Appendix

July 19, 2024

1 Results for Quadratic Assignment Procedure

The tables below present the Quadratic Assignment Procedure (QAP) results for the follower, mentions and retweets network analyzed in our study. 4108 legislators are included in this analysis. We use 500 permutations of the data set to create the empirical sampling distribution under the null hypothesis and calculate the p-values by comparing the actual value of the coefficient to this distribution.

2 cross-partisan and cross-state dyads

Below we break our data down by within and across state, as well as within and across parties, and present the density of the ties in the network in each segment of the tabulation. While the cross-state ties are much more sparse than are within-state ties, in absolute terms, the sample sizes are sufficient to make precise inferences.

3 Power Analysis

We also evaluate the statistical power to detect the effects in our models using a direct simulation approach [**?**] as there is no generally accessible formula for calculating power when using QAPs. For each of the three network types - followers, mentions and retweets network - we simulated 50 networks from the fitted models and then calculated the proportion of times the effect was significant at the two-tailed 0.05 level in the same direction as the initial estimate. In the figures below, the red triangles are under-powered and are those for which the results are significant, but are low power. The blue dots represent sufficient power. We find that we have more than sufficient power to detect all of the interactions, and indeed all of the effects that we find are statistically significant in our empirical models.

Table 1: QAP results for the follower network with different state in interaction

	Variable	Coefficient	PValue
1	Intercept	-7.888	0
2	State Similarity	5.640	0
3	Party Similarity	1.438	0
4	Chamber Similarity	0.633	0
5	Gender Similarity	0.137	0
6	Race Similarity	0.313	0
7	Difference in Legislatures Proffesionalism	-0.074	0.014
8	Dem Sender Effect	-0.513	0.274
9	Rep Sender Effect	-0.693	0.102
10	House Sender Effect	-0.155	0
11	Female Sender Effect	-0.036	0.410
12	Profesh Sender Effect	-0.039	0.182
13	Black Sender Effect	0.010	0.858
14	Latino Sender Effect	0.634	0
15	Asian Sender Effect	0.261	0.066
16	Mena Sender Effect	0.876	0.006
17	Multi Sender Effect	0.553	0.048
18	Native Sender Effect	0.175	0.682
19	Democrat Receiver Effect	-0.673	0.018
20	Republican Receiver Effect	-0.711	0.004
21	House Receiver Effect	-0.479	0
22	Female Receiver Effect	0.036	0.258
23	Profesh Receiver Effect	0.018	0.390
24	Black Receiver Effect	0.150	0
25	Latino Receiver Effect	0.607	0
26	Asian Receiver Effect	0.446	0
27	Mena Receiver Effect	0.551	0.014
28	Multi Receiver Effect	0.878	0
29	Native Receiver Effect	0.308	0.244
30	Same Party ∗Diff State	-0.875	0
31	Same Chamber ∗Diff State	0.419	0
32	Same Gender ∗Diff State	-0.045	0.086
33	Same Race ∗Diff State	0.135	0
34	Contiguous States	0.856	0

Table 2: QAP results for the follower network with same state in interaction

	Variable	Coefficient	PValue
1	Intercept	-7.888	0
2	State Similarity	5.640	0
3	Party Similarity	2.313	0
4	Chamber Similarity	0.214	0
5	Gender Similarity	0.182	0
6	Race Similarity	0.178	0
7	Difference in Legislatures Professionalism	-0.074	0.024
8	Dem Sender Effect	-0.513	0.240
9	Rep Sender Effect	-0.693	0.090
10	House Sender Effect	-0.155	0
11	Female Sender Effect	-0.036	0.438
12	Profess Sender Effect	-0.039	0.156
13	Black Sender Effect	0.010	0.838
14	Latino Sender Effect	0.634	0
15	Asian Sender Effect	0.261	0.058
16	Mena Sender Effect	0.876	0.014
17	Multi Sender Effect	0.553	0.060
18	Native Sender Effect	0.175	0.630
19	Democrat Receiver Effect	-0.673	0.020
20	Republican Receiver Effect	-0.711	0.014
21	House Receiver Effect	-0.479	0
22	Female Receiver Effect	0.036	0.262
23	Profess Receiver Effect	0.018	0.416
24	Black Receiver Effect	0.150	0
25	Latino Receiver Effect	0.607	0
26	Asian Receiver Effect	0.446	0
27	Mena Receiver Effect	0.551	0.008
28	Multi Receiver Effect	0.878	0
29	Native Receiver Effect	0.308	0.260
30	Same Party *Same State	-0.875	0
31	Same Chamber *Same State	0.419	0
32	Same Gender *Same State	-0.045	0.086
33	Same Race *Same State	0.135	0
34	Contiguous States	0.856	0

