7%	82%	18%
28	86%	14%	86%	14%
29	75%	25%	68%	32%
30	83%	17%	83%	17%
All other areas	90%	10%	90%	10%

Evaluation

The process of comparing police data to the benchmark is straight forward. It centers on identifying differences between the racial demographic percentages from ICPD traffic stops to the corresponding benchmark information. Any difference between benchmark values and police data signifies **disproportionality**. Figures 2 and 3 give the day and night comparisons of ICPD traffic stop driver's race percentages to benchmark values for the areas of town were the most stops were made.

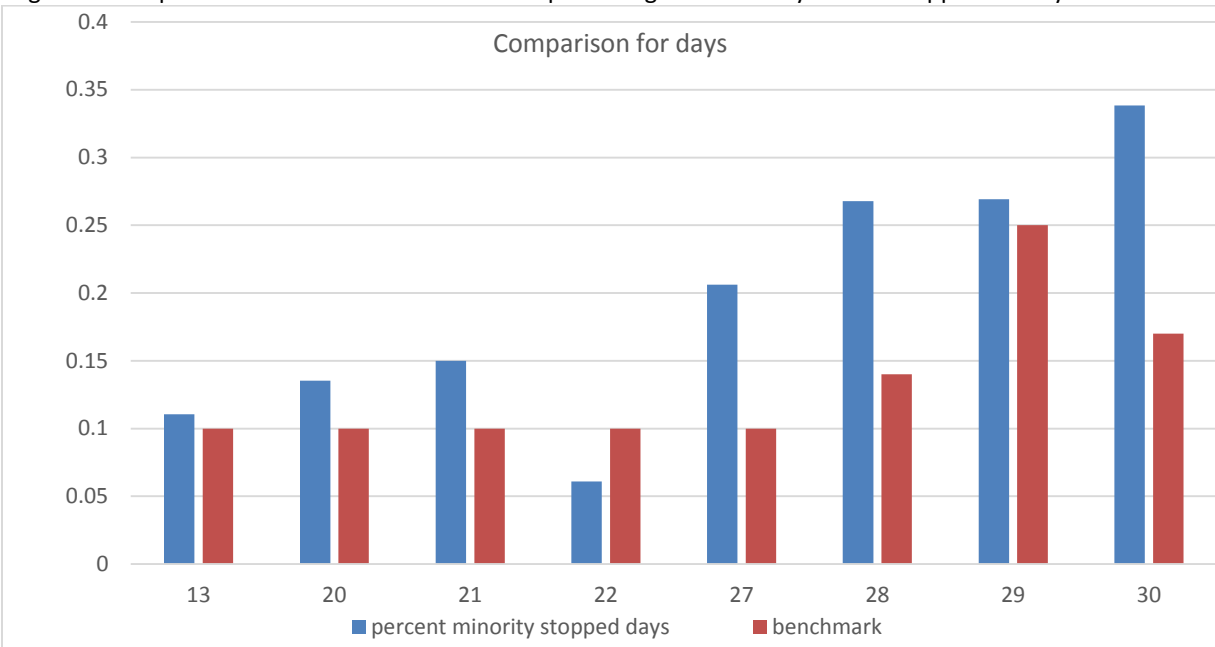Figure 2. Comparison of benchmark values to the percentages of minority drivers stopped for days.
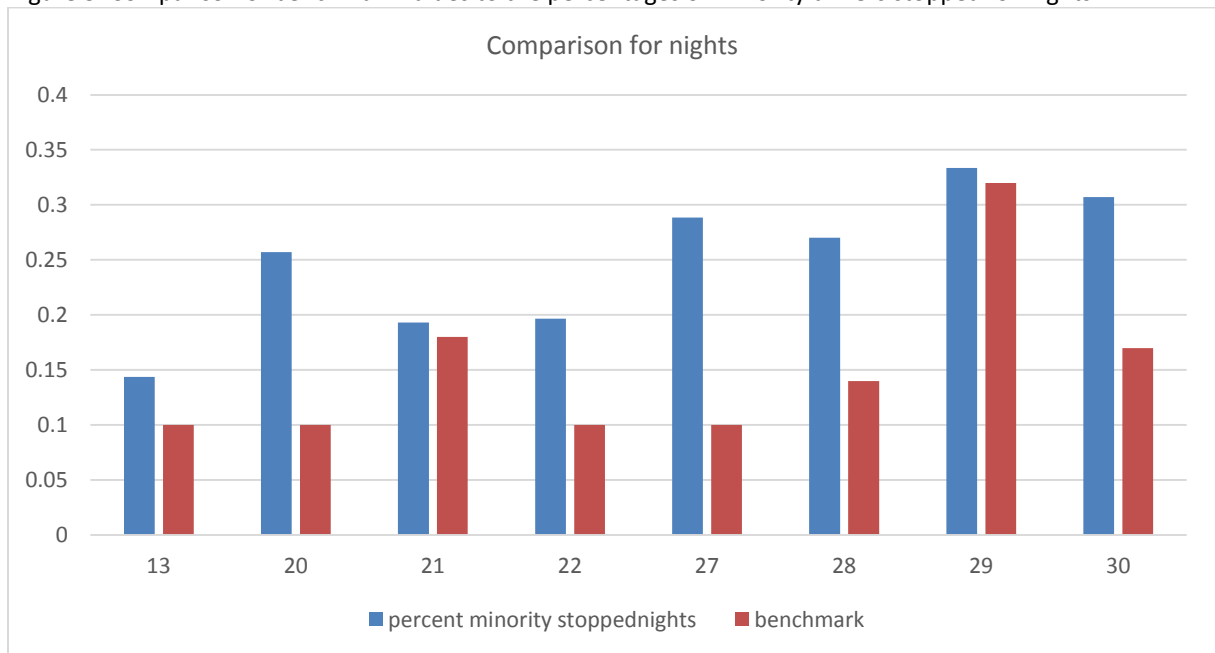

