

Checkpoint 3: Interactive Visualization

COMP_SCI 396/496: Data Science Seminar

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An interactive bar graph to observe how the distribution of TRRs by action type (e.g. verbal commands, taser, etc.) changes in relation to police district, subject age, subject race, lighting condition, whether the officer was on or off duty, and the year. Furthermore, we want to observe whether this distribution is dependent on the group of officers being observed. Do officers in the highest percentile of TRRs use specific types of force more than officers in a lower percentile of TRRs?

This question builds off the analysis we performed in Checkpoint 1 to determine how the distribution of TRRs by action type changes in relation to different variables. We wanted to answer this question using a visualization because one of our main takeaways from Checkpoint 1 was that these types of questions are very difficult to draw conclusions from without visualizing the results. We created a dropdown menu for each variable we wanted to consider, allowing the user of the visualization to select specific values to filter the TRR data. The bar chart automatically updates to reflect the filtered data. As we noted in Checkpoint 1, the distribution of TRRs across action types remains relatively stable across different districts, subject ages, subject races, lighting conditions, officer status, and years. Our visualization clearly illustrates this point as the proportion of TRRs in each category remains the same as the data is filtered across these variables.

Given that these conclusions were similar to our conclusions for Checkpoint 1, we wanted to use an interactive visualization to extend upon these findings in the direction of our theme. We wanted to determine whether the distribution remains stable when looking at officers that have TRRs filed against them at different rates. Our initial assumption was that officers with a high TRR percentile might be more prone to using more aggressive types of force (e.g. firearm, taser) as opposed to more mild types of force (e.g. verbal commands). To answer this question, we again used bar charts that only show the top five action types. We decided to use two bar charts for easier comparison where the user can filter by a range of TRR percentiles for each chart. This visualization disproved our initial hypothesis and showed that the distribution of TRRs is the same (i.e. officers use the same types of force in the same proportions) regardless of how often they use force. This is an interesting finding because it suggests that officers who are more prone to using force do not have different tendencies than those who are less prone to using force. It would be much more problematic if the officers in the highest TRR percentile also used more severe types of force.

Future directions:

- Would the publicity of these analyses bring changes in the behaviour of the officers ? Or do Departments increase the accountability of officers' actions ? (This could be observed by a downward trend in TRRs arising from that department, or less aggressive actions corresponding to the TRRs filed)

- Will the current trend of relatively stable TRRs across each category continue or will we see an increase in the “less aggressive” actions (e.g. verbal commands) and a decrease in the more aggressive actions (e.g. use of firearm)?
- Once we get more up to date data (from 2016 onwards), it would be interesting to look into how the distribution of TRRs has changed since the time the consent decree was passed.