Table 3: QAP results for the mentions network with different state in interaction

	Variable	Coefficient	PValue
1	Intercept	-0.012	0.582
2	State Similarity	0.270	0
3	Party Similarity	1.507	0
4	Chamber Similarity	0.427	0
5	Gender Similarity	0.091	0
6	Race Similarity	-0.167	0
7	Difference in Legislatures Professionalism	-0.001	0.006
8	Dem Sender Effect	-0.006	0.666
9	Rep Sender Effect	-0.020	0.084
10	House Sender Effect	-0.015	0
11	Female Sender Effect	0.011	0
12	Profess Sender Effect	0.0004	0.446
13	Black Sender Effect	0.023	0
14	Latino Sender Effect	0.055	0
15	Asian Sender Effect	0.045	0
16	Mena Sender Effect	0.055	0
17	Multi Sender Effect	0.073	0
18	Native Sender Effect	0.034	0.006
19	Democrat Receiver Effect	-0.001	0.960
20	Republican Receiver Effect	-0.013	0.252
21	House Receiver Effect	-0.021	0
22	Female Receiver Effect	0.007	0
23	Profess Receiver Effect	0.0005	0.336
24	Black Receiver Effect	0.028	0
25	Latino Receiver Effect	0.052	0
26	Asian Receiver Effect	0.046	0
27	Mena Receiver Effect	0.057	0
28	Multi Receiver Effect	0.067	0
29	Native Receiver Effect	0.042	0
30	Same Party *Diff State	1.512	0
31	Same Chamber *Diff State	0.415	0
32	Same Gender *Diff State	0.084	0
33	Same Race *Diff State	-0.213	0
34	Contiguous States	0.001	0.184

Table 4: QAP results for the mentions network with same state in interaction

	Variable	Coefficient	PValue
1	Intercept	-0.012	0.630
2	State Similarity	0.270	0
3	Party Similarity	-0.005	0
4	Chamber Similarity	0.012	0
5	Gender Similarity	0.008	0
6	Race Similarity	0.045	0
7	Difference in Legislatures Professionalism	-0.001	0
8	Dem Sender Effect	-0.006	0.660
9	Rep Sender Effect	-0.020	0.106
10	House Sender Effect	-0.015	0
11	Female Sender Effect	0.011	0
12	Profess Sender Effect	0.0004	0.456
13	Black Sender Effect	0.023	0
14	Latino Sender Effect	0.055	0
15	Asian Sender Effect	0.045	0
16	Mena Sender Effect	0.055	0
17	Multi Sender Effect	0.073	0
18	Native Sender Effect	0.034	0.002
19	Democrat Receiver Effect	-0.001	0.948
20	Republican Receiver Effect	-0.013	0.234
21	House Receiver Effect	-0.021	0
22	Female Receiver Effect	0.007	0
23	Profess Receiver Effect	0.0005	0.350
24	Black Receiver Effect	0.028	0
25	Latino Receiver Effect	0.052	0
26	Asian Receiver Effect	0.046	0
27	Mena Receiver Effect	0.057	0
28	Multi Receiver Effect	0.067	0
29	Native Receiver Effect	0.042	0.002
30	Same Party *Same State	1.512	0
31	Same Chamber *Same State	0.415	0
32	Same Gender *Same State	0.084	0
33	Same Race *Same State	-0.213	0
34	Contiguous States	0.001	0.168

Table 5: QAP results for the retweets network with different state in interaction

