

EXHIBIT 3

Report on New York State Senate's Proposed Remedial Senate Redistricting Plan

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Introduction and Qualifications

I have been asked by counsel for the New York State Senate to evaluate the Legislature's enacted Senate redistricting plan, which it submits as its proposed remedial plan, together with the New York Independent Redistricting Commission's (IRC) Plan A and Plan B as well as the 2012 New York State Senate districts along a number of traditional criteria used in redistricting. I have worked as an expert witness in a number of redistricting cases in which I have been asked to analyze and evaluate various political and geographic-related data and maps.

I am an associate professor of political science at Brigham Young University and faculty fellow at the Center for the Study of Elections and Democracy in Provo, Utah. I received my PhD in political science from Princeton University in 2014 with emphases in American politics and quantitative methods/statistical analyses. In my position as a professor of political science, I have conducted research on a variety of election- and voting-related topics in American politics and public opinion. Much of this research has been published in my discipline's top peer-reviewed journals. I have published more than 20 peer-reviewed articles. I have previously provided expert reports in a number of redistricting, voting, and election-related cases. I have also recently testified before the Pennsylvania Legislative Reapportionment Commission regarding the Commission's proposed map for the Pennsylvania House of Representatives.

The analysis and opinions I provide below are consistent with my education, training in statistical and quantitative analysis, and knowledge of the relevant academic literature. These skills are well-suited for this type of analysis in political science and quantitative analysis more generally. A full description of my education, training, and qualifications is contained in my CV, which was appended to my initial report in this case, is attached to this memo.

Contiguity and Population

The Senate's proposed map contains 63 contiguous districts that are very nearly equal in population. Table 1 shows the variation in district population of the Senate's proposed map using the 2020 Census "prisoner-adjusted" population numbers produced by the New York State Legislative Task Force on Demographic Research and Reapportionment (LATFOR). Table 1 also shows similar calculations for the IRC Plan A, IRC Plan B, and the 2012-2020 State Senate districts. Because the 2012-2020 districts were enacted a decade ago I use the 2010 Census population data rather than the 2020 Census data to measure the population deviation of the 2012 districts *at the time they were enacted* and not in 2020 when a decade of uneven population growth and movement into, out of, and across the state have made the districts dramatically malapportioned.

The first column of Table 1 shows the percent deviation of the most underpopulated district in each plan from the "target" district population, which is the total statewide population divided by 63. The second column shows the percent deviation of the most overpopulated district in each plan from the target district population. The final column shows the average deviation, which is the average absolute deviation of the 63 districts from the target population. In other words, for each district I calculate the percent deviation of the district population from the target district population. I then take the absolute value of these deviations. Finally, I take the overall average of these district-by-district absolute deviations. The Senate's proposed plan has the smallest deviation across all measures for all four plans in Table 1. The average deviation in the Senate proposal is 0.329%, or approximately 1,055 people. The average deviations in the IRC Plans A and B are 0.52% and 0.61%, respectively. The 2012-2020 plan had a much larger population deviation at the time of its enactment, with an average absolute deviation of 3.67%.

Table 2 reports the total population and deviation from the target district population for each district in each plan.

Table 1: Population Deviations

Proposal/Population Deviation:	Smallest	Largest	Average
Senate Proposal	-0.29%	+1.33%	0.33%
IRC Plan A	-1.15%	+1.38%	0.52%
IRC Plan B	-1.37%	+3.28%	0.61%
2012-2020 Districts	-4.97%	+3.83%	3.67%

Note: “Smallest” reports the deviation of the most underpopulated district in each plan from the target district population. “Largest” reports the deviation of the most overpopulated district in each plan from the target district population. “Average” reports the average absolute deviation of all 63 districts from the target district population.

Table 2

District	Senate Proposal		IRC Plan A		IRC Plan B		2012-2020 Plan	
	Population	% deviation	Population	% deviation	Population	% deviation	2010 Population	% deviation
1	319697	-0.262%	324957	1.379%	324957	1.379%	315163	2.540%
2	319697	-0.262%	324957	1.379%	324957	1.379%	315164	2.540%
3	319696	-0.262%	324957	1.379%	324957	1.379%	315163	2.540%
4	319697	-0.262%	324957	1.379%	324957	1.379%	315163	2.540%
5	319696	-0.262%	324957	1.379%	324956	1.379%	315163	2.540%
6	319695	-0.263%	324957	1.379%	324957	1.379%	315163	2.540%
7	319696	-0.262%	324957	1.379%	324957	1.379%	315163	2.540%
8	319696	-0.262%	324957	1.379%	324957	1.379%	315163	2.540%
9	319695	-0.263%	324956	1.379%	324957	1.379%	315164	2.540%
10	319696	-0.262%	322227	0.527%	319736	-0.250%	319113	3.825%
11	319696	-0.262%	320476	-0.019%	319736	-0.250%	319114	3.826%
12	319696	-0.262%	320476	-0.019%	319736	-0.250%	319114	3.826%
13	319697	-0.262%	320476	-0.019%	319736	-0.250%	319115	3.826%
14	319695	-0.263%	320476	-0.019%	319736	-0.250%	319112	3.825%
15	319696	-0.262%	318725	-0.565%	319736	-0.250%	319115	3.826%
16	319696	-0.262%	320476	-0.019%	319736	-0.250%	319113	3.825%
17	319696	-0.262%	320475	-0.019%	319736	-0.250%	318022	3.470%
18	319697	-0.262%	320476	-0.019%	319736	-0.250%	318022	3.470%
19	319696	-0.262%	320476	-0.019%	319736	-0.250%	318019	3.469%
20	319697	-0.262%	320475	-0.019%	319736	-0.250%	318021	3.470%
21	319697	-0.262%	320476	-0.019%	319736	-0.250%	318021	3.470%
22	319697	-0.262%	320476	-0.019%	319735	-0.250%	318022	3.470%
23	319697	-0.262%	320476	-0.019%	319736	-0.250%	318021	3.470%
24	319697	-0.262%	320476	-0.019%	319736	-0.250%	318021	3.470%
25	319696	-0.262%	320475	-0.019%	319736	-0.250%	318021	3.470%
26	319697	-0.262%	320476	-0.019%	319736	-0.250%	318021	3.470%
27	319697	-0.262%	320475	-0.019%	319736	-0.250%	318021	3.470%
28	319696	-0.262%	320475	-0.019%	319736	-0.250%	318021	3.470%
29	319697	-0.262%	320476	-0.019%	319736	-0.250%	318019	3.469%
30	319696	-0.262%	320476	-0.019%	319736	-0.250%	318021	3.470%

