Formula Funds Study: Simulations Visualization

Final Report

Presented by:
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Social Science Research Center
Mississippi State University

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Final Report

This is the final deliverable for the Simulation Visualization component of the Agriculture Formula Funds Counterfactual Project and marks the completion of the project. The visualizations here are driven by data generated by Drs. Wally Huffman and Robert Evenson. Complete discussion of their research approach and methodology can be found in their papers presented at Baltimore and submitted with their final report.

The main portion of this report is composed of slides that were presented at the 2002 National ESS and SAES / ARD Workshop in Baltimore, MD. Additional descriptive text has been added to this report as well as the data tables with the tabular state level data.

Any questions or comments about the Visualization Component of the Agriculture Formula Funds Counterfactual Project can be directed to:

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Review of Historic Numbers and Change

This section contains maps representing the first and last years of the baseline historic data that was used in the modeling simulations presented later in this report. The State Agriculture Experiment Station (SAES) expenditure data used was drawn from the Current Research Information System (CRIS) for the time period 1970 through 1995.

The maps present the shares of SAES revenues by source (Federal Funds, State Appropriations, Federal Grants, Contracts, and Cooperative Agreements, and Other, Non-Federal Funds) and Total Factor Productivity (an overall measure of agriculture productivity at the state level; for further information see the Huffman-Evenson paper cited in the introduction of this report). The maps visualize the beginning and ending values of each component for the time period (1970 – 1990) and the change in that component during that time.

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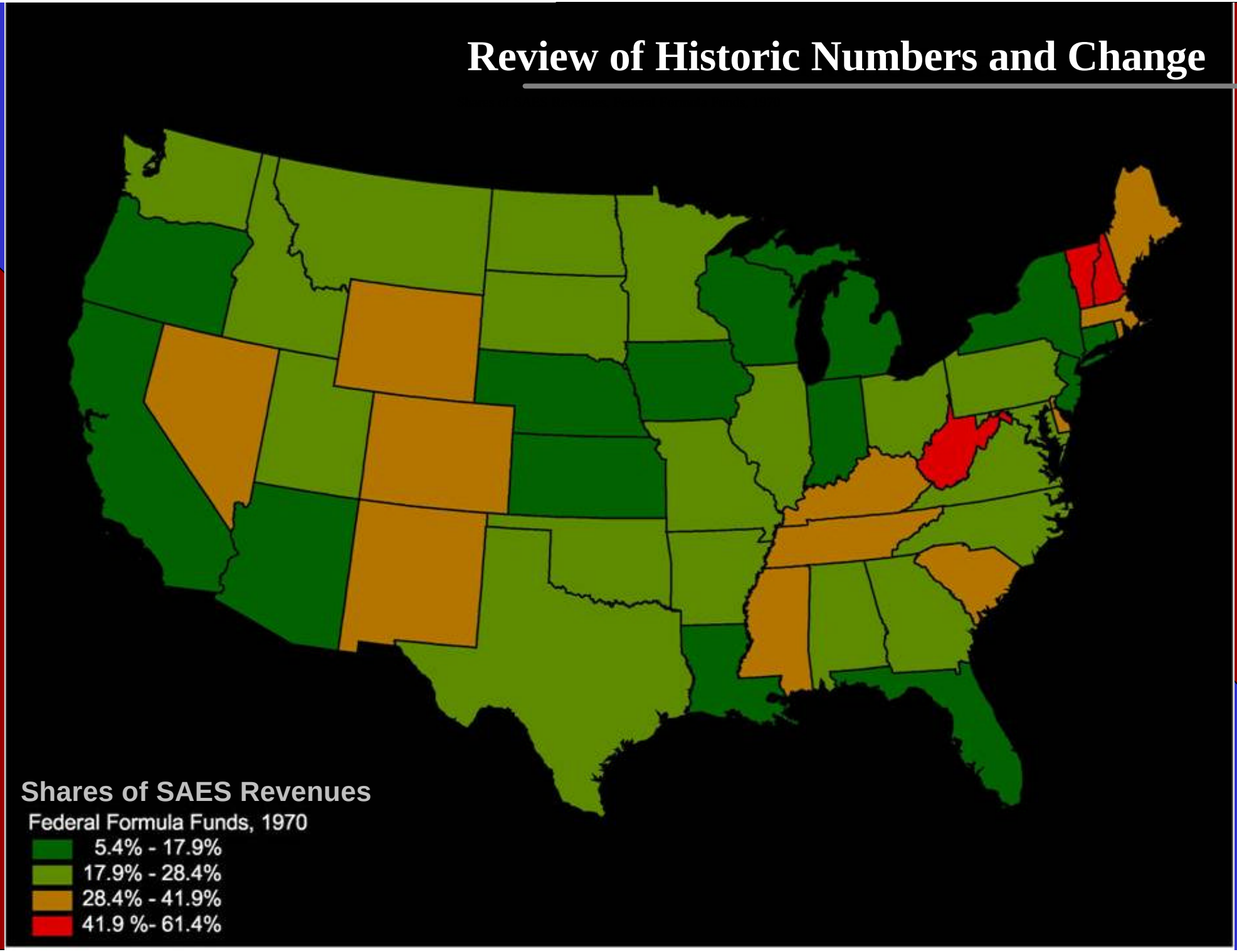
Review of Historic Numbers and Change



