CPDBP: Injury Trends
Checkpoint 2: Visualization

By: Hawkins Gay, Alex Leidner, Ramsey Wehbe

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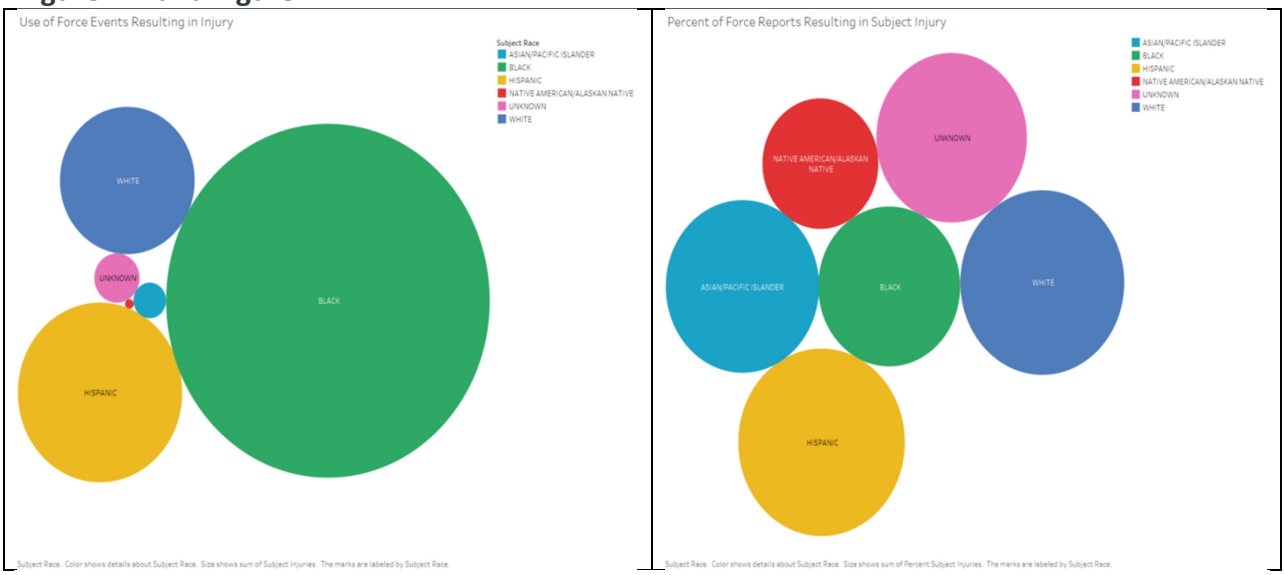
Question 1: Use of force incidents by demographics (race, gender, age) and percentage that result in injury or lead to emergency medical attention

Our first goal was to assess if there were other factors that could be correlated with harm during a use of force event. In this question, we provide two approaches to the proposed stratifications. First, we evaluate the total number of injuries per strata. Next we assess the percentage of force resulting in injury, this can speak to the likelihood of an individual force event to result in harm, as well as which did not result in harm. In these first images, we can see obvious trends like the number of injuries sustained are not proportional to the demographics of Chicago. While 30% of Chicagoans are Black, we see that they sustained more injuries than Whites. However, this seems to be a general trend with a higher incidence of the use of force, rather than the force being more likely to result in injury as seen in Figure 1.2.

