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Modeling Police Misconduct



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Is it possible to model the risk of police misconduct?

Can we prevent or mitigate misconduct in the future?

To find the answer, we start with a prior study from the Invisible Institute that classifies police into distinct groups based on indicators of misconduct. The prior study modeled complaint data as a means to create a better complaint classification system. However, in this study, we investigate whether the identification of "tight-knit communities of officers involved in high levels of egregious misconduct" can be leveraged to model the risk of future misconduct.

Community detection algorithms based on complaint data, such as allegations of illegal search, suggests there distinct groups of officers in Chicago. Though not inherently bad, certain Communities of police exhibit attributes that distinguish them in relation to all other officers. However, when the nature of alleged misconduct is especially severe, a Community is classified as Crew. As a result, for this analysis, we explore the attributes of three Cohorts of police, (1) Crews, (2) Communities, and (3) Unaffiliated.

The Cost of Misconduct

Motivation. If for nothing else, the motivation of this analysis is to support a functioning society. However, to provide a tangible motivation, consider the cost of police misconduct in terms of dollars.

To date, police misconduct in Chicago has cost in excess of \$350 million. For perspective, in 2019, the mayor told residents to expect a \$838 million shortfall heading into 2020 according to WBEZ Chicago on NPR, 19 October 2019. In other words, nearly half the 2020 budget shortfall could have been paid for if we did not have lawsuits and settlements as result of police

misconduct.

Imagine all the other things the city could do with this money.



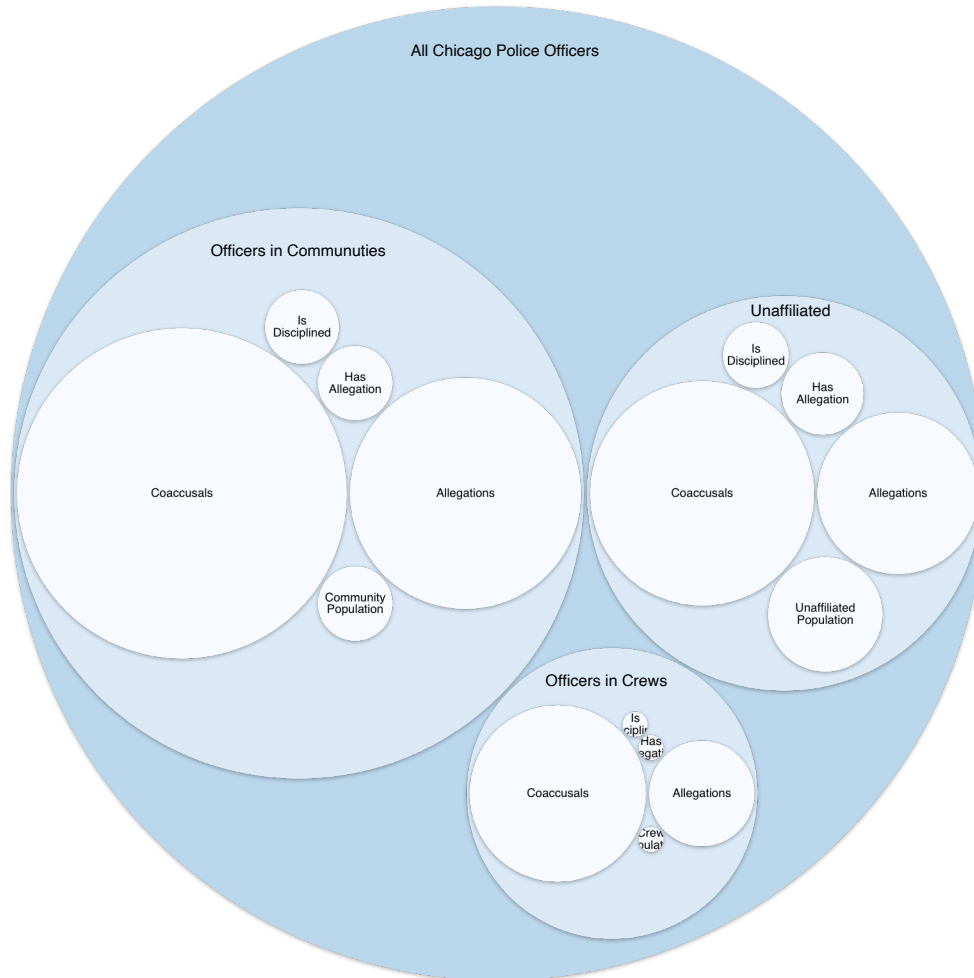
Police as a Population of Communities and Crews

Overview. The Invisible Institute analyzed allegations of police misconduct and based on the results, they identified there groups of police officers that work closely with each other - more than other groups. Based on the model's score, police officers are classified into one of three groups. For instance, the most severe score means an officer is in a "crew," the least severe score means an officer is "unaffiliated", and anything else means an officer is in a "community."

One way to think about these groups, Crews, Communities, and Unaffiliated, is think about the social network patterns that develop among officers. Police work is performed in teams and the formation of networks is to be expected; however, there is a tipping point at which negative features change the picture.

For instance, in the bubble chart below, we breakout the three

sub-groups of officers; Community is the largest, Unaffiliated are in the middle, and Crews are the smallest in terms of population size. However, notice the relative sizes of the "coaccusals" bubble and "allegations" bubble: they are much larger for crews than for the other groups.



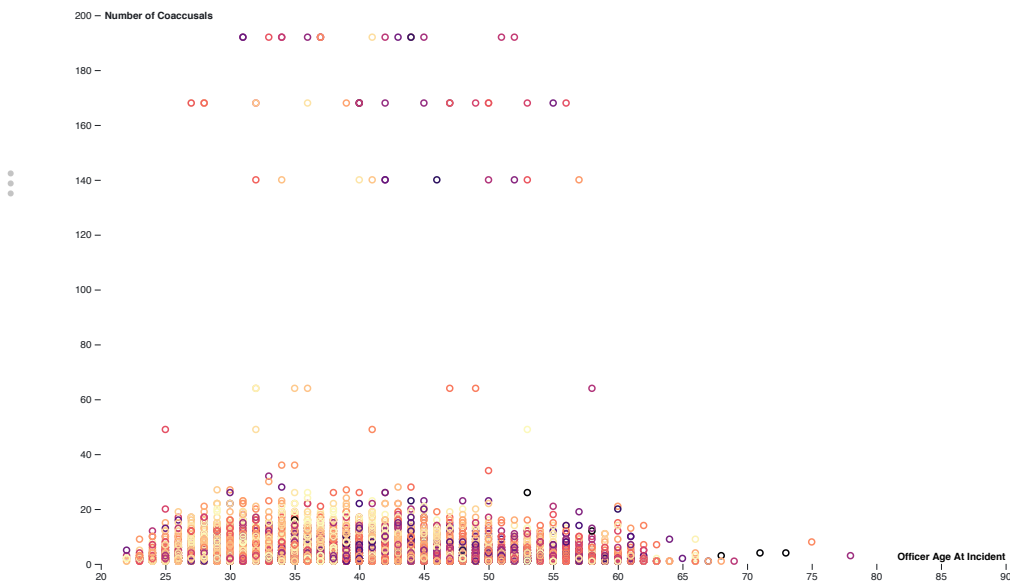
Officer Age at Incident and Number of Coaccusals Scatter Plot

Correlations. In some sense, modeling risk means a capability (or at least an attempt), to predict outcomes. If prediction is the task, then what are the factors that lead one police officer to misconduct and another to none? Although there are many factors other than demographics of the police officer, we can still explore what the current data has to say.

In a report titled "The network dynamics of co-offending

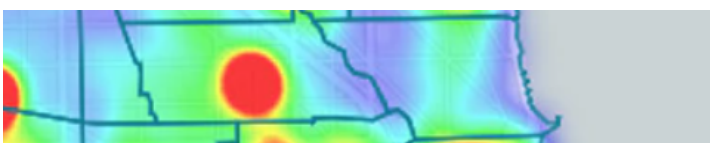
careers," Yanick Charette and Andrew Papachristos analyze crime as a group phenomenon as opposed to a static and solo event. The premise is that the dynamics of co-offending in any given crime have a substantial impact as opposed to committing a crime independantly of others.

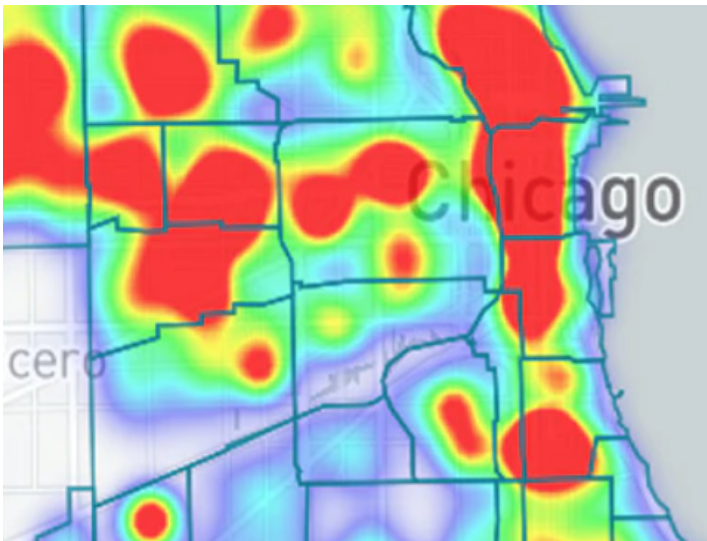
When applying the idea of coffending to the police ranks, Marle Ouellet, Sadaf Hashimi, and Jason Gravel examine "social transmission of police misconduct" in a paper titled "Network exposure and excessive use of force." Among Ouellet's many findings, it turns out the officer's age may have something to do with misconduct. For instance, are younger officers with less experience more prone to allegations of misconduct?



Interpretation. The scatterplot depicts the age of an officer at the time of an incident alleging misconduct along the horizontal axis. Along the verticle axis, the dots represent the number of coaccusals for that age. Lastly, the chart depicts a third dimension for each dot in the form of color - darker circles mean a higher percentile ranking in complaints.

Fullscreen





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scroll_percentage = 0
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```
milestones = ▶ Array(3) [Object, Object, Object]
```

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scrollable_height = 600
```

```
scrollable_width = 4000
```

```
scrollbar_bg = "#DEBFA4"
```

```
scrollthumb_bg = "#4DB6AD"
```

```
dashboard_contents = ▶ HTMLImageElement {}
```

How to reuse?

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import { importCell } from '@mbostock/dataflow'
importCell("viewof Horizon", "@a10k/panoramic-dashboards",
```

```
d3 = ▶ Object {format: f(t), formatPrefix: f(t, n), timeFo
```

```
⋮ data = ▶ Object {name: "All Chicago Police", children: Arra
⋮
⋮ pack = f(data)
⋮
⋮ width = 975
⋮
⋮ height = 975
⋮
⋮ color = f(n)
⋮
⋮ format = f(t)
⋮ | // chart 1
⋮
⋮ data2 = ▶ Array(3) [Object, Object, Object]
⋮
⋮ pack2 = f(data)
⋮
⋮ height2 = 400
⋮
⋮
⋮
⋮ color3 = f(n)
⋮
⋮ height3 = 600
⋮ | // chart 2
⋮
⋮ x3 = f(n)
⋮
⋮ y3 = f(n)
⋮
⋮ xAxis3 = f(g)
⋮ | //chart 3
⋮
⋮ data3 = ▶ Array(20000) [Object, Object, Object, Object, Ob:
```