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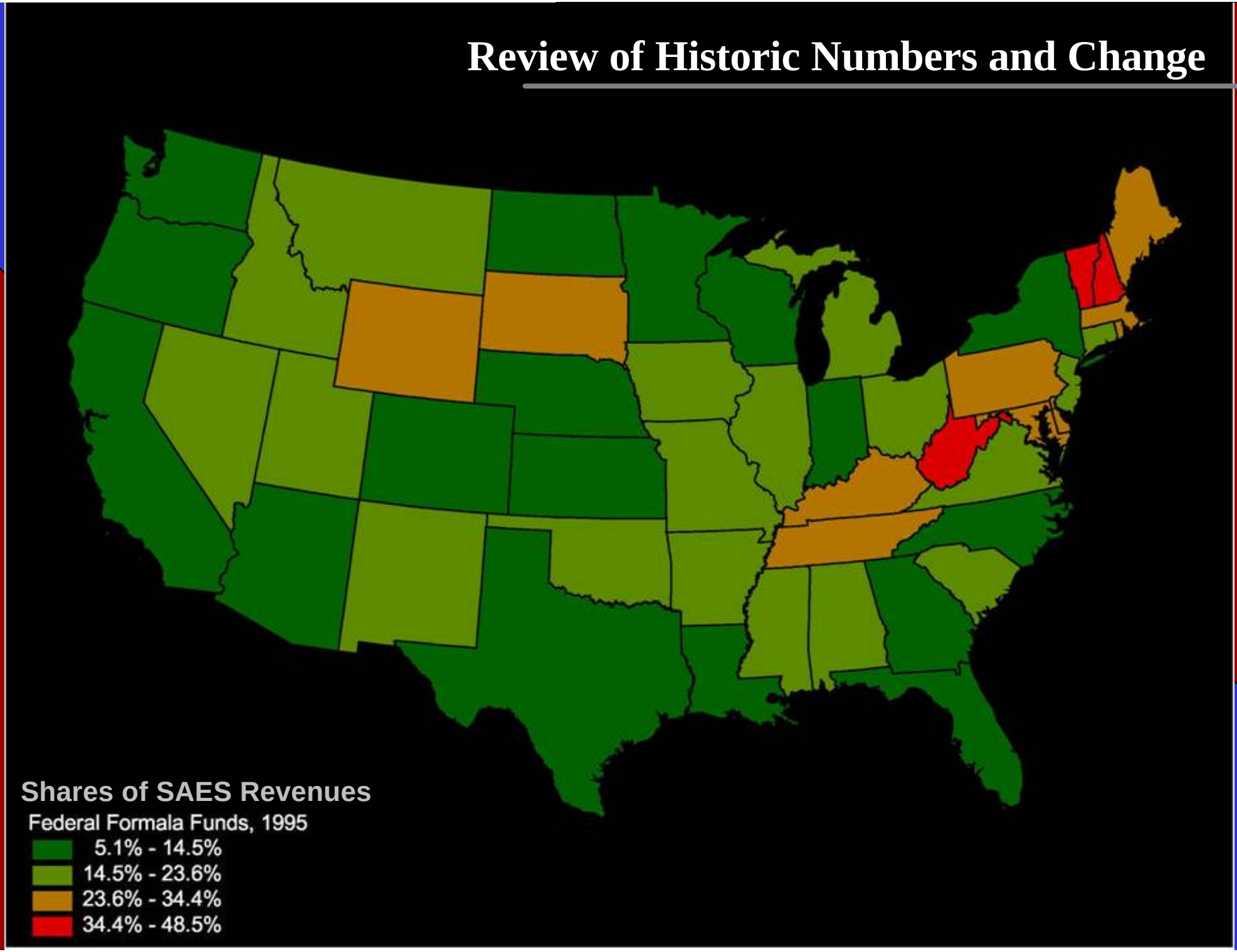