District-by-District Population Details

Table 2, Cont'd

District	Senate Proposal		IRC Plan A		IRC Plan B		2012-2020 Plan	
	Population	% deviation	Population	% deviation	Population	% deviation	2010 Population	% deviation
31	319696	-0.262%	320475	-0.019%	319736	-0.250%	318021	3.470%
32	319696	-0.262%	320476	-0.019%	319736	-0.250%	318021	3.470%
33	319696	-0.262%	320476	-0.019%	319736	-0.250%	318019	3.469%
34	319697	-0.262%	320476	-0.019%	319735	-0.250%	318021	3.470%
35	319696	-0.262%	320476	-0.019%	319735	-0.250%	307463	0.035%
36	319697	-0.262%	320476	-0.019%	319735	-0.250%	318023	3.471%
37	321719	0.369%	320475	-0.019%	319735	-0.250%	307463	0.035%
38	319697	-0.262%	323585	0.951%	319736	-0.250%	296208	-3.627%
39	321719	0.369%	320476	-0.019%	323781	1.012%	293888	-4.382%
40	323361	0.881%	320476	-0.019%	319735	-0.250%	302408	-1.610%
41	321027	0.153%	319996	-0.169%	316163	-1.365%	306760	-0.194%
42	321719	0.369%	317270	-1.019%	318480	-0.642%	292711	-4.765%
43	323924	1.057%	318397	-0.668%	316788	-1.170%	292750	-4.752%
44	320761	0.070%	322539	0.625%	320089	-0.140%	292749	-4.752%
45	321125	0.183%	317304	-1.009%	319354	-0.369%	293101	-4.638%
46	320800	0.082%	318545	-0.621%	320687	0.047%	292750	-4.752%
47	320800	0.082%	317822	-0.847%	318034	-0.781%	293195	-4.607%
48	324786	1.326%	317502	-0.947%	319757	-0.243%	292870	-4.713%
49	321565	0.321%	317634	-0.906%	320342	-0.061%	292749	-4.752%
50	321289	0.235%	321070	0.166%	320216	-0.100%	292444	-4.852%
51	321510	0.304%	317832	-0.844%	323935	1.060%	292344	-4.884%
52	319608	-0.290%	317934	-0.812%	316981	-1.109%	292375	-4.874%
53	321401	0.270%	319077	-0.455%	317737	-0.874%	292445	-4.851%
54	321107	0.178%	317696	-0.886%	320256	-0.088%	292445	-4.851%
55	319607	-0.290%	318500	-0.635%	317569	-0.926%	292306	-4.897%
56	322258	0.537%	318500	-0.635%	331043	3.278%	292307	-4.896%
57	322258	0.537%	317453	-0.962%	317304	-1.009%	292081	-4.970%
58	320275	-0.082%	317678	-0.892%	319830	-0.221%	292933	-4.693%
59	320965	0.134%	316838	-1.154%	318336	-0.687%	292392	-4.869%
60	322942	0.750%	323334	0.873%	317581	-0.922%	292562	-4.813%
61	322684	0.670%	317628	-0.908%	322665	0.664%	292307	-4.896%
62	322941	0.750%	317505	-0.946%	322664	0.664%	292166	-4.942%
63	322942	0.750%	323334	0.873%	317580	-0.923%	292562	-4.813%

District-by-District Population Details

Political Subdivisions

To obtain population equality (or population equality as nearly as practicable), and in consideration of the fact that the larger counties in the state have populations that are larger than a single district, some counties must be divided when creating a map with 63 districts. The Senate’s proposed remedial map splits 30 counties a total of 71 different times. This is comparable to the number of county splits in the 2012-2020 Senate map, which split 30 counties a total of 72 times. The IRC Plan A splits more counties - 40 counties 93 times. The IRC Plan B splits fewer counties - 24, but splits them 72 total times, one more than the Senate’s proposed map. Table 3 reports these numbers.

Table 3: County Divisions

Proposal/County Divisions:	Counties Split	Total County Splits
Senate Proposal	30	71
IRC Plan A	40	93
IRC Plan B	24	72
2012-2020 Districts	30	72

Core Retention

The New York Constitution states that any redistricting plan shall consider the maintenance of cores of existing districts. The following section reports the composition of the Senate's proposed remedial districts and the IRC's two plans in term of how the new districts are composed from pieces of the previous 2012-2020 districts. For each of the proposed districts I note the largest percent of the old 2012-2020 districts that are retained within each new proposed district. For example, District 1 in the Senate's proposed map retains 79% of the 2012-2020 population of District 1.

For the Senate's proposed map, in all cases the new districts retain greater than 33% of the old district population with an average retention of 69%. This is quite high, especially due to the fact that the 2012-2020 districts started in 2012 with a much larger population deviation and have become even more malapportioned due to population growth and movement within the state over the last decade. In fact, using the 2020 Census data for the 2012-2020 districts shows that in 2020 the 2012 Senate districts had a population deviation from the target district population that ranged from a district with a -14.15% underpopulation to a district with a +17.55% overpopulation. Furthermore, because of the extreme malapportionment between underpopulated upstate districts and overpopulated downstate districts and changes in population that reflect substantial growth in the downstate region, all three proposed plans essentially eliminate two upstate districts and create two new downstate districts. This means that any new districting plan needs to shift a sizable portion of the population of the state into new districts to equalize population. However, the Senate's proposed map does this while still managing to retain a substantial portion of the cores of the previous decade's map. Using the same measures, the IRC plans perform slightly worse. Plan A has an average district core retention of 68% and the IRC Plan B has an average district core retention of 66%. Table 4 below shows the district-by-district retention numbers for each of the three plans.

