

Analyze network segregation

Review

Officers

- There are 8502 officers with a work assignment from 2012 - 2015.
 - 7524 (88.5%) officers made a stop during a work assignment.
 - 7200 (84.69%) officers made an arrest during a work assignment.

Stops

- There were 946912 stops during this time period.
 - 190666 (20.14%) were made by a single officer.
 - 756246 (79.86%) were made by multiple officers.
 - * These stops generate 756246 stop-ties.
 - 242685 (32.09%) stop-ties involve a stop that could not be tracked back to a work assignment for at least one officer involved in the stop.
 - 513561 (67.91%) stop-ties had all stops able to be traced back to a work assignment for all officers involved in the stop.
 - **Our final sample size number is:** 510873. We drop: 1) all stop-ties where officers were not working in the same unit, 2) any stop-ties from units 13, 21, or 23 (since they were dissolved in 2012), and 3) all stops from 2016 (since we only have about a month of data from 2016).

Arrests

- There were 164802 arrests during this time period.
 - 7734 (4.69%) were made by a single officer.
 - 157068 (95.31%) were made by multiple officers.

- * These arrests generate 157073 arrest-ties.
 - 54794 (34.88%) arrest-ties involve an arrest that could not be tracked back to a work assignment for at least one officer involved in the arrest.
 - 102279 (65.12%) arrest-ties had all arrests able to be traced back to a work assignment for all officers involved in the arrest.
 - **Our final sample size number is:** 101651. We drop: 1) all arrest-ties where officers were not working in the same unit, 2) any arrest-ties from units 13, 21, or 23 (since they were dissolved in 2012), and 3) all arrests from 2016 (since we only have about a month of data from 2016).

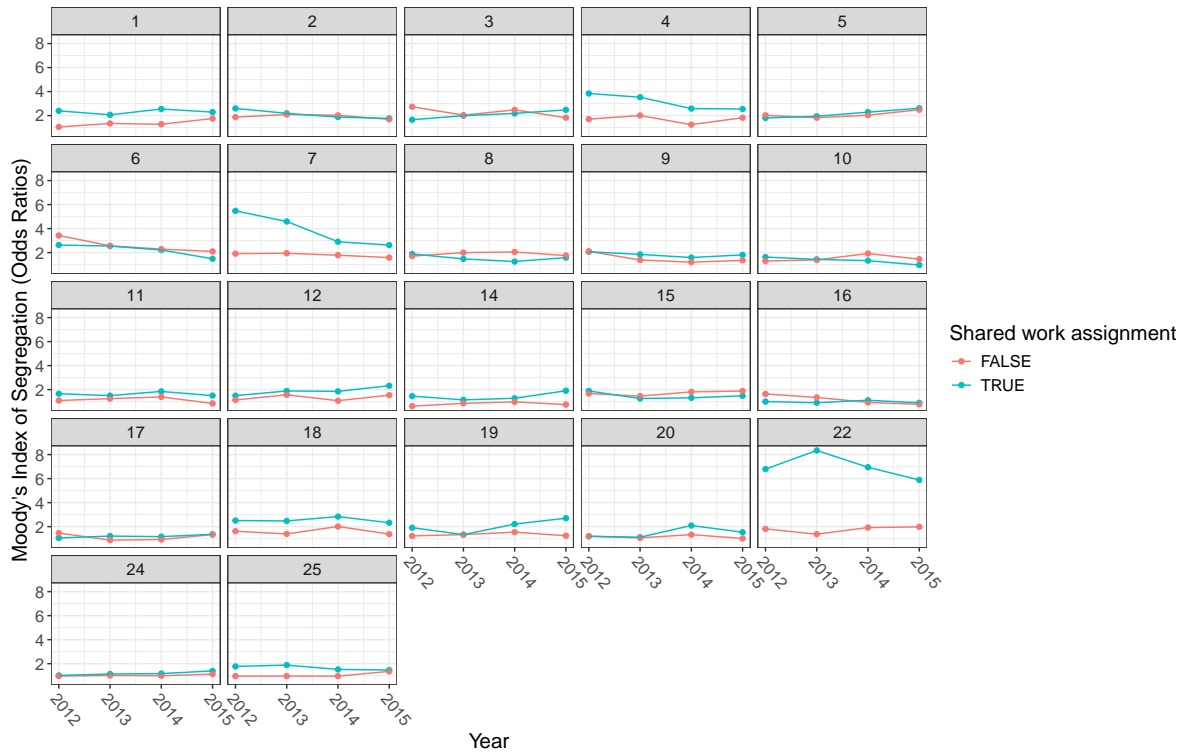
Network segregation based on Moody's Segregation Index (odds-ratios)