	Variable	Coefficient	PValue
1	Intercept	0.001	0.712
2	State Similarity	-0.025	0
3	Party Similarity	0.156	0
4	Chamber Similarity	0.050	0
5	Gender Similarity	0.005	0
6	Race Similarity	0.008	0
7	Difference in Legislatures Profeshionalism	0.001	0
8	Dem Sender Effect	-0.0003	0.846
9	Rep Sender Effect	-0.001	0.396
10	House Sender Effect	-0.001	0
11	Female Sender Effect	0.001	0
12	Profesh Sender Effect	-0.001	0
13	Black Sender Effect	-0.00004	0.910
14	Latino Sender Effect	0.001	0
15	Asian Sender Effect	0.002	0.022
16	Mena Sender Effect	0.003	0.026
17	Multi Sender Effect	0.001	0.294
18	Native Sender Effect	0.001	0.300
19	Democrat Receiver Effect	-0.0002	0.968
20	Republican Receiver Effect	-0.001	0.658
21	House Receiver Effect	-0.002	0
22	Female Receiver Effect	0.001	0.120
23	Profesh Receiver Effect	-0.001	0
24	Black Receiver Effect	-0.001	0.104
25	Latino Receiver Effect	0.0002	0.782
26	Asian Receiver Effect	0.0003	0.816
27	Mena Receiver Effect	-0.001	0.752
28	Multi Receiver Effect	0.002	0.382
29	Native Receiver Effect	0.005	0.046
30	Same Party *Diff State	0.157	0
31	Same Chamber *Diff State	0.049	0
32	Same Gender *Diff State	0.005	0
33	Same Race *Diff State	0.007	0
34	Contiguous States	0.0005	0.022