Figure 3. Comparison of benchmark values to the percentages of minority drivers stopped for nights.


Figures 2 and 3 are very similar. Each shows some degree of disproportionality between police traffic stops involving minority drivers and observational benchmark values. For each figure, the

highest degrees of disproportionality tended to be concentrated in areas where the *fewest* stops were made. Correspondingly, the degree of disproportionality was much lower in the areas where the most stops were made—like zones 21 and 29. We computed a disparity index that is useful in assessing the average level of disproportionality across all areas of the city. For each zone, the index equals the difference between the percentage of minority drivers stopped and the benchmark value, weighted by the number of traffic stops made in the zone. When summed across all zones, this index gives a ballpark estimate of disproportionality. Results show the index equals approximately 5% for both days and nights, meaning across all areas of the city, the weighted average degree of disproportionality was approximately five percentage points higher than the corresponding benchmark values. It is important to keep in mind that the roadside observations that form the benchmark are generated from a *sample* of the drivers on the roads. As such, the index values should be treated as *estimates* and interpreted with a generous degree of latitude in terms of margin of error.

Officer Level Analysis
Next we computed disparity index values for each officer making at least twenty stops in 2015. The index is calculated by assessing two ratios: the percentage of minority drivers stopped against the minority benchmark to the percentage of White & Asian drivers stopped against the White & Asian benchmark. Figure 4, gives the index values.

Figure 4. Individual officer disparity index values
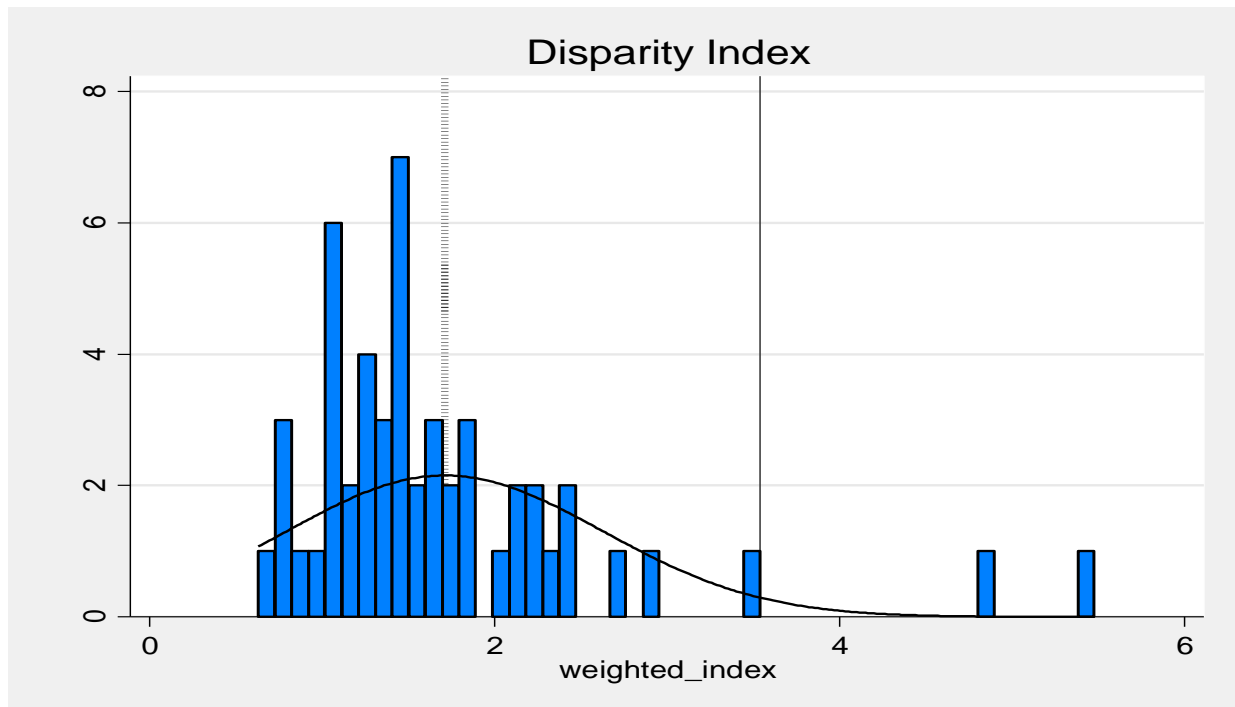
The horizontal axis in figure 4 shows the disparity index values. Scores greater than one indicate disproportionality. The greater the value, the more disproportionality. For instance, a score of two suggests that minority drivers were twice as likely to be stopped as were other drivers. The