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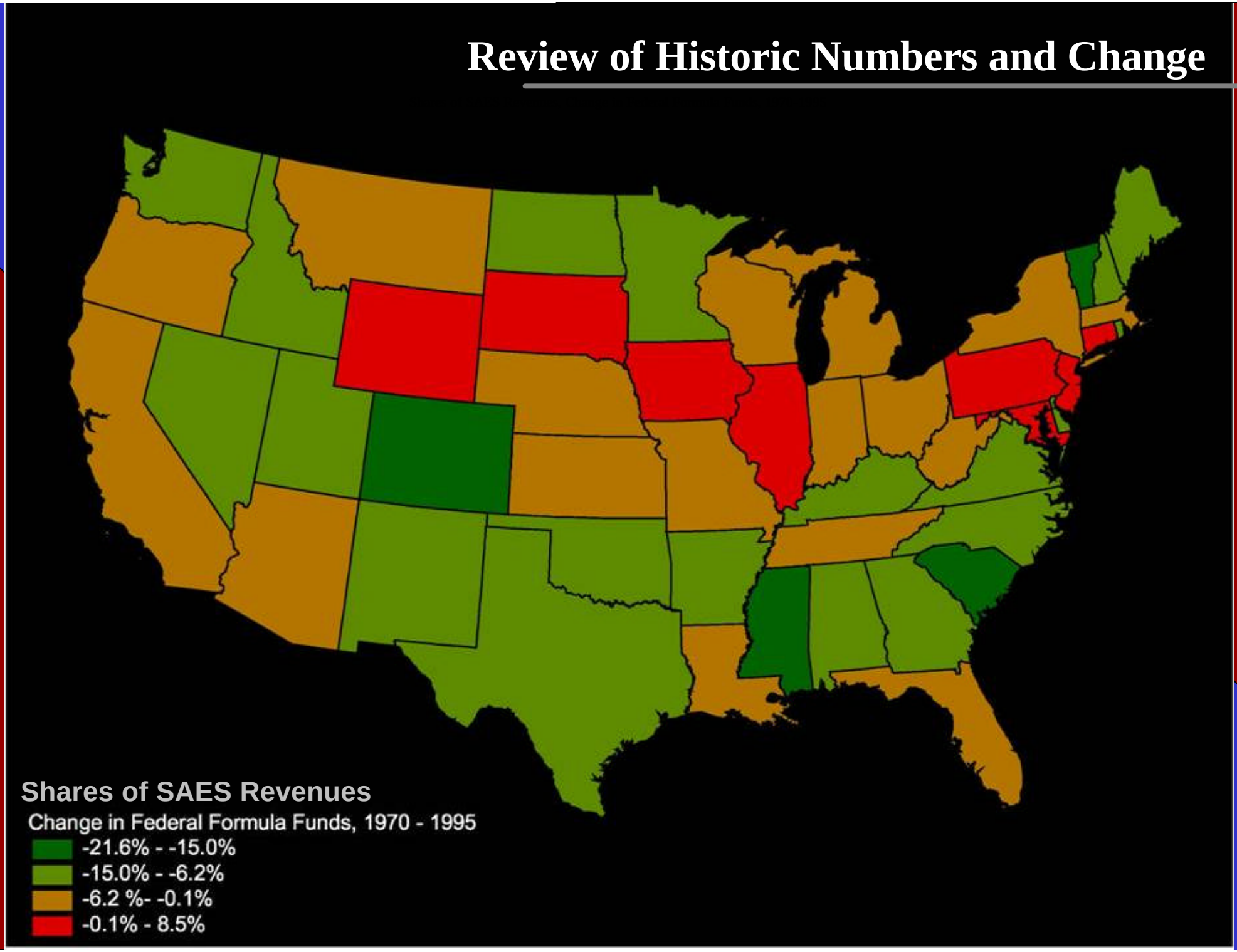