Table 6: QAP results for the retweets network with same state in interaction

|	Variable	Coefficient	PValue
1	Intercept	0.001	0.730
2	State Similarity	-0.025	0
3	Party Similarity	-0.0001	0.158
4	Chamber Similarity	0.001	0
5	Gender Similarity	0.001	0
6	Race Similarity	0.0005	0.026
7	Difference in Legislatures Professionalism	0.001	0
8	Dem Sender Effect	-0.0003	0.822
9	Rep Sender Effect	-0.001	0.390
10	House Sender Effect	-0.001	0
11	Female Sender Effect	0.001	0
12	Profess Sender Effect	-0.001	0
13	Black Sender Effect	-0.00004	0.904
14	Latino Sender Effect	0.001	0.008
15	Asian Sender Effect	0.002	0.022
16	Mena Sender Effect	0.003	0.044
17	Multi Sender Effect	0.001	0.288
18	Native Sender Effect	0.001	0.324
19	Democrat Receiver Effect	-0.0002	0.952
20	Republican Receiver Effect	-0.001	0.618
21	House Receiver Effect	-0.002	0
22	Female Receiver Effect	0.001	0.114
23	Profess Receiver Effect	-0.001	0
24	Black Receiver Effect	-0.001	0.150
25	Latino Receiver Effect	0.0002	0.750
26	Asian Receiver Effect	0.0003	0.806
27	Mena Receiver Effect	-0.001	0.698
28	Multi Receiver Effect	0.002	0.384
29	Native Receiver Effect	0.005	0.064
30	Same Party *Same State	0.157	0
31	Same Chamber *Same State	0.049	0
32	Same Gender *Same State	0.005	0
33	Same Race *Same State	0.007	0
34	Contiguous States	0.0005	0.014
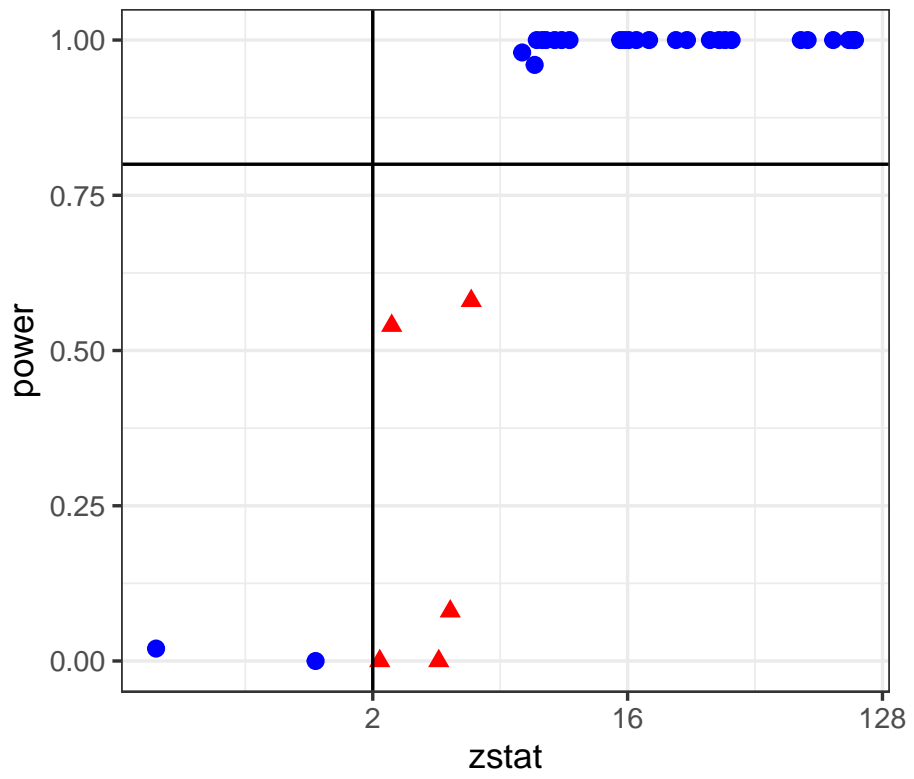
Figure 1: Power Analysis of the Follower Network
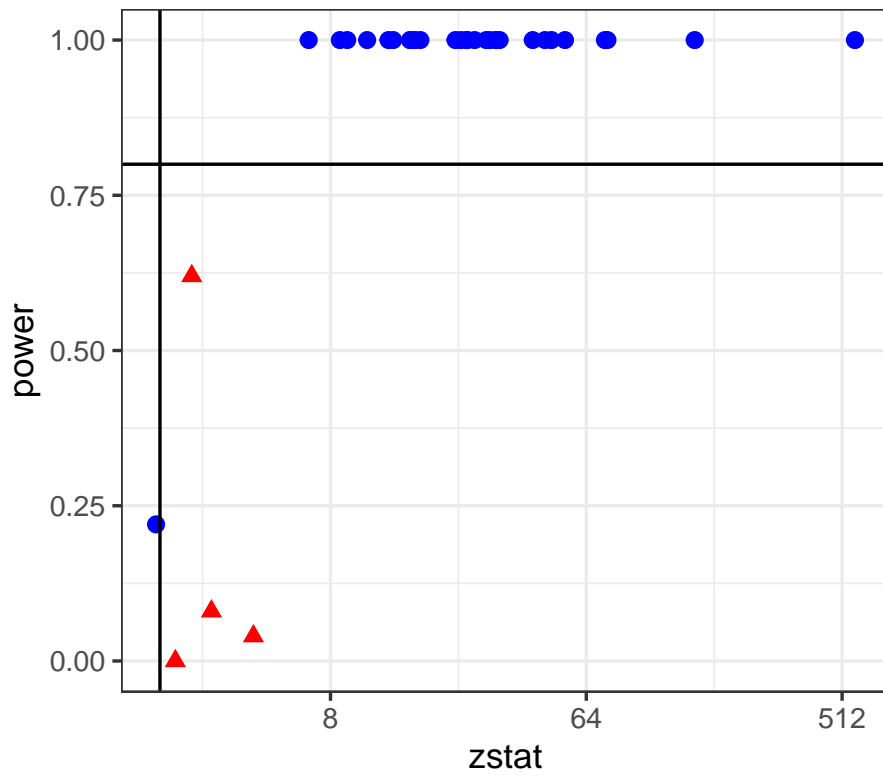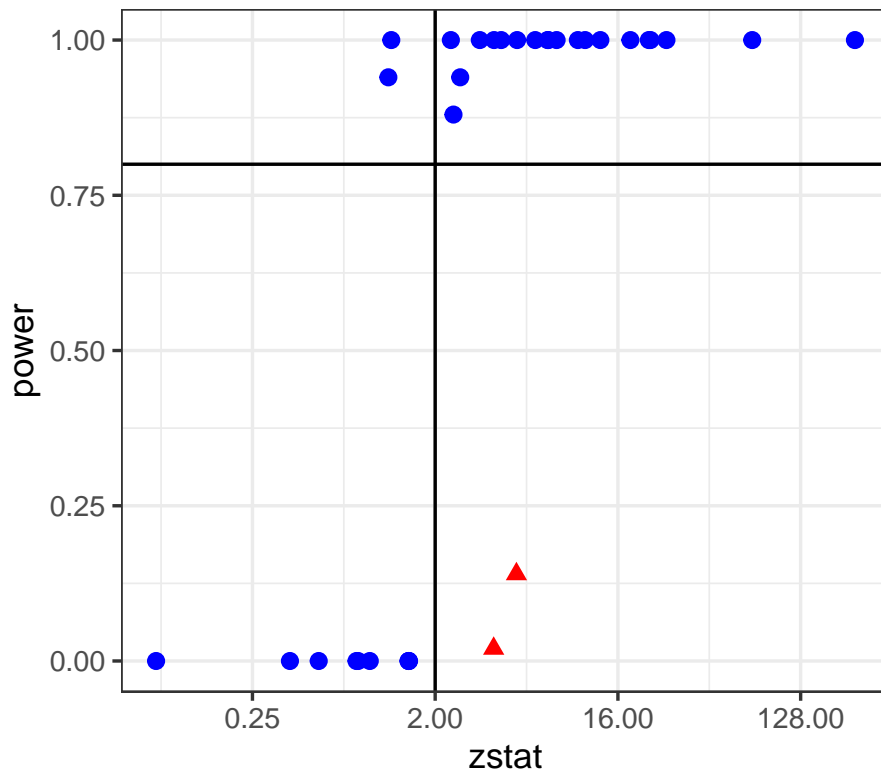
Figure 2: Power Analysis of the Mentions Network