blue bars in the graph signify a given officer's score. The vertical axis shows the frequency or number of officers with a given disparity index score. A unit normal curve is superimposed across the distribution of officers' scores. The two solid vertical black lines show important markers of the distribution. The thick line gives the mean disparity index value for all officers. This equals 1.71. The thin vertical line shows an index value that is two standard deviations above the mean. This value equals 3.54. In a normal distribution, values greater than two standard deviations above the mean occur with a low probability.

Most of the officers' disparity index scores in figure 4 are tightly grouped together about the mean. However, there are two values that are quite different from the rest. These two values sit well beyond two-standard deviations above the mean. Sampling theory suggests that scores this extreme are unlikely to be due to chance. It is important to note that extreme values like these also pull the mean of the entire distribution higher. When the two extreme scores are ignored, the mean of the distribution becomes 1.62 (with a median of 1.46). Given that the extreme index values suggest that minority drivers are four to five times more likely to be stopped than others, these values indicate a high degree of disproportionality.

Stop Outcomes
Next we examined trends in stop outcomes. We assessed disproportionality in citations, arrests, consent searches and *hit-rates* or seizures from consent searches over a ten year period using an odds ratio-ratio. Like the disparity index above, odds-ratio values greater than one indicate disproportionality. Each odds-ratio is computed by comparing the ratios of exposure to non-exposure (for example, comparing the probability of receiving a citation to not receiving a citation) for minority and non-minority drivers. The figures below give the odds-ratios.