Below are two graphs which display Moody's Segregation Index for officer race and officer sex across each year for each police unit. Some observations:

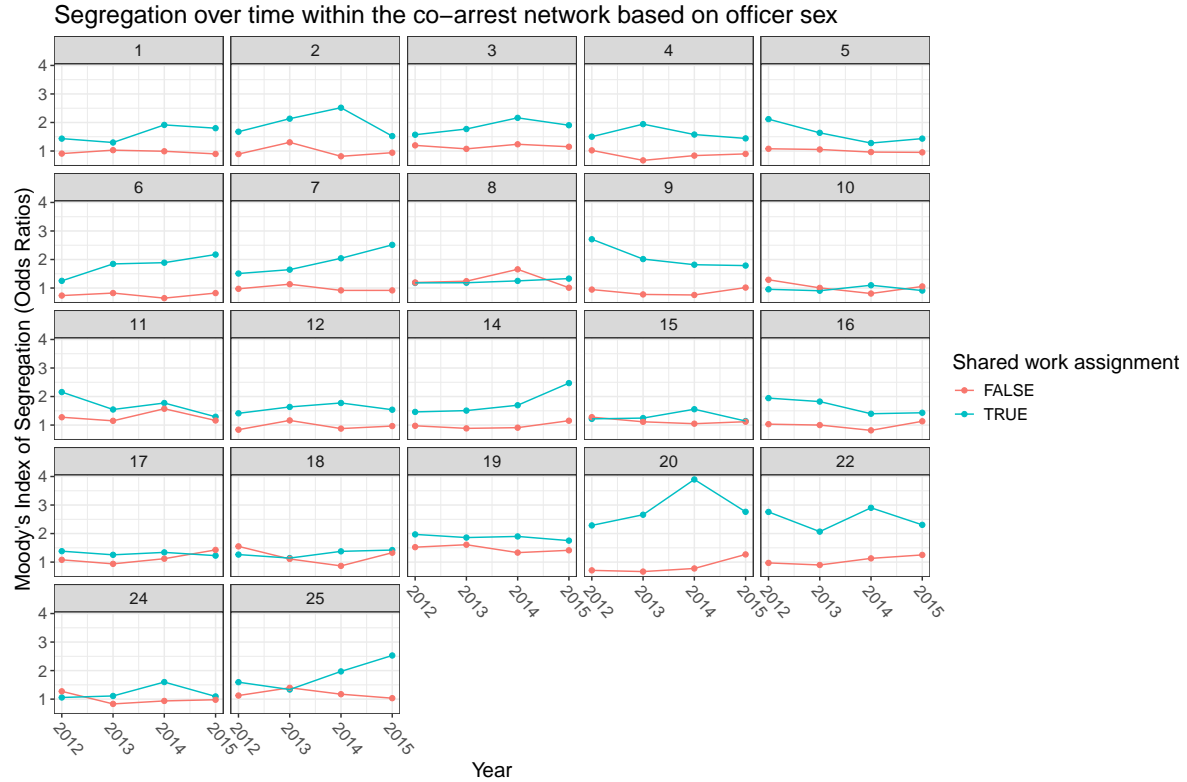
- Work assignments contribute more to both racial and sex segregation in the arrest network.
- Work assignments appear to contribute more to sex segregation than racial segregation.
- The effect of work assignments appears relatively stable over time for both race and sex (eyeball test).

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Segregation over time within the co-arrest network based on officer race



[[2]]