Table 4

District/Core Retention %:	Senate Proposal	IRC Plan A	IRC Plan B
1	79%	77%	83%
2	67%	80%	76%
3	73%	76%	62%
4	59%	79%	64%
5	47%	85%	76%
6	51%	49%	57%
7	86%	79%	96%
8	58%	58%	59%
9	83%	83%	97%
10	66%	70%	72%
11	52%	45%	73%
12	63%	36%	42%
13	89%	87%	86%
14	78%	62%	80%
15	53%	43%	34%
16	44%	52%	67%
17	33%	69%	61%
18	81%	73%	72%
19	80%	62%	75%
20	58%	54%	59%
21	67%	43%	70%
22	38%	61%	43%
23	72%	81%	83%
24	95%	93%	96%
25	61%	60%	59%
26	58%	30%	30%
27	37%	59%	59%
28	86%	41%	34%
29	57%	76%	77%
30	68%	46%	79%

Core Retention Values

Table 4 Cont'd

District/Core Retention %:	Senate Proposal	IRC Plan A	IRC Plan B
31	66%	77%	45%
32	84%	61%	68%
33	89%	56%	59%
34	77%	59%	59%
35	90%	39%	41%
36	83%	83%	83%
37	70%	56%	55%
38	94%	69%	88%
39	82%	88%	89%
40	100%	74%	84%
41	63%	73%	78%
42	69%	83%	76%
43	71%	93%	81%
44	58%	75%	100%
45	86%	65%	75%
46	60%	100%	68%
47	82%	65%	35%
48	64%	100%	50%
49	41%	60%	66%
50	59%	97%	68%
51	47%	84%	61%
52	80%	48%	65%
53	71%	66%	61%
54	62%	91%	68%
55	54%	42%	64%
56	84%	57%	68%
57	83%	90%	90%
58	90%	57%	57%
59	76%	76%	57%
60	82%	46%	67%
61	49%	76%	30%
62	84%	93%	68%
63	61%	77%	39%
Average:	69%	68%	66%

Core Retention Values

Compactness

To measure the geographic compactness of the districts I rely on three commonly used measures - Polsby-Popper, Convex Hull, and Schwartzberg. All three measures range from 0-1 with 0 being perfectly geographically non-compact and 1 being perfectly compact. The Senate's proposed remedial plan has an average Polsby-Popper score of 0.278, an average Convex Hull score of 0.703, and an average Schwartzberg score of 0.520. These values are comparable to the IRC Plans and are more compact than the old 2012-2020 Senate districts. Table 5 below shows the average compactness scores for each of the four plans across the three different measures of compactness. Table 6 then shows the district-by-district compactness measures for the Senate's proposed plan for these same measures.

Table 5: Average Compactness of State Senate District Plans

Proposal/Compactness Measure:	Polsby-Popper	Convex Hull	Schwartzberg
Senate Proposal	0.278	0.703	0.520
IRC Plan A	0.275	0.721	0.517
IRC Plan B	0.314	0.746	0.551
2012-2020 Districts	0.229	0.679	0.462

Table 6

District/Compactness Measure:	Polsby-Popper	Convex Hull	Schwartzberg
1	0.479	0.895	0.692
2	0.212	0.499	0.460
3	0.234	0.690	0.483
4	0.328	0.776	0.573
5	0.471	0.862	0.686
6	0.219	0.668	0.468
7	0.319	0.740	0.565
8	0.254	0.651	0.504
9	0.335	0.814	0.579
10	0.306	0.732	0.553
11	0.274	0.716	0.523
12	0.201	0.666	0.449
13	0.240	0.725	0.490
14	0.394	0.763	0.628
15	0.171	0.447	0.413
16	0.131	0.507	0.362
17	0.168	0.600	0.410
18	0.194	0.564	0.440
19	0.351	0.850	0.593
20	0.352	0.821	0.593
21	0.293	0.828	0.542
22	0.099	0.344	0.315
23	0.151	0.468	0.389
24	0.597	0.910	0.773
25	0.242	0.620	0.492
26	0.192	0.664	0.438
27	0.188	0.630	0.434
28	0.329	0.742	0.574
29	0.256	0.702	0.506
30	0.306	0.755	0.553

District-by-District Compactness Measures of Senate's Proposed Remedial Districts - Districts are ordered by district number.

Table 6 Cont'd

District/Compactness Measure:	Polsby-Popper	Convex Hull	Schwartzberg
31	0.269	0.712	0.519
32	0.152	0.627	0.390
33	0.211	0.783	0.459
34	0.415	0.793	0.644
35	0.234	0.670	0.483
36	0.156	0.569	0.395
37	0.270	0.749	0.519
38	0.307	0.719	0.554
39	0.330	0.778	0.575
40	0.463	0.839	0.680
41	0.227	0.587	0.476
42	0.304	0.721	0.551
43	0.230	0.698	0.480
44	0.191	0.667	0.437
45	0.352	0.819	0.594
46	0.292	0.701	0.540
47	0.331	0.772	0.576
48	0.279	0.739	0.528
49	0.332	0.790	0.576
50	0.352	0.743	0.594
51	0.323	0.714	0.568
52	0.182	0.655	0.426
53	0.267	0.712	0.516
54	0.229	0.612	0.479
55	0.243	0.615	0.493
56	0.363	0.916	0.603
57	0.221	0.750	0.470
58	0.508	0.893	0.712
59	0.234	0.699	0.483
60	0.156	0.487	0.395
61	0.210	0.682	0.458
62	0.337	0.776	0.581
63	0.279	0.658	0.529
Average:	0.278	0.703	0.520

District-by-District Compactness Measures of Senate's Proposed Remedial Districts - Districts are ordered by district number.