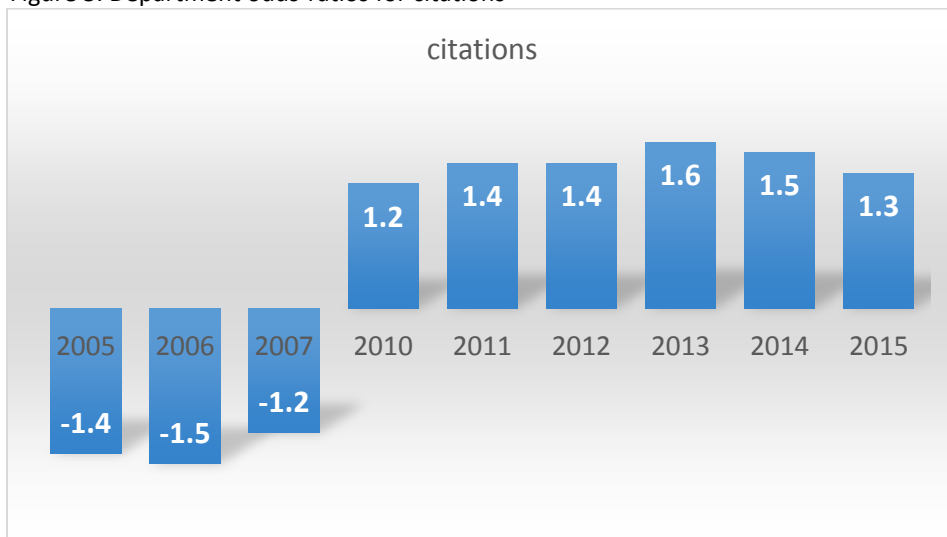Figure 5. Department odds-ratios for citations
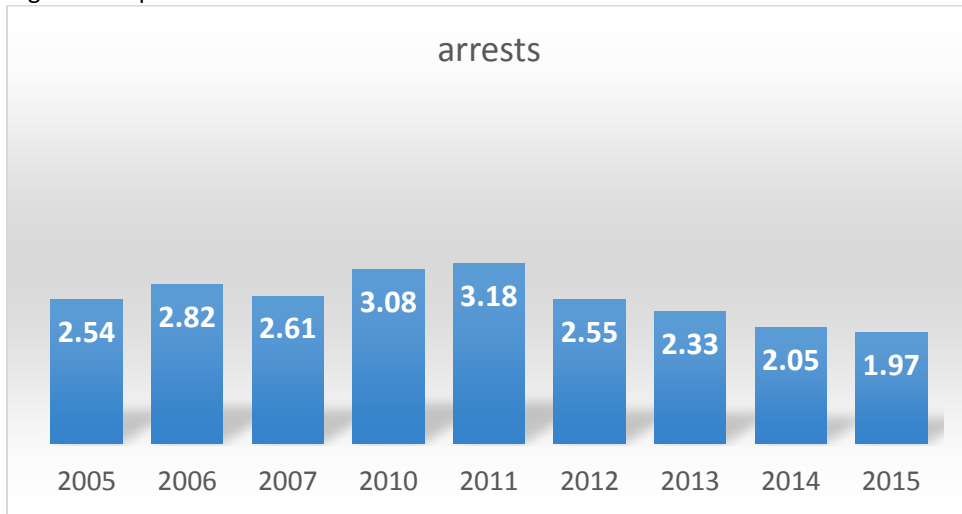
Figure 6. Department odds-ratios for arrests

arrests

2005	2006	2007	2010	2011	2012	2013	2014	2015
2.54	2.82	2.61	3.08	3.18	2.55	2.33	2.05	1.97

Figure 7. Department odds-ratios for search requests

search requests

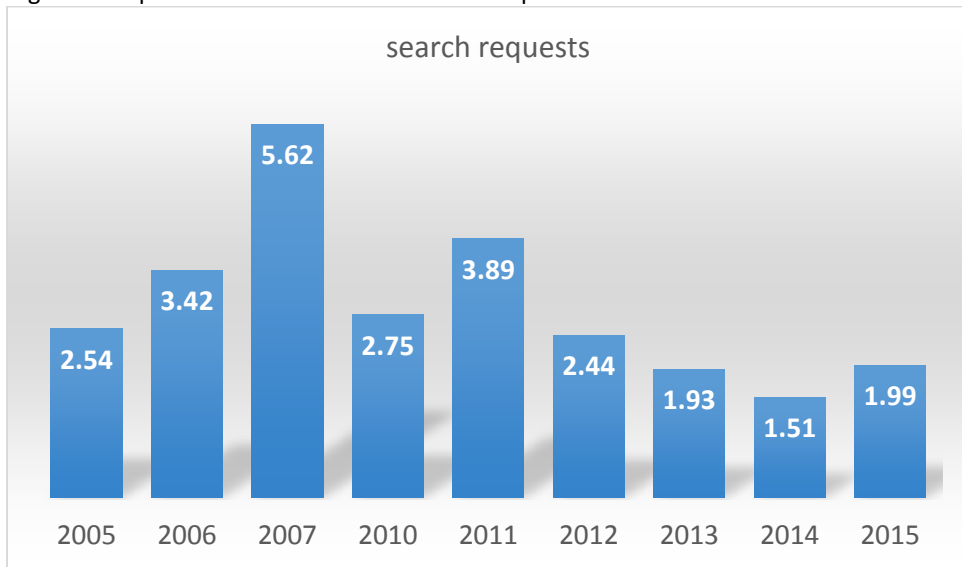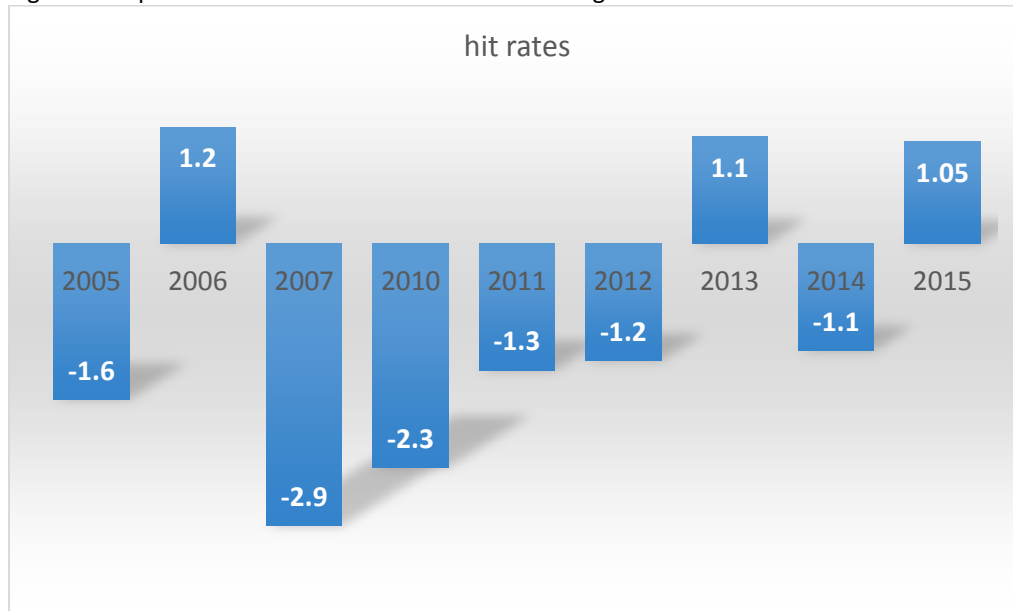| 2005	2006	2007	2010	2011	2012	2013	2014	2015
2.54	3.42	5.62	2.75	3.89	2.44	1.93	1.51	1.99