Figure 3: Power Analysis of the Retweets Network

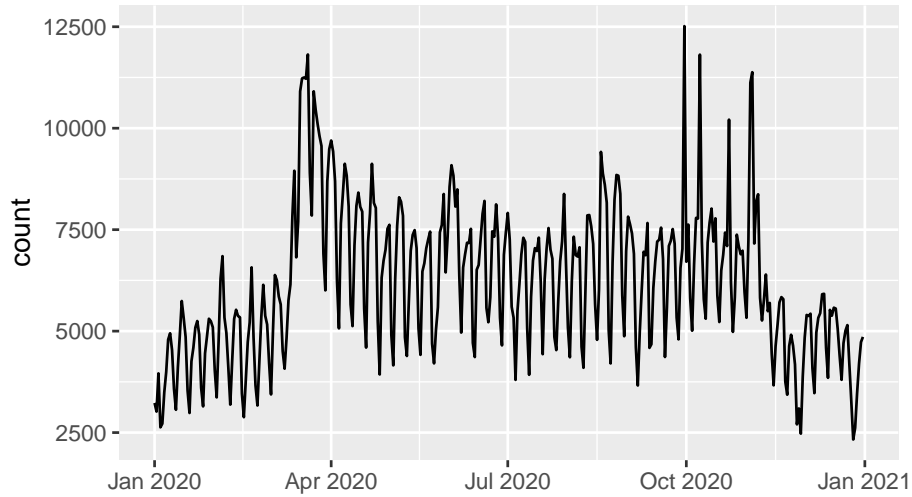|	different state	same state
different party	8222786	183612
same party	8230190	234968

Figure 4: Trend of total number of tweets across time

4 Legislators tweeting activity

The period of data collection overlapped with the early part of the Covid-19 pandemic, which is a unique timeline to study. But we can observe from the plot below that state legislators were particularly active between April and October of 2020 and using this period in our study provides us with rich data to study interactions and variables which impact these interactions.