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A Look Into Demographic-Based Police Leniency

Introduction:

The Stanford Open Policing Project has used a variety of statistical measures to establish that racial profiling by police does exist within the United States. More specifically that Black and Hispanic drivers are searched more often than Whites. Although I didn't know that fact had previously been quantified, I definitely was not surprised. I was intrigued by these findings and wanted to see what other insights I could draw from the datasets: primarily, if other biases exist after a car is stopped. I decided to look into how lenient police officers are post-stop to examine potential biases. To standardize what people were being pulled over for, I filtered the data to look only at speeding violations. I will concede that this data is not completely neutral because speeding violations can range drastically in severity and that certain demographics may speed with greater intensity. To measure leniency I do not take into account cases in which a search was initiated but instead the difference between citation and warning rates for different demographics. I decided to conduct this analysis of speeding outcomes on combinations of race, sex, age, and wealth of a subject. I decided to conduct primary research using data from Illinois due to the state's robust quantity of data points over several years in addition to its geographic and racial diversity.

Findings:

The very first test I did was examining the relationship between a subject's race and their odds for getting a warning or a citation. The results were generally in line with some preliminary expectations I had considering the findings from the original research paper. I wanted to account for population differences with different racial groups so I decided to do a simple calculation that used the stopped population as my baseline for the racial breakup. From there, I calculated the

mean across all stops for warning and citation rates. I then compared these values on a chart. Out of all ethnic groups, it is evident that white people have the greatest likelihood of getting a warning as opposed to a ticket at a 45.9%. This quantity is 9.09% greater than hispanic people and 7.70% more likely than black people.

	subject_race	warning_rate	citation_rate
	<fct>	<dbl>	<dbl>
1	asian/pacific islander	0.374	0.626
2	black	0.382	0.618
3	hispanic	0.360	0.640
4	white	0.459	0.541
5	other	0.380	0.620
6	NA	0.0192	0.981

I wanted to explore a similar calculation with women and men. I used a benchmark test to obtain the following results. I thought it was interesting that females were more likely to get a warning 3.2% more than men. However, this could also be attributed to outside factors. Studies have shown that women are safer drivers behind the wheel which may translate to women receiving more minor speeding violations which are more likely to result in a warning as opposed to a ticket.

	subject_sex	warning_rate	citation_rate
	<fct>	<dbl>	<dbl>
1	male	0.421	0.579
2	female	0.452	0.548
3	NA	0.0645	0.935

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I wanted to see if the relatively small gap between men and women for warning rates would produce more insights if it was also compared with race. It was interesting that sex appeared to play a larger role in certain racial populations for traffic stops. Black males and females had the least gap in their warning rates at about a 0.7% difference while hispanic and

white had a sex disparity of 3.4%. Cumulatively this means that white women have a 47.9% chance of getting a warning instead of a ticket while hispanic males have a 34.9% chance of getting a warning. I then examined the largest difference in warning rates which was hispanic males and white women. This value was 13% which is roughly 4% greater than the difference obtained from examining (figure 1).

1	male	asian/pacific islander	0.364	0.636
2	male	black	0.385	0.615
3	male	hispanic	0.349	0.651
4	male	white	0.445	0.555
5	male	other	0.367	0.633
6	male	NA	0.0209	0.979
7	female	asian/pacific islander	0.395	0.605
8	female	black	0.378	0.622
9	female	hispanic	0.383	0.617
0	female	white	0.479	0.521
1	female	other	0.407	0.593
2	female	NA	0.0145	0.986