Figure 8. Department odds-ratios for hit-rates resulting from consent searches

Interpretation

The odds-ratios for citations in figure 5 indicate that disproportionality in citations for minority drivers has increased over the last ten years. In 2005-2007, White & Asian drivers were more likely to receive a citation as the result of traffic stop than were minority drivers. This pattern reversed in 2010. From that year on, minority drivers were on average about one-and-a-half times more likely to receive a citation than were non-minority drivers. Note, that even though the results indicate a degree of disproportionality, the values of the most recent citation odds ratio are fairly close to one, suggesting a comparatively low level of disproportionality.

The odds-ratios for arrests shown in figure 6 have been declining over the last four years. In 2015, minority drivers were about twice as likely to be arrested during a traffic stop as were White & Asian drivers. This value has been steadily declining every year since 2011—when minority drivers were 3.18 times more likely to be arrested compared to other drivers.

The odds ratios for voluntary search requests in figure 7 have also been decreasing over the last several years of the study. Voluntary search requests occur in contexts where the circumstances of the stop do not permit an officer to search based on probable cause. The driver must give the officer voluntary consent. The information in figure 7 shows that in 2015 officers were about twice as likely to request a search from a minority driver as from others. This value is down from 5.62 in 2007.

Finally, the information in figure 8 for hit-rates is mixed. In comparison to White & Asian drivers, in some years officers were more likely to seize evidence or contraband from minority drivers as the result of a voluntary search. However, in other years the opposite was true.

Additionally, the odds ratio values for each year were comparatively low. This information suggests that officers were about equally as likely to make a seizure during a voluntary search from non-minority drivers as from minority drivers. So taken together, the information in figures 7 and 8 suggests that although the odds were about the same that a seizure would be made during a voluntary search of minority and non-minority drivers, officers still were about twice as likely to request such a search from a minority driver.

Bullet-Point Conclusions and Suggestions

➢ Results suggest a degree of racial disproportionality in traffic stops conducted by the ICPD. A ballpark estimate of the level of disproportionality indicates that minority drivers were stopped on average about five percentage points above observational benchmark values.

➢ Comparatively little traffic stop disproportionality was found in areas of town where the bulk of the traffic stops were made. Instead, most disproportionality occurred in areas where stops were less frequent.

➢ Individual officer analyses show that two officers' disparity index values were considerably higher than other officers' values.

➢ Disproportionality in most stop outcomes has decreased in recent years. The single exception is citations, where disproportionality increased. It should be noted however, that odds-ratio values for citations were comparatively modest.

➢ In recent years, officers were about twice as likely to arrest a minority driver as others during a stop

➢ In recent years, officers were about twice as likely to request a voluntary search from minority drivers as from other drivers. This occurred even though seizures or hit rates resulting from voluntary searches were about the same for minority and non-minority drivers.

➢ Overall, results suggest that the levels of disproportionality in stop outcomes has been trending lower. We suggest that the City continue to monitor these indicators for at least the next couple of years.