Measures of Race

In this section I report the racial composition of the districts in the Senate’s proposed remedial plan as well as the two IRC plans and the 2012-2020 Senate districts. Table 7 below shows summaries of the number of majority-minority districts in each proposal using the prisoner-adjusted voting age population (VAP).¹ The Senate proposal contains 26 districts that are majority-minority. The 2012-2020 plan contained 21 such districts. The IRC Plans A and B both contain 24 majority-minority districts. Looking across Table 7, the Senate proposal contains 4 majority-Black districts, 4 majority-Hispanic districts, and 1 majority-Asian district. IRC Plan A contains 5 majority-Black districts, 5 majority-Hispanic districts, and 1 majority-Asian district. IRC Plan B contains 4 majority-Black districts, 5 majority-Hispanic districts, and 1 majority-Asian district. Finally, the 2012-2020 plan contained 3 majority-Black districts, 3 majority-Hispanic districts, and 1 majority-Asian district. Tables 8-11 below show the district-by-district numbers for each plan for each of the racial categories noted above.

Table 7: Summary of Race Statistics - Number of majority minority districts in each plan.

Proposal/Minority Districts:	Majority Non-White	Majority Black	Majority Hispanic	Majority Asian
Senate Proposal	26	4	4	1
IRC Plan A	24	5	5	1
IRC Plan B	24	4	5	1
2012-2020 Districts	21	3	3	1

¹The LATFOR prisoner-adjusted data reports race based on the Census “single race” measures. For example, Black individuals who identify as multi-racial would be counted in the “Multiple Races” category and not the “Black Alone” category. Because the Multiple Races category does not allow one to determine which races a person selected, I calculate the race percentages for each plan using the “Black Alone” and “Asian Alone” categories. Hispanic calculations differ because Hispanic is an ethnicity and not a race on the Census form. Thus, Hispanic calculations reflect any person who responded Hispanic on the Census regardless of whether they identified with any other races or ethnicities. To calculate the prisoner-adjusted non-White VAP I take the total adjusted voting age population minus only those individuals who identify as “White Alone, non-Hispanic”.

Table 8

District	%Non-White VAP			
	Senate Plan	IRC A	IRC B	2012-2020 Plan
1	26.97%	26.39%	27.84%	26.65%
2	23.73%	21.26%	25.32%	24.54%
3	55.00%	28.25%	41.96%	43.07%
4	18.14%	55.54%	42.66%	38.02%
5	39.21%	32.83%	28.26%	29.67%
6	47.87%	59.03%	66.51%	45.59%
7	46.10%	47.65%	39.30%	46.77%
8	40.03%	27.17%	21.01%	41.68%
9	40.51%	39.01%	43.62%	40.26%
10	83.86%	84.24%	84.08%	94.57%
11	75.35%	62.60%	60.81%	65.38%
12	55.97%	55.96%	76.86%	62.28%
13	89.27%	84.14%	91.35%	86.44%
14	94.09%	92.78%	85.88%	91.28%
15	60.21%	75.07%	57.19%	50.59%
16	68.68%	88.58%	87.43%	82.29%
17	66.53%	33.82%	94.49%	45.05%
18	65.39%	65.69%	66.22%	72.47%
19	85.96%	89.85%	76.57%	84.65%
20	69.82%	70.02%	68.03%	80.94%
21	86.74%	77.34%	68.98%	76.63%
22	50.45%	69.01%	33.93%	47.56%
23	54.70%	55.21%	54.57%	57.59%
24	27.12%	26.85%	27.34%	27.18%
25	69.31%	78.02%	76.16%	68.43%
26	30.62%	48.30%	48.31%	44.07%
27	68.75%	48.41%	48.55%	38.71%
28	27.60%	42.44%	44.02%	25.76%
29	50.52%	28.51%	28.54%	78.09%
30	36.46%	77.91%	37.09%	76.62%

District-by-District %Non-White VAP

Table 8 Cont'd

District	%Non-White VAP			
	Senate Plan	IRC A	IRC B	2012-2020 Plan
31	96.38%	37.26%	77.26%	67.55%
32	75.27%	88.81%	85.59%	97.76%
33	66.94%	98.06%	98.17%	96.24%
34	97.84%	82.81%	83.56%	66.12%
35	96.25%	93.28%	93.18%	61.26%
36	63.69%	91.23%	90.83%	94.33%
37	54.85%	64.80%	67.90%	38.06%
38	94.52%	40.62%	55.72%	38.64%
39	42.39%	37.89%	40.63%	41.67%
40	38.64%	56.17%	38.44%	28.64%
41	46.30%	29.77%	30.88%	28.98%
42	31.90%	29.45%	36.39%	32.01%
43	24.32%	12.61%	29.07%	12.51%
44	24.23%	33.03%	26.58%	33.89%
45	29.48%	9.90%	15.84%	9.57%
46	25.38%	40.48%	33.27%	17.01%
47	8.51%	10.98%	22.80%	16.24%
48	18.81%	10.39%	9.29%	12.32%
49	9.00%	23.75%	10.14%	20.41%
50	12.75%	29.99%	12.60%	15.47%
51	11.24%	22.82%	15.09%	10.48%
52	19.00%	21.84%	10.57%	15.73%
53	21.14%	17.11%	29.73%	27.05%
54	10.84%	9.92%	11.09%	11.79%
55	28.23%	26.25%	18.24%	22.99%
56	26.96%	38.38%	47.92%	36.33%
57	39.33%	11.30%	11.03%	11.59%
58	11.04%	11.09%	21.65%	15.40%
59	9.50%	13.92%	9.66%	10.81%
60	25.59%	45.54%	11.00%	19.14%
61	10.53%	12.71%	16.66%	24.06%
62	11.09%	9.91%	14.14%	14.68%
63	44.44%	21.46%	50.04%	46.39%