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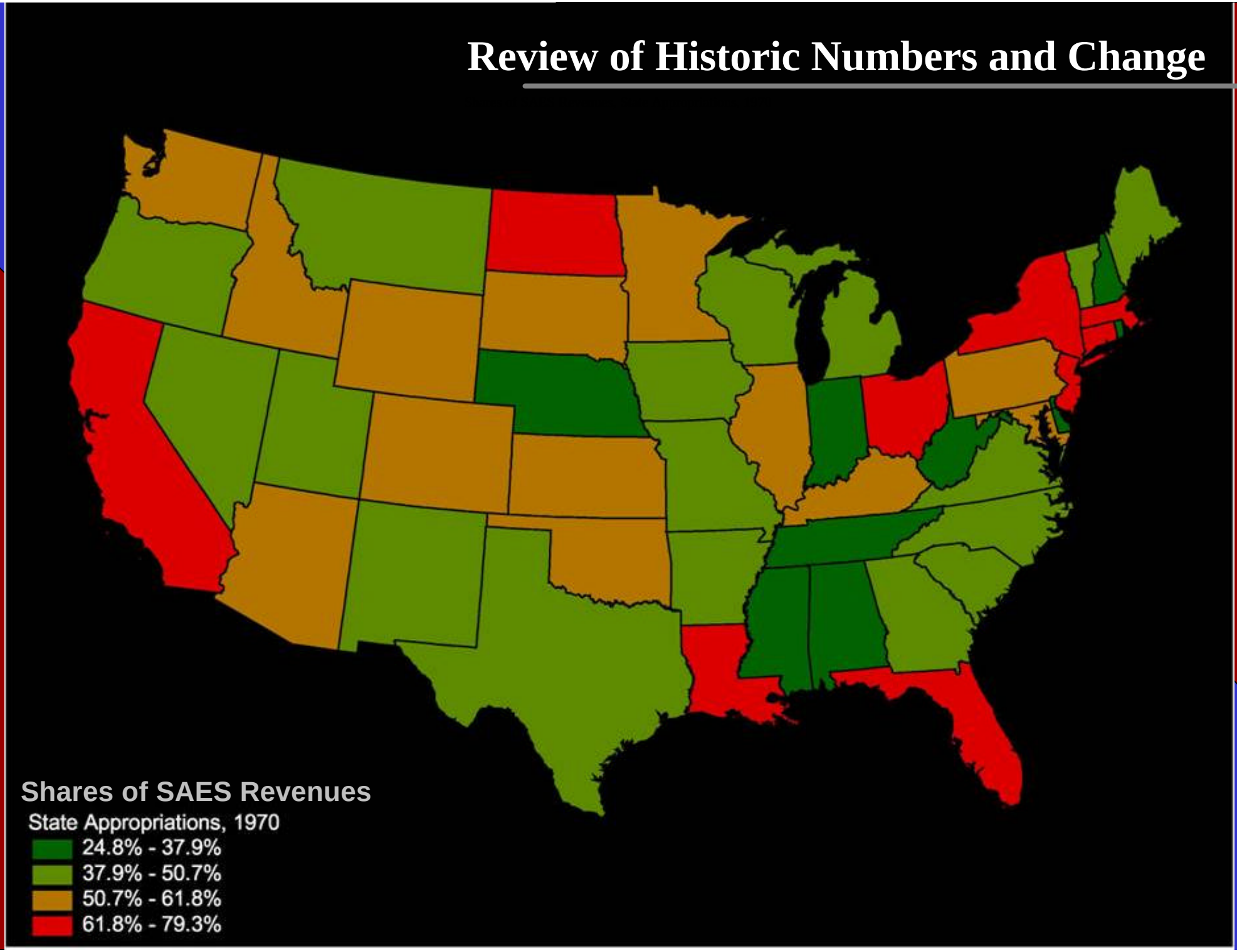

