

## Theme

Our theme is analyzing the influence that supervisors have on the officers they manage.

## Questions

- Which police units have average complaint\_percentiles above the 75th percentile?
- Which commanders oversee these high complaint units from Q1? What are their personal complaint\_percentiles?
- Across all units, what is the average complaint percentile on a per-unit and per-rank basis?
- How do unit sizes relate to complaint percentiles of units?

## Charts

- Supervisors above the 75th percentile
  - We created 2 horizontal bar charts to tackle the question of the relationship between supervisor complaint percentiles and the complaint percentiles of the units they manage. In the tab named supervisors we can see the supervisors above the 75th complaint percentile and the unit IDs of the units they manage. Isolating these supervisors helps us focus in on the supervisors we will be analyzing throughout our project. Upon hovering, you can see the supervisor's ID number and their unit number. This chart also allows us to understand the amount of officers above the 75th complaint percentile that manage other officers.
- Complaint percentiles of units with supervisors above the 75th complaint percentile
  - The tab named units uses the units that have supervisors above the 75th percentile (displayed in the previous supervisors graph) and shows the unit's complaint percentile. The unit's percentile is the average of the percentiles of each member, which already answers one of our questions. Relating to supervisors, our hypothesis was that supervisors above the 75th complaint percentile would manage units who are also in high complaint percentiles. The graph confirmed our hypothesis. All of the units managed by these supervisors were also over the 75th percentile. This suggests that officers who have high complaint records may influence those they manage to commit misconduct.
- Rank / Unit vs. Complaint Percentile Graphs I & II
  - Both charts represent the breakup of rank and unit vs. the complaint percentile per those ranks/units. Since our original goal was to determine a supervisors influence on their unit, an overall picture of what each rank/unit looks like greatly benefits us. From graph II, it's clear that with all ranks considered, units 153, 6, and 5 have the highest complaint percentile, and for each rank, graph I shows the complaint percentile, as well as the average percentile. These graphs, though

similar in the data they display, show two contrasting views when organized on a per-rank basis and on a per-unit basis, which will aid in identifying units that are at a greater risk of re-offending as a whole, and pair that with the supervisors that manage over them. Of course, in the next checkpoint - the data cleaning checkpoint - we will be sure to “shrink” these graphs, especially graph I.

- D3.js bubble chart
  - Our bubble chart shows the relationship between the unit’s overall complaint percentile and their supervisor’s complaint percentile. Our hypothesis was that units in high complaint percentiles would also have supervisors with high complaint percentiles. Our chart confirmed this. We thought that organizing this data by illustrating the bubble sizes as complaint percentile and also by the unit size would be helpful in 2 ways; Having the bubble size as the complaint percentile shows how large of a “problem” that unit is. Using unit size for bubble size is helpful in getting a grasp for the units’ amount of members in relation to one another; some units are 1 person while others are 4,000 people. This chart also answers our question of finding the average complaint percentile across members of a unit. When you hover over a bubble, the complaint percentile of the unit is the average of the members within the unit.

## Other takeaways

- As we worked with the actual data, we realized our original ideas for visualizations may not be as effective as we thought. Our visualizations evolved as we created them to be more impactful.
- With more time to refine our D3 visualization, we’d like to make the transition between charts a smooth animation instead of a sudden cut to the next chart. We also have thoughts about making it more interactive by adding a zoom in when you click on a unit to see individual members’ data.