District-by-District %Non-White VAP

Table 9

District	%Black VAP			
	Senate Plan	IRC A	IRC B	2012-2020 Plan
1	5.11%	5.25%	5.46%	5.17%
2	4.19%	2.93%	5.17%	4.69%
3	11.17%	6.09%	7.20%	8.22%
4	2.92%	13.86%	13.37%	10.02%
5	12.27%	2.79%	3.63%	3.12%
6	10.47%	23.29%	25.68%	14.17%
7	9.62%	8.92%	4.41%	7.72%
8	13.10%	6.69%	2.60%	15.38%
9	13.66%	12.69%	14.69%	13.60%
10	51.51%	51.70%	50.09%	46.56%
11	2.79%	4.79%	3.41%	3.78%
12	6.38%	2.65%	8.77%	5.45%
13	7.27%	7.41%	6.23%	6.34%
14	48.11%	47.15%	45.78%	46.91%
15	7.54%	7.84%	2.86%	5.04%
16	4.60%	2.65%	6.93%	3.82%
17	5.34%	2.74%	67.29%	3.65%
18	14.26%	12.44%	13.21%	18.51%
19	59.51%	63.09%	51.54%	57.16%
20	48.68%	49.21%	46.69%	46.88%
21	63.74%	51.51%	1.60%	50.83%
22	4.41%	1.62%	2.72%	1.69%
23	18.33%	18.24%	18.10%	16.57%
24	2.39%	2.50%	2.67%	2.51%
25	42.12%	50.08%	48.38%	40.42%
26	2.87%	7.03%	7.04%	5.19%
27	2.64%	5.99%	6.03%	5.98%
28	3.11%	5.91%	5.94%	2.64%
29	6.39%	3.60%	3.60%	23.21%
30	5.57%	38.50%	6.59%	38.86%

District-by-District %Black VAP

Table 9 Cont'd

District	%Black VAP			
	Senate Plan	IRC A	IRC B	2012-2020 Plan
31	33.57%	6.63%	37.88%	11.16%
32	38.35%	29.20%	28.67%	36.21%
33	11.92%	36.21%	36.00%	27.86%
34	33.65%	15.79%	16.13%	15.70%
35	28.23%	27.07%	27.04%	17.50%
36	13.64%	59.62%	59.95%	58.35%
37	13.94%	15.60%	15.83%	6.38%
38	60.47%	12.09%	14.61%	11.29%
39	8.82%	5.87%	12.09%	11.30%
40	11.29%	14.65%	6.60%	4.92%
41	14.32%	5.42%	5.55%	9.40%
42	6.27%	8.25%	10.01%	9.08%
43	7.90%	2.27%	9.35%	2.58%
44	5.38%	14.99%	7.64%	15.43%
45	12.76%	1.77%	3.60%	1.42%
46	8.35%	13.68%	15.11%	3.63%
47	1.31%	1.52%	6.22%	4.88%
48	4.31%	2.13%	1.35%	2.94%
49	1.66%	7.13%	1.46%	5.81%
50	2.88%	14.91%	3.04%	4.96%
51	1.73%	5.51%	4.34%	1.63%
52	6.95%	5.22%	2.05%	4.30%
53	5.02%	5.03%	14.83%	13.51%
54	2.30%	2.05%	2.61%	2.60%
55	13.07%	10.83%	5.69%	9.81%
56	12.01%	22.01%	27.04%	18.24%
57	20.65%	1.93%	1.72%	1.90%
58	1.71%	2.86%	5.07%	3.24%
59	2.14%	3.34%	2.23%	2.34%
60	10.98%	28.42%	3.20%	6.82%
61	3.89%	2.78%	4.51%	10.40%
62	3.37%	2.36%	5.80%	6.33%
63	27.27%	10.63%	32.01%	30.55%

District-by-District %Black VAP

Table 10

District	%Hispanic VAP			
	Senate Plan	IRC A	IRC B	2012-2020 Plan
1	15.10%	14.68%	17.47%	16.19%
2	12.17%	9.55%	11.13%	10.25%
3	38.08%	16.05%	29.34%	29.30%
4	10.61%	35.71%	23.03%	21.78%
5	18.41%	14.48%	13.12%	12.93%
6	20.59%	27.03%	29.09%	20.65%
7	13.92%	14.93%	12.20%	15.00%
8	18.40%	14.76%	10.72%	20.76%
9	16.11%	16.36%	16.98%	16.52%
10	18.60%	17.09%	17.97%	20.30%
11	12.74%	15.87%	22.48%	16.16%
12	24.98%	30.00%	30.14%	30.37%
13	59.39%	58.51%	60.33%	58.97%
14	16.15%	16.65%	12.80%	17.78%
15	21.66%	29.50%	27.32%	26.54%
16	19.30%	19.09%	16.07%	17.04%
17	36.00%	9.36%	18.40%	12.59%
18	40.78%	42.74%	42.56%	43.46%
19	16.93%	17.81%	11.48%	15.13%
20	12.05%	11.20%	11.40%	18.82%
21	11.24%	11.74%	16.66%	13.09%
22	22.07%	16.81%	9.43%	13.32%
23	22.31%	21.71%	21.43%	21.90%
24	11.16%	11.19%	11.46%	11.24%
25	17.00%	19.28%	18.61%	15.90%
26	8.51%	22.58%	22.61%	13.96%
27	17.64%	15.35%	15.38%	12.95%
28	7.52%	15.32%	16.38%	7.34%
29	15.80%	8.09%	8.00%	49.65%
30	12.54%	30.35%	13.63%	28.45%