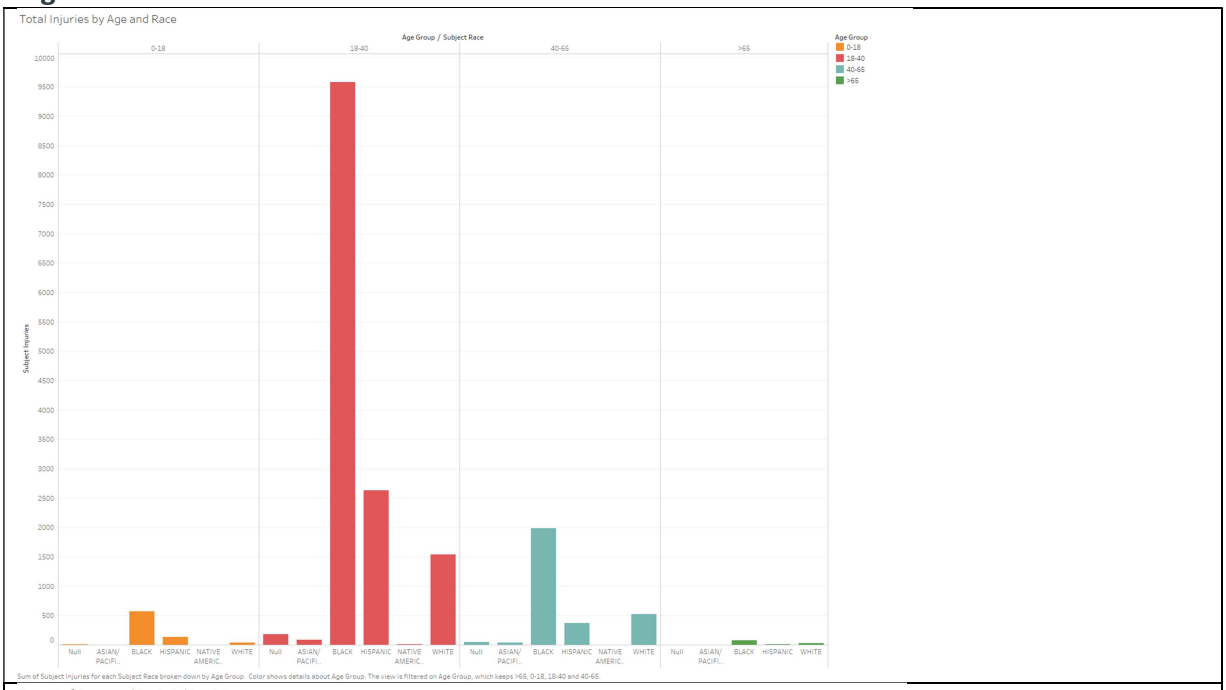
Figure 1.1 and Figure 1.2



When evaluating these same trends by age, it is no surprise that the majority of injuries happen in the 18-40 year old age group and then being to fall off in the older ages. Similar prevalence patterns maintain themselves. Again the percent of force that results in injury does not seem to have a discernable pattern along racial lines. Interestingly, force seems to trend to result in more injury as subject's age. These trends can be seen in Figure 1.2 and 1.3.

Finally when taking into account subject gender and race we can see that males experience more instances of use of force resulting in injury. Black females also do see a disproportionately high incidence of force as well. When the victim of a use of force was a female it appears to be less likely to result in injury. Unfortunately the genders represented in the database are binary so it is hard to draw conclusions from the null category, but for this subset of data we left the null category as is. We make no assumptions on the meaning of this gender, only that the injury pattern appears more similar to the group of males than the group of women. This can be seen from figure 1.4 and 1.5

