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SELECTING U.S. SENATORS BY THE ORIGINAL METHOD: INTERSECTING MATHEMATICS AND SOCIAL STUDIES

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Mathematics teachers are concerned with incorporating connections with other academic areas in their mathematics curriculum. Social science provides a rich source of data which can be collected, organized, and interpreted by mathematics students. These data become of particular interest to many students if they involve political questions and processes.

Prior to Amendment 17 of the U.S. Constitution (ratified in 1913), the two U.S. senators from each state were selected by the state legislatures rather than in a general election. This suggests the following question: if Amendment 17 were not in effect today, what would be the likely party composition of the Senate of the 110th Congress (2007 – 2009)?

Although it is impossible to predict all the political considerations and payoffs that these selections might involve, it is likely that the following assumptions would hold.

1. If a single party had a majority in both houses of a state legislature, that state would elect two senators of that party.
2. If different parties controlled the two houses of a state's legislature, neither would succeed in naming two members of its party, so there would be one senator from each party.
3. If one house had a "tie" between the two parties, that house would likely successfully insist on one senator from each party.

The following table lists for each state:

- the two-party breakdown of each house of its legislature (as of 2007);

  D = Democratic, R = Republican
- current party composition of the state's two U.S. senators (determined by how they vote to organize the Senate);
- the hypothetical party composition of the state's two U.S. senators if both were chosen (by the original method) in 2007 according to our assumptions.

	State Legislatures				U.S. Senate			
State	House		Senate		Current		Hypothetical	
	D	R	D	R	D	R	D	R
AL	62	43	23	12	0	2	2	0
AK	17	23	9	11	0	2	0	2
AZ	28	32	12	18	0	2	0	2
AR	75	25	27	8	2	0	2	0
CA	48	32	25	15	2	0	2	0
CO	39	26	20	15	1	1	2	0
CT	106	45	24	12	2	0	2	0
DE	18	23	13	8	2	0	1	1
FL	41	79	14	26	1	1	0	2
GA	74	106	22	34	0	2	0	2
HI	43	8	20	5	2	0	2	0
ID	19	51	7	28	0	2	0	2
IL	66	52	37	22	2	0	2	0
IN	51	49	17	33	1	1	1	1
IA	54	45	30	20	1	1	2	0
KS	47	78	10	30	0	2	0	2
KY	61	39	16	21	0	2	1	1
LA	62	41	24	15	1	1	2	0
ME	89	60	18	17	0	2	2	0
MD	106	35	33	14	2	0	2	0
MA	141	19	35	5	2	0	2	0
MI	58	52	17	21	2	0	1	1

MN	85	49	44	23	1	1	2	0
MS	74	46	27	23	0	2	2	0
MO	71	92	13	21	1	1	0	2
MT	49	50	26	24	2	0	1	1
NE	Non-Partisan				1	1	1	1
NV	27	15	10	11	1	1	1	1
NH	236	161	14	10	0	2	2	0
NJ	49	31	22	18	2	0	2	0
NM	42	28	24	18	1	1	2	0
NY	105	45	28	34	2	0	1	1
NC	68	52	31	19	0	2	2	0
ND	33	61	21	26	2	0	0	2
OH	46	53	12	21	1	1	0	2
OK	44	57	24	24	0	2	1	1
OR	31	29	17	11	1	1	2	0
PA	102	101	21	29	1	1	1	1
RI	60	15	33	5	2	0	2	0
SC	51	73	20	26	0	2	0	2
SD	20	50	15	20	1	1	0	2
TN	53	46	16	17	0	2	1	1
TX	69	81	11	20	0	2	0	2
UT	20	55	8	21	0	2	0	2
VT	93	49	23	7	2	0	2	0
VA	40	57	17	23	1	1	0	2
WA	63	35	32	17	2	0	2	0
WV	72	28	23	11	2	0	2	0
WI	46	53	18	15	2	0	1	1
WY	17	43	7	23	0	2	0	2
Total					51	49	58	42

The Nebraska legislature contains only one house and is officially nonpartisan. We assume that in the spirit of nonpartisanship they would elect one member from each party.

A reversion to the pre-1913 method of selecting U.S. senators would give control of the Senate to the Democrats in the 110th Congress by a substantial margin, while the actual Democratic margin is only 51-49.

In any discussion of political matters, there are many different opinions and scenarios. Some of your students may dispute our three assumptions of how state legislatures would conduct elections. Let them form alternative assumptions and investigate the consequences of these new assumptions.

Challenges:

1. It appears that the Democratic Party is stronger at the state level than in the U.S. Senate. If so, why do you suppose that this might be true?
2. Find and investigate other connections between mathematics and social sciences.

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Both David and Bonnie have recently retired from the mathematics department at UNI.

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