District-by-District %Hispanic VAP

Table 10 Cont'd

District	%Hispanic VAP			
	Senate Plan	IRC A	IRC B	2012-2020 Plan
31	63.05%	13.68%	30.19%	49.28%
32	27.77%	56.74%	53.07%	58.43%
33	48.65%	63.30%	63.70%	67.73%
34	59.55%	64.72%	65.29%	40.81%
35	67.99%	57.44%	57.44%	33.05%
36	39.78%	26.06%	25.69%	30.47%
37	31.19%	40.69%	43.56%	22.56%
38	28.62%	19.11%	31.54%	17.69%
39	23.69%	22.33%	19.12%	23.10%
40	17.69%	31.28%	21.36%	17.10%
41	25.64%	17.88%	18.70%	12.44%
42	18.65%	15.19%	19.18%	16.73%
43	9.63%	3.44%	12.70%	3.52%
44	11.89%	6.87%	13.16%	6.98%
45	6.12%	2.07%	5.45%	2.08%
46	5.84%	18.71%	6.93%	6.65%
47	2.17%	4.26%	6.48%	4.49%
48	7.44%	3.21%	2.00%	3.76%
49	2.45%	6.26%	2.75%	4.59%
50	3.28%	5.79%	3.68%	2.96%
51	4.34%	10.82%	4.23%	3.22%
52	4.05%	5.21%	2.65%	3.70%
53	4.95%	4.52%	5.81%	5.51%
54	3.91%	2.61%	3.78%	4.09%
55	6.23%	7.41%	4.36%	7.33%
56	8.70%	10.38%	13.23%	10.48%
57	9.12%	3.96%	4.03%	4.48%
58	4.01%	3.49%	5.27%	3.38%
59	2.22%	2.37%	2.23%	2.59%
60	7.55%	9.33%	4.23%	5.88%
61	2.28%	3.31%	3.28%	3.77%
62	2.96%	2.77%	3.09%	3.15%
63	5.99%	4.21%	8.48%	7.73%

District-by-District %Hispanic VAP

Table 11

District	%Asian VAP			
	Senate Plan	IRC A	IRC B	2012-2020 Plan
1	4.03%	3.64%	1.88%	2.45%
2	4.88%	6.52%	6.58%	7.22%
3	3.37%	3.46%	3.39%	3.16%
4	2.58%	3.96%	3.89%	4.04%
5	6.15%	13.46%	9.43%	11.56%
6	14.52%	6.31%	9.15%	8.52%
7	19.71%	20.93%	20.17%	21.25%
8	6.37%	3.53%	5.62%	3.22%
9	7.69%	6.95%	8.73%	7.09%
10	6.66%	7.06%	7.66%	13.71%
11	58.16%	39.53%	32.62%	42.50%
12	21.01%	20.83%	26.63%	22.86%
13	21.24%	16.51%	23.43%	19.60%
14	21.79%	20.93%	20.93%	19.10%
15	21.47%	26.36%	24.59%	15.56%
16	42.31%	65.48%	60.97%	59.34%
17	19.68%	17.33%	4.71%	24.36%
18	7.62%	7.67%	7.58%	7.85%
19	5.78%	4.99%	8.35%	8.72%
20	4.42%	4.53%	4.99%	11.32%
21	6.27%	8.77%	48.77%	7.66%
22	21.24%	48.62%	17.40%	30.24%
23	11.71%	13.14%	12.96%	16.83%
24	11.79%	11.35%	11.36%	11.61%
25	6.51%	5.50%	5.85%	8.12%
26	14.73%	15.68%	15.64%	21.55%
27	46.44%	23.88%	23.94%	16.11%
28	13.81%	17.26%	17.68%	12.52%
29	25.16%	13.63%	13.80%	5.87%
30	14.83%	7.56%	13.43%	7.82%

District-by-District %Asian VAP

Table 11 Cont'd

District	%Asian VAP			
	Senate Plan	IRC A	IRC B	2012-2020 Plan
31	2.23%	13.49%	7.54%	6.59%
32	7.56%	4.62%	5.28%	5.17%
33	5.72%	1.31%	1.28%	2.89%
34	6.17%	3.53%	3.46%	8.50%
35	2.53%	9.22%	9.21%	8.65%
36	9.02%	3.42%	3.06%	3.82%
37	7.85%	7.31%	7.57%	6.66%
38	3.59%	7.13%	7.80%	7.26%
39	7.37%	7.30%	7.14%	3.20%
40	7.26%	8.27%	7.79%	4.27%
41	3.79%	4.00%	4.25%	3.68%
42	4.47%	2.55%	2.85%	2.86%
43	3.06%	2.97%	3.64%	2.24%
44	2.14%	7.17%	2.20%	7.54%
45	6.77%	0.88%	2.56%	0.86%
46	5.13%	3.62%	7.18%	2.58%
47	0.85%	1.03%	4.07%	3.31%
48	2.98%	1.00%	0.82%	1.26%
49	0.95%	4.22%	1.89%	3.86%
50	1.23%	4.72%	1.35%	3.51%
51	1.03%	2.91%	3.07%	1.36%
52	3.87%	7.04%	1.90%	3.71%
53	6.73%	4.08%	4.70%	3.60%
54	0.91%	1.01%	1.10%	1.46%
55	5.08%	5.03%	4.98%	2.89%
56	3.40%	2.96%	4.66%	4.51%
57	6.29%	1.01%	0.67%	0.72%
58	0.66%	0.91%	6.97%	4.48%
59	1.17%	5.71%	1.31%	2.93%
60	3.60%	4.75%	0.95%	3.08%
61	1.94%	3.00%	5.93%	6.90%
62	1.08%	0.72%	1.17%	1.04%
63	8.26%	3.32%	6.54%	5.16%

District-by-District %Asian VAP

Conclusion

The Senate's proposed remedial map is an improvement in many ways to the 2012-2020 map and stands out in a number of areas in comparison to the two IRC plans. It contains the smallest population deviation of all of the plans and is comparable to the other plans presented here on number of counties split, but importantly has the lowest total number of county splits. The Senate's proposed plan is more compact than the 2012-2020 plan and is comparable to the IRC plans on different compactness measures. The Senate's proposed plan furthermore manages to improve upon the 2012-2020 map in terms of population equality and geographic compactness while still also retaining a high proportion of previous district cores. Finally all of the proposed 2022 plans are very similar overall on measures of race and contain slightly more majority-minority districts than did the 2012-2020 map, although the Senate's proposed plan contains two more majority-minority districts than either IRC plan.