Figure 1.2 and 1.3



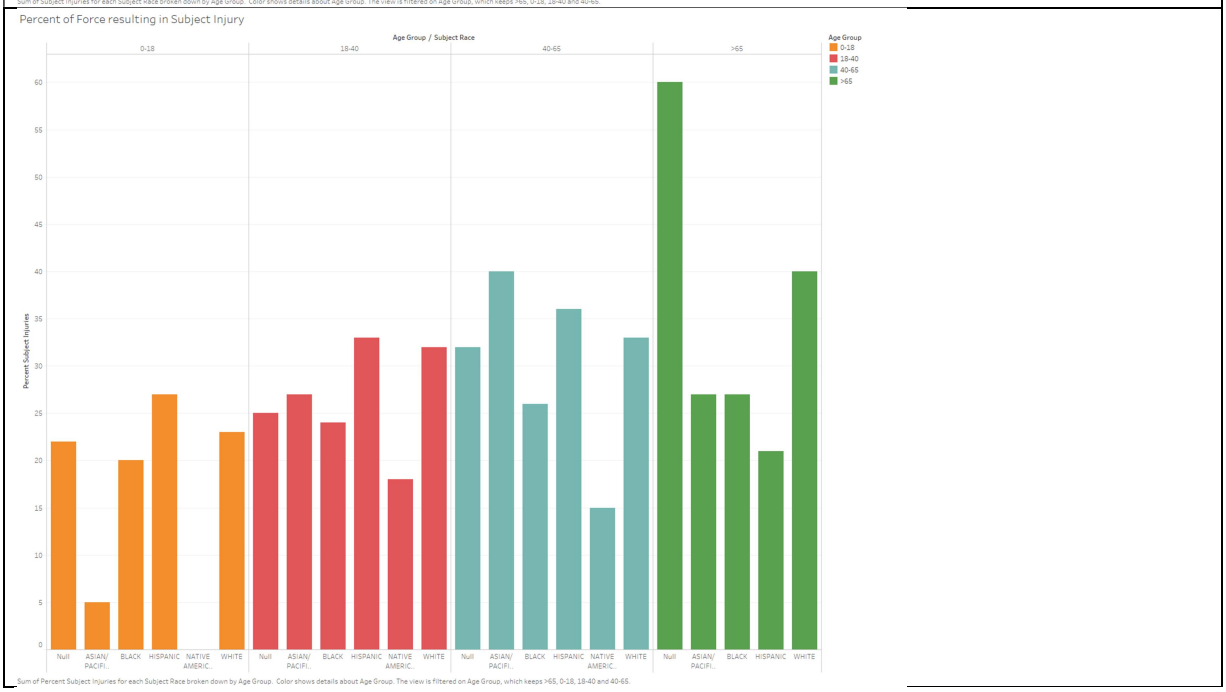
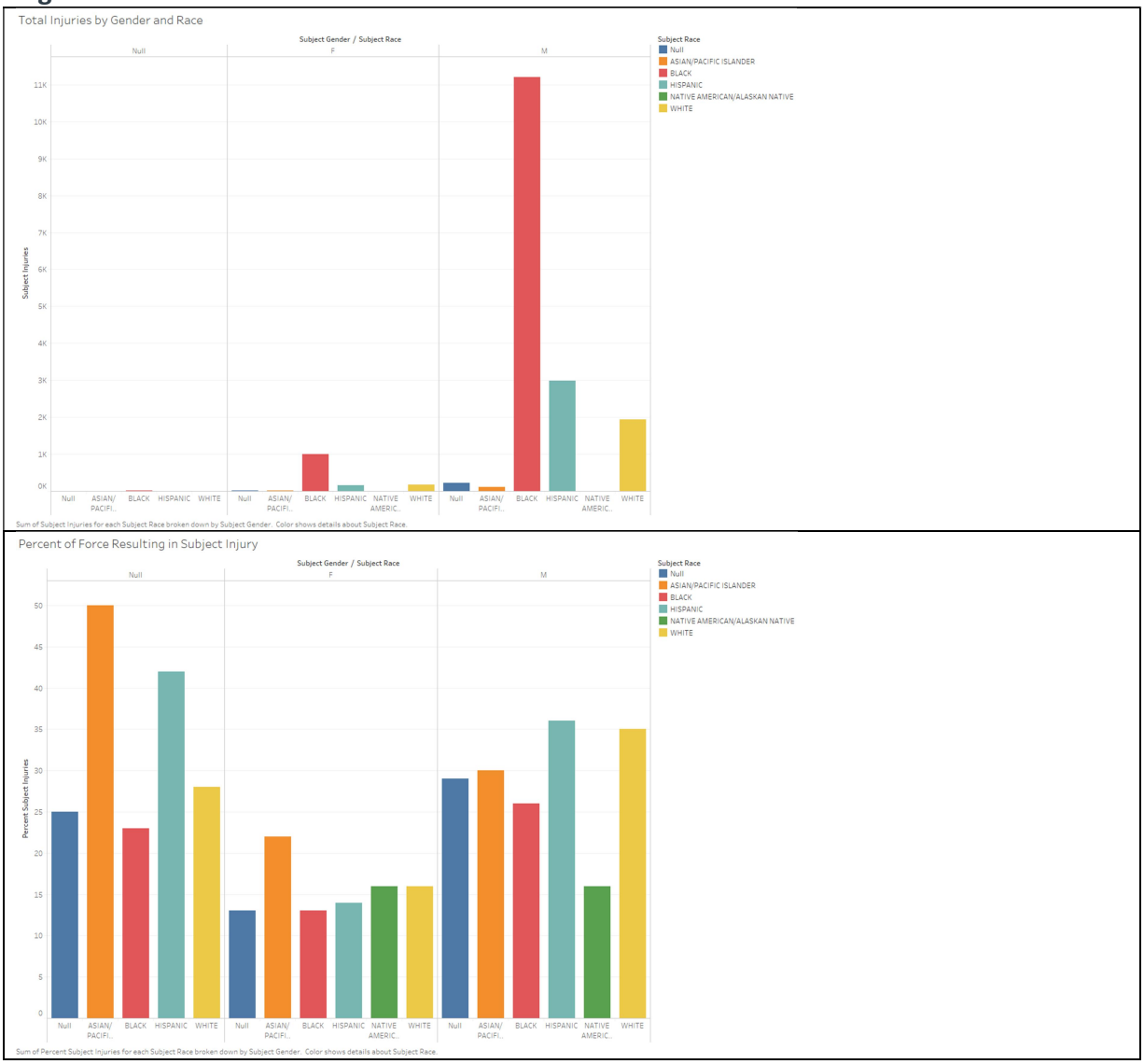