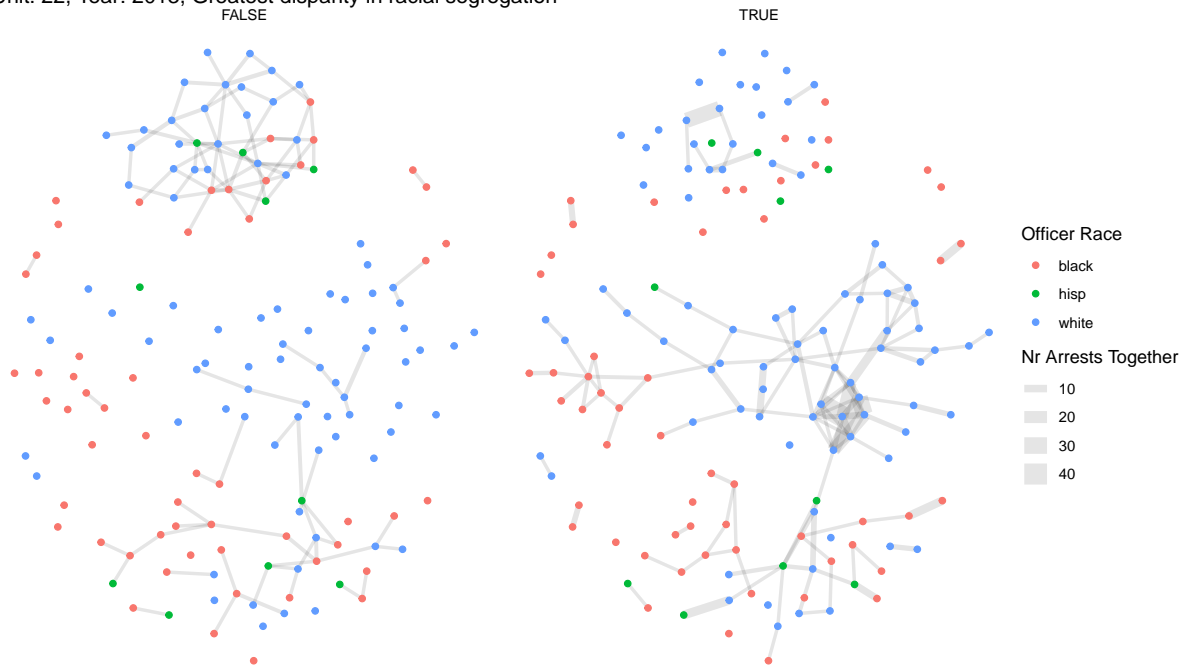


Most racially segregated unit

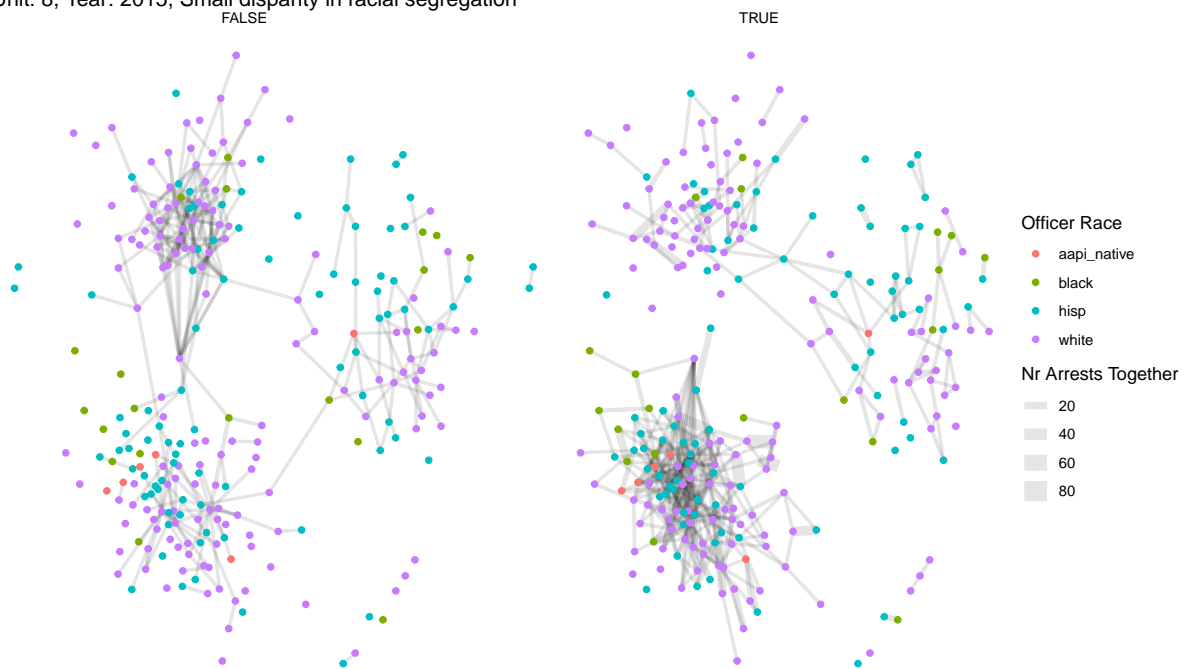
An idea for how to present our findings for the presentation. We present contrasting officer co-arrest networks.

- The first would be the unit + year combination with the greatest disparity in racial segregation due to work assignments as shown below.
- The second graph would be a unit + year combination with very little disparity in racial segregation due to work assignments. This is the second graph.

Unit: 22, Year: 2013, Greatest disparity in racial segregation



Unit: 8, Year: 2015, Small disparity in racial segregation



Relationship between racial and sex segregation due to work assignments

I was curious if the most racially segregated unit + years (due to work assignments) would also be the most sexually segregated. There is not really a strong correlation between the two, though. This means while work assignments may contribute a lot (or a little) to racial segregation for a given unit + year, they may only contribute a little (or a lot) to sex segregation (and vice versa).

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