Dated: May 4, 2022



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ACADEMIC APPOINTMENTS **Brigham Young University**, Provo, UT
August 2020 - present Associate Professor, Department of Political Science
2014 - July 2020 Assistant Professor, Department of Political Science
2014 - present Faculty Scholar, Center for the Study of Elections and Democracy

EDUCATION **Princeton University Department of Politics**, Princeton, NJ
Ph.D., Politics, July 2014

- Advisors: Brandice Canes-Wrone, Nolan McCarty, and Kosuke Imai
- Dissertation: "Buying Representation: the Incentives, Ideology, and Influence of Campaign Contributions on American Politics"
- 2015 Carl Albert Award for Best Dissertation, Legislative Studies Section, American Political Science Association (APSA)

M.A., Politics, December 2011
Brigham Young University, Provo, UT
B.A., International Relations - Political Economy Focus, April, 2008

- *Cum Laude*

RESEARCH INTERESTS American politics, congressional polarization, political ideology, campaign finance, survey research

PUBLICATIONS 19. **"Ideological Disagreement and Pre-emption in Municipal Policymaking"**
with Adam Dynes
Forthcoming at *American Journal of Political Science*
18. **"Comparing Campaign Finance and Vote Based Measures of Ideology"**
Forthcoming at *Journal of Politics*
17. **"The Participatory and Partisan Impacts of Mandatory Vote-by-Mail"**, with
John Holbein
Science Advances, 2020. Vol. 6, no. 35, DOI: 10.1126/sciadv.abc7685
16. **"Issue Politicization and Interest Group Campaign Contribution Strategies"**,
with Mandi Eatough
Journal of Politics, 2020. Vol. 82: No. 3, pp. 1008-1025

15. **“Campaign Contributions and Donors’ Policy Agreement with Presidential Candidates”**, with Brandice Canes-Wrone and Sharece Thrower
Presidential Studies Quarterly, 2019, 49 (4) 770–797
14. **“Conservatism in the Era of Trump”**, with Jeremy Pope
Perspectives on Politics, 2019, 17 (3) 719–736
13. **“Legislative Constraints on Executive Unilateralism in Separation of Powers Systems”**, with Alex Bolton and Sharece Thrower
Legislative Studies Quarterly, 2019, 44 (3) 515–548
Awarded the Jewell-Loewenberg Award for best article in the area of subnational politics published in *Legislative Studies Quarterly* in 2019
12. **“Electoral Competitiveness and Legislative Productivity”**, with Soren Schmidt
American Politics Research, 2019, 47 (4) 683–708
11. **“Does Party Trump Ideology? Disentangling Party and Ideology in America”**, with Jeremy Pope
American Political Science Review, 2019, 113 (1) 38–54
10. **“The Evolution of National Constitutions”**, with Scott Abramson
Quarterly Journal of Political Science, 2019, 14 (1) 89–114
9. **“Who is Ideological? Measuring Ideological Responses to Policy Questions in the American Public”**, with Jeremy Pope
The Forum: A Journal of Applied Research in Contemporary Politics, 2018, 16 (1) 97–122
8. **“Status Quo Bias in Ballot Wording”**, with David Gordon, Ryan Hill, and Joe Price
The Journal of Experimental Political Science, 2017, 4 (2) 151–160.
7. **“Ideologically Sophisticated Donors: Which Candidates Do Individual Contributors Finance?”**, with Brandice Canes-Wrone and Sharece Thrower
American Journal of Political Science, 2017, 61 (2) 271–288.
6. **“Gender Inequalities in Campaign Finance: A Regression Discontinuity Design”**, with Daniel Butler and Jessica Preece
Quarterly Journal of Political Science, 2016, Vol. 11, No. 2: 219–248.
5. **“Representing the Preferences of Donors, Partisans, and Voters in the U.S. Senate”**
Public Opinion Quarterly, 2016, 80: 225–249.
4. **“Donation Motivations: Testing Theories of Access and Ideology”**
Political Research Quarterly, 2016, 69 (1) 148–160.
3. **“Ideological Donors, Contribution Limits, and the Polarization of State Legislatures”**
Journal of Politics, 2016, 78 (1) 296–310.
2. **“Online Polls and Registration Based Sampling: A New Method for Pre-Election Polling”** with Quin Monson, Kelly Patterson and Chris Mann.
Political Analysis 2014, 22 (3) 321–335.
1. **“Causes and Consequences of Political Polarization”** In *Negotiating Agreement in Politics*. Jane Mansbridge and Cathie Jo Martin, eds., Washington, DC: American Political Science Association: 19–53. with Nolan McCarty. 2013.
 - Reprinted in *Solutions to Political Polarization in America*, Cambridge University Press. Nate Persily, eds. 2015
 - Reprinted in *Political Negotiation: A Handbook*, Brookings Institution Press. Jane Mansbridge and Cathie Jo Martin, eds. 2015

AVAILABLE
WORKING PAPERS

“Misclassification and Bias in Predictions of Individual Ethnicity from Administrative Records” (Revise and Resubmit at *American Political Science Review*)

“Taking Cues When You Don’t Care: Issue Importance and Partisan Cue Taking”
with Jeremy Pope (Revise and Resubmit)

“A Revolution of Rights in American Founding Documents”
with Scott Abramson and Jeremy Pope (Conditionally Accepted)

“410 Million Voting Records Show the Distribution of Turnout in America Today”
with John Holbein (Revise and Resubmit)

“Partisanship and Trolleyology”
with Ryan Davis (Under Review)

“Who’s the Partisan: Are Issues or Groups More Important to Partisanship?”
with Jeremy Pope (Revise and Resubmit)

“Race and Realignment in American Politics”
with Jeremy Pope (Revise and Resubmit)

“The Policy Preferences of Donors and Voters”

“Estimating Neighborhood Effects on Turnout from Geocoded Voter Registration Records.”
with Kosuke Imai

“Super PAC Contributions in Congressional Elections”

WORKS IN
PROGRESS

“Collaborative Study of Democracy and Politics”
with Brandice Canes-Wrone, Gregory Huber, and Joshua Clinton

“Preferences for Representational Styles in the American Public”
with Ryan Davis and Adam Dynes

“Representation and Issue Congruence in Congress”
with Taylor Petersen

“Education, Income, and the Vote for Trump”
with Edie Ellison

INVITED
PRESENTATIONS

“Are Mormons Breaking Up with Republicanism? The Unique Political Behavior of Mormons in the 2016 Presidential Election”

- Ivy League LDS Student Association Conference - Princeton University, November 2018, Princeton, NJ