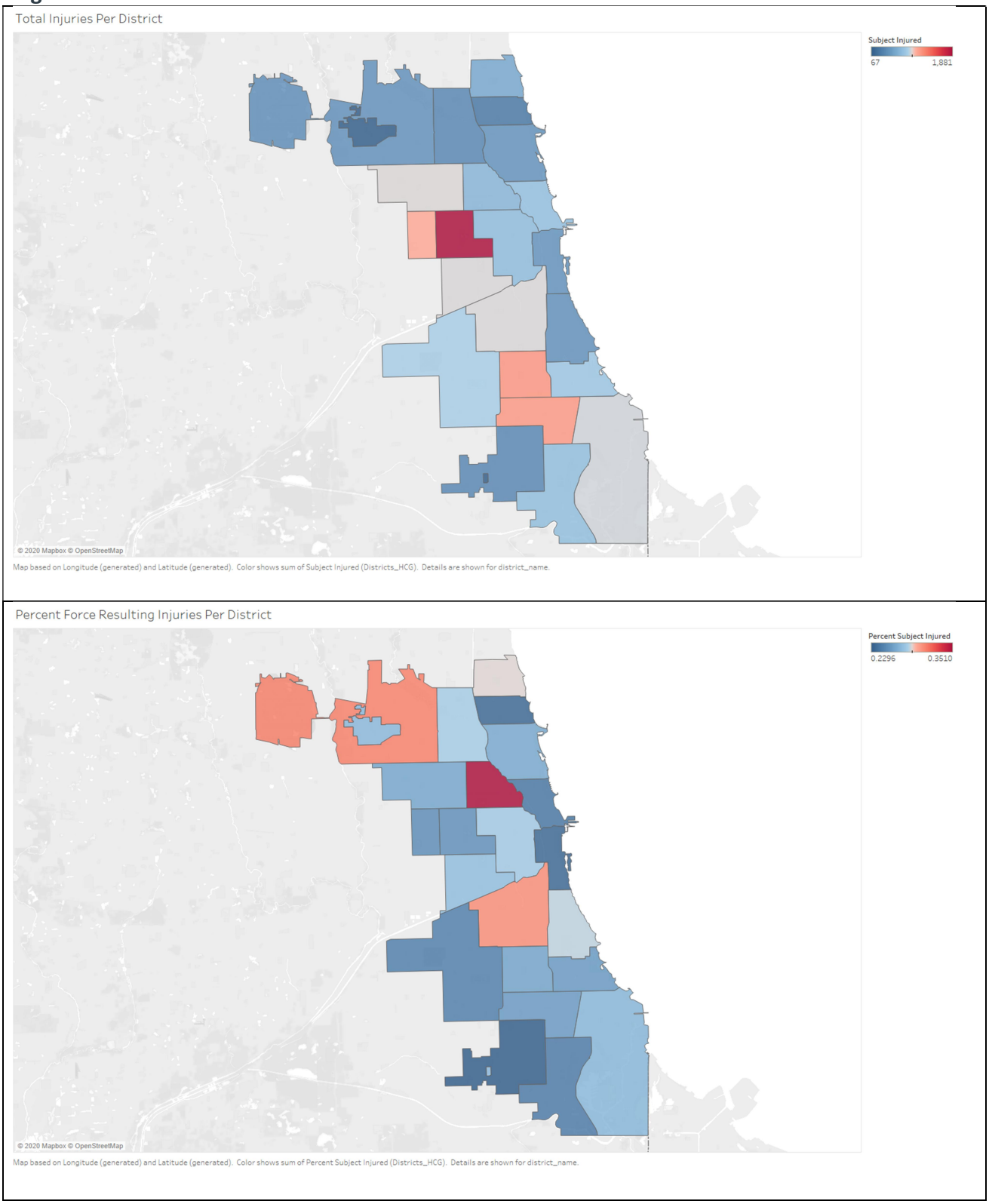
Figure 1.4 and 1.5



Question 2: Symbol/bubble map to assess geographic distribution for proportion of use of force incidents that result in injury.

Most districts appear to have similar amounts of injuries reported on the use of force reports. Interestingly the area in red (district 11) is somewhat well known for violence and even murder. This outlier may not be the result of police misconduct. More interestingly we can see in figure 2.2 that there are some districts that force result in much higher rates of subject injury. While the average injury rate is around 25%, in areas 14 16 and 9, the use of force results in more frequent injury approaching 35%. Further investigation into these area where injury rates exceed others may shed light onto police practices that should be further scrutinized as targets for intervention or at least monitoring.

Figure 2.1 and 2.2



Conclusion:

Minority groups in Chicago appear to be the subject of more use of force reports than Whites. This results in more injuries to minority groups as whole, however in the majority of cases the likelihood of the force to result in injury appears the same across race. There appears to be a slight trend to cause a higher percentage injury as people age, perhaps a place for improvement for officers when dealing with those who are frail. Men appear much more likely to be the subject of injury and force that result in a higher percentage of injury. Certainly there are areas where more people are injured by police in Chicago, however it is difficult to say that this is misconduct due to those areas also being known for violence. Curiously there are other areas where, while not as high in total event, the rates of injury exceed what appears to be the standard of police practice. These areas should be the subject of further monitoring to make sure that training, and use of force in these areas is appropriate. As our previous third question states we hope to be able to further stratify these injury cases to those that are severe and resulted in emergency services after checkpoint five using more detailed report data.