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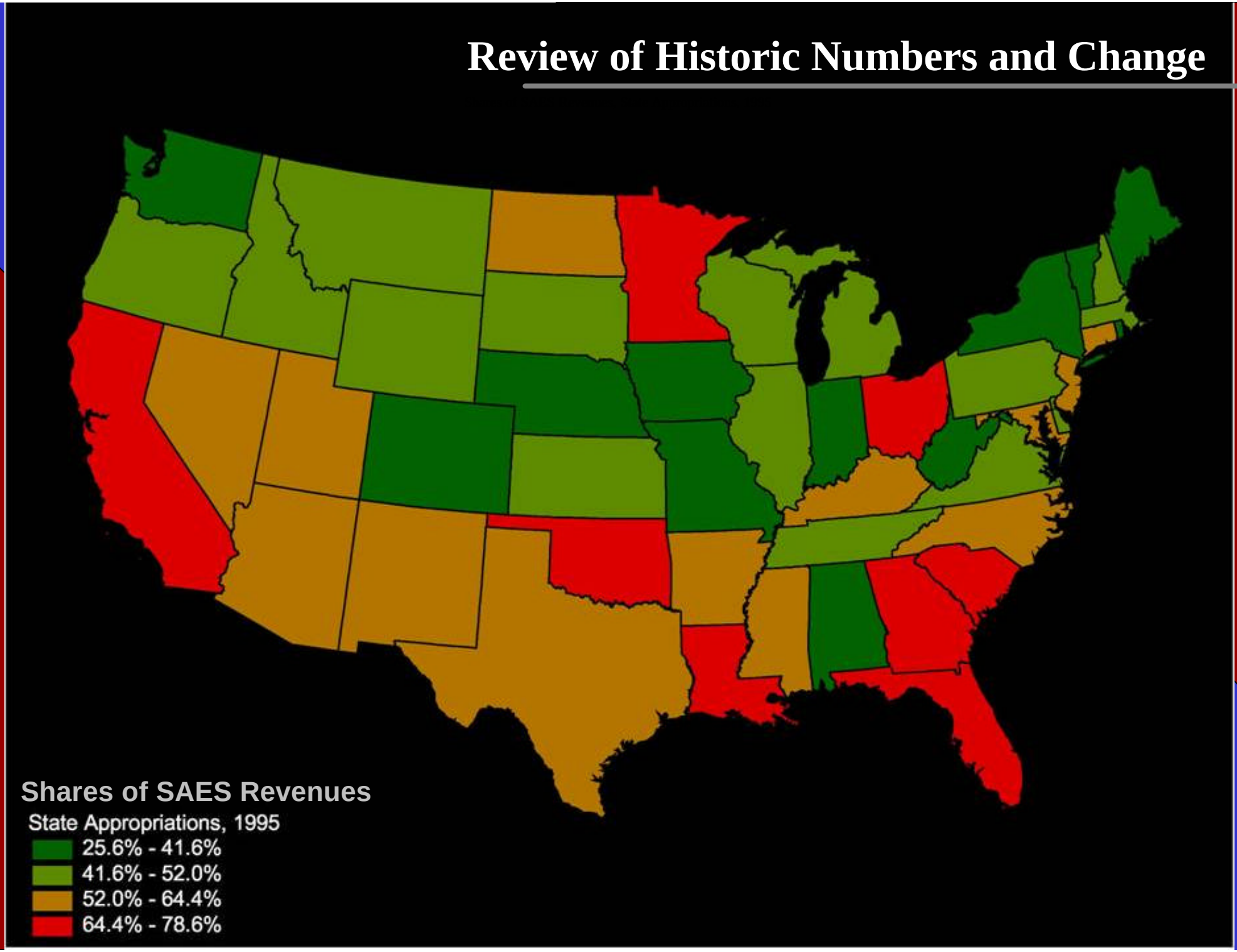

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