“Issue Politicization and Access-Oriented Giving: A Theory of PAC Contribution Behavior”

- Vanderbilt University, May 2017, Nashville, TN

“Lost in Issue Space? Measuring Levels of Ideology in the American Public”

- Yale University, April 2016, New Haven, CT

“The Incentives, Ideology, and Influence of Campaign Donors in American Politics”

- University of Oklahoma, April 2016, Norman, OK

“Lost in Issue Space? Measuring Levels of Ideology in the American Public”

- University of Wisconsin - Madison, February 2016, Madison, WI

“Polarization and Campaign Contributors: Motivations, Ideology, and Policy”

- Hewlett Foundation Conference on Lobbying and Campaign Finance, October 2014, Palo Alto, CA

“Ideological Donors, Contribution Limits, and the Polarization of State Legislatures”

- Bipartisan Policy Center Meeting on Party Polarization and Campaign Finance, September 2014, Washington, DC

“Representing the Preferences of Donors, Partisans, and Voters in the U.S. Senate”

- Yale Center for the Study of American Politics Conference, May 2014, New Haven, CT

CONFERENCE
PRESENTATIONS

Washington D.C. Political Economy Conference (PECO):

- 2017 discussant

American Political Science Association (APSA) Annual Meeting:

- 2014 participant and discussant, 2015 participant, 2016 participant, 2017 participant, 2018 participant

Midwest Political Science Association (MPSA) Annual Meeting:

- 2015 participant and discussant, 2016 participant and discussant, 2018 participant

Southern Political Science Association (SPSA) Annual Meeting:

- 2015 participant and discussant, 2016 participant and discussant, 2017 participant

TEACHING
EXPERIENCE

Poli 315: Congress and the Legislative Process

- Fall 2014, Winter 2015, Fall 2015, Winter 2016, Summer 2017

Poli 328: Quantitative Analysis

- Winter 2017, Fall 2017, Fall 2019, Winter 2020, Fall 2020, Winter 2021

Poli 410: Undergraduate Research Seminar in American Politics

- Fall 2014, Winter 2015, Fall 2015, Winter 2016, Summer 2017

AWARDS AND
GRANTS

2019 BYU Mentored Environment Grant (MEG), American Ideology Project, \$30,000

2017 BYU Political Science Teacher of the Year Award

2017 BYU Mentored Environment Grant (MEG), Funding American Democracy Project, \$20,000

2016 BYU Political Science Department, Political Ideology and President Trump (with Jeremy Pope), \$7,500

2016 BYU Office of Research and Creative Activities (ORCA) Student Mentored Grant x 3

- Hayden Galloway, Jennica Peterson, Rebecca Shuel

2015 BYU Office of Research and Creative Activities (ORCA) Student Mentored Grant x 3

- Michael-Sean Covey, Hayden Galloway, Sean Stephenson

2015 BYU Student Experiential Learning Grant, American Founding Comparative Constitutions Project (with Jeremy Pope), \$9,000

2015 BYU Social Science College Research Grant, \$5,000

2014 BYU Political Science Department, 2014 Washington DC Mayoral Pre-Election Poll (with Quin Monson and Kelly Patterson), \$3,000

2014 BYU Social Science College Award, 2014 Washington DC Mayoral Pre-Election Poll (with Quin Monson and Kelly Patterson), \$3,000

2014 BYU Center for the Study of Elections and Democracy, 2014 Washington DC Mayoral Pre-Election Poll (with Quin Monson and Kelly Patterson), \$2,000

2012 Princeton Center for the Study of Democratic Politics Dissertation Improvement Grant, \$5,000

2011 Princeton Mamdouha S. Bobst Center for Peace and Justice Dissertation Research Grant, \$5,000

2011 Princeton Political Economy Research Grant, \$1,500

OTHER SCHOLARLY
ACTIVITIES

Expert Witness in Nancy Carola Jacobson, et al., Plaintiffs, vs. Laurel M. Lee, et al., Defendants. Case No. 4:18-cv-00262 MW-CAS (U.S. District Court for the Northern District of Florida)

Expert Witness in Common Cause, et al., Plaintiffs, vs. LEWIS, et al., Defendants. Case No. 18-CVS-14001 (Wake County, North Carolina)

Expert Witness in Kelvin Jones, et al., Plaintiffs, v. Ron DeSantis, et al., Defendants, Consolidated Case No. 4:19-cv-300 (U.S. District Court for the Northern District of Florida)

Expert Witness in Community Success Initiative, et al., Plaintiffs, v. Timothy K. Moore, et al., Defendants, Case No. 19-cv-15941 (Wake County, North Carolina)

Expert Witness in Richard Rose et al., Plaintiffs, v. Brad Raffensperger, Defendant, Civil Action No. 1:20-cv-02921-SDG (U.S. District Court for the Northern District of Georgia)

Georgia Coalition for the People's Agenda, Inc., et al., Plaintiffs, v. Brad Raffensberger, Defendant. Civil Action No. 1:18-cv-04727-ELR (U.S. District Court for the Northern District of Georgia)

Expert Witness in Alabama, et al., Plaintiffs, v. United States Department of Commerce; Gina Raimondo, et al., Defendants. Case No. CASE No. 3:21-cv-00211-RAH-ECM-KCN (U.S. District Court for the Middle District of Alabama Eastern Division)

Expert Witness in League of Women Voters of Ohio, et al., Relators, v. Ohio Redistricting Commission, et al., Respondents. Case No. 2021-1193 (Supreme Court of Ohio)

Expert Witness in Regina Adams, et al., Relators, v. Governor Mike DeWine, et al., Respondents. Case No. 2021-1428 (Supreme Court of Ohio)

Expert Witness in Rebecca Harper, et al., Plaintiffs, v. Representative Destin Hall, et al., Defendants (Consolidated Case). Case No. 21 CVS 500085 (Wake County, North Carolina)

ADDITIONAL
TRAINING

EITM 2012 at Princeton University - Participant and Graduate Student Coordinator

COMPUTER
SKILLS

Statistical Programs: R, Stata, SPSS, parallel computing

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