

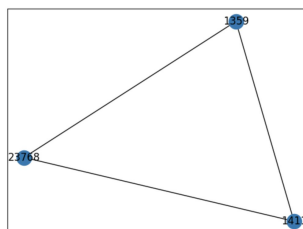
Findings

1. Using PageRank, we can identify "important/influential" vertices in the graph, and thereby, officers who are most frequently connected to other officers when the associated allegations category has changed. As one can see, the officers who have a high pagerank when allegations are changed also tend to have some of the highest complaint percentiles (often 90+). So there is something to be said in the sense that officers who are fielding some of the highest complaint percentiles are generally the same officers involved in changed allegations. There is just a small minority of exceptions in the list below of officers who don't have a very high complaint percentile, but are still quite frequently linked to allegation changes. There might be something interesting about this subset as one couldn't necessarily argue that their pagerank is being driven by the sheer volume of complaints.

id	officer_fname	officer_lname	complaint_percentile	pagerank
21309	Eric	Olson	94.46720123291016	14.6843363535723
28758	Jesse	Torres	43.90639877319336	14.484175385091378
17176	Ricardo	Mancha	83.57720184326172	14.033271002320387
27725	Mark	Struke	82.25520324707031	13.656611151876517
25980	Roberto	Sena	88.70120239257812	12.517037105678986
21941	Daniel	Passarelli	89.08329772949219	12.004761240422239
32086	Shane	Jones	97.64240264892578	11.045369399725754
11686	Timothy	Hawkins	87.7688980102539	10.949908884745193
31997	Emerico	Gonzalez	92.91960144042969	10.855702489793506
20177	Nathaniel	Myles	93.80229949951172	10.103644595649541
18384	Kathleen	Mc Lean	94.97540283203125	10.018741684885711
12440	Terrance	Hollis	27.52669906616211	9.624971127388415
32159	Jorge	Martinez	99.81659698486328	9.515512072442359
29379	Artemio	Vargas	74.81559753417969	9.110292972755232
15273	Karl	Kruger	88.70120239257812	9.067880632233914
29612	Frank	Villareal	99.2876968383789	8.949792463004878
13903	Julie	Joyce	71.59449768066406	8.797037105983549
27962	John	Swarbrick	77.83419799804688	8.618667197571575
3998	Justin	Carrillo	75.12129974365234	8.440248247900932
7273	Daniel	Dowling	84.99870300292969	8.247455360497561

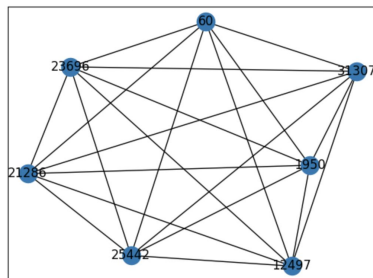
only showing top 20 rows

2. Using the Label Propagation Algorithm we were able to cluster the officers co-accused on allegations when the category changed. The clusters are identified as "labels." Below are sample results for two different allegations.



src	dst	crid	old_category	new_category
23768	1359	1039765	RACIAL ETHNIC ETC	Illegal Arrest False Arrest
23768	1411	1039765	RACIAL ETHNIC ETC	Illegal Arrest False Arrest
1359	1411	1039765	RACIAL ETHNIC ETC	Illegal Arrest False Arrest
23768	1359	1039765	RACIAL ETHNIC ETC	Gang Affiliation
23768	1411	1039765	RACIAL ETHNIC ETC	Gang Affiliation
1359	1411	1039765	RACIAL ETHNIC ETC	Gang Affiliation

The web above corresponds to the allegation crid of '1039765'. Three officers were linked in this allegation. Their degree of association can also be seen in the chart.



src	dst	crid	old_category	new_category
60	1950	1039676	UNNECESSARY DISPLAY OF WEAPON ON DUTY	Search Of Premise Without Warrant
60	21286	1039676	UNNECESSARY DISPLAY OF WEAPON ON DUTY	Search Of Premise Without Warrant
60	23696	1039676	UNNECESSARY DISPLAY OF WEAPON ON DUTY	Search Of Premise Without Warrant
60	12497	1039676	UNNECESSARY DISPLAY OF WEAPON ON DUTY	Search Of Premise Without Warrant
31307	1950	1039676	UNNECESSARY DISPLAY OF WEAPON ON DUTY	Search Of Premise Without Warrant
31307	21286	1039676	UNNECESSARY DISPLAY OF WEAPON ON DUTY	Search Of Premise Without Warrant
31307	23696	1039676	UNNECESSARY DISPLAY OF WEAPON ON DUTY	Search Of Premise Without Warrant
31307	12497	1039676	UNNECESSARY DISPLAY OF WEAPON ON DUTY	Search Of Premise Without Warrant

The web above corresponds to the chart immediately above. The allegation here changed from “unnecessary display of weapon on duty” to “search of premise without warrant”, which are not particularly related allegations. You can see who the officers were that were involved and how they were connected. This type of analysis has the power to really understand how the allegation changes relate to clusters of officers. We’ve already shown the officers with high complaint rates are frequently involved in allegation changes (with PageRank in part 1). The LPA approach gives us some insight into how those officers might actually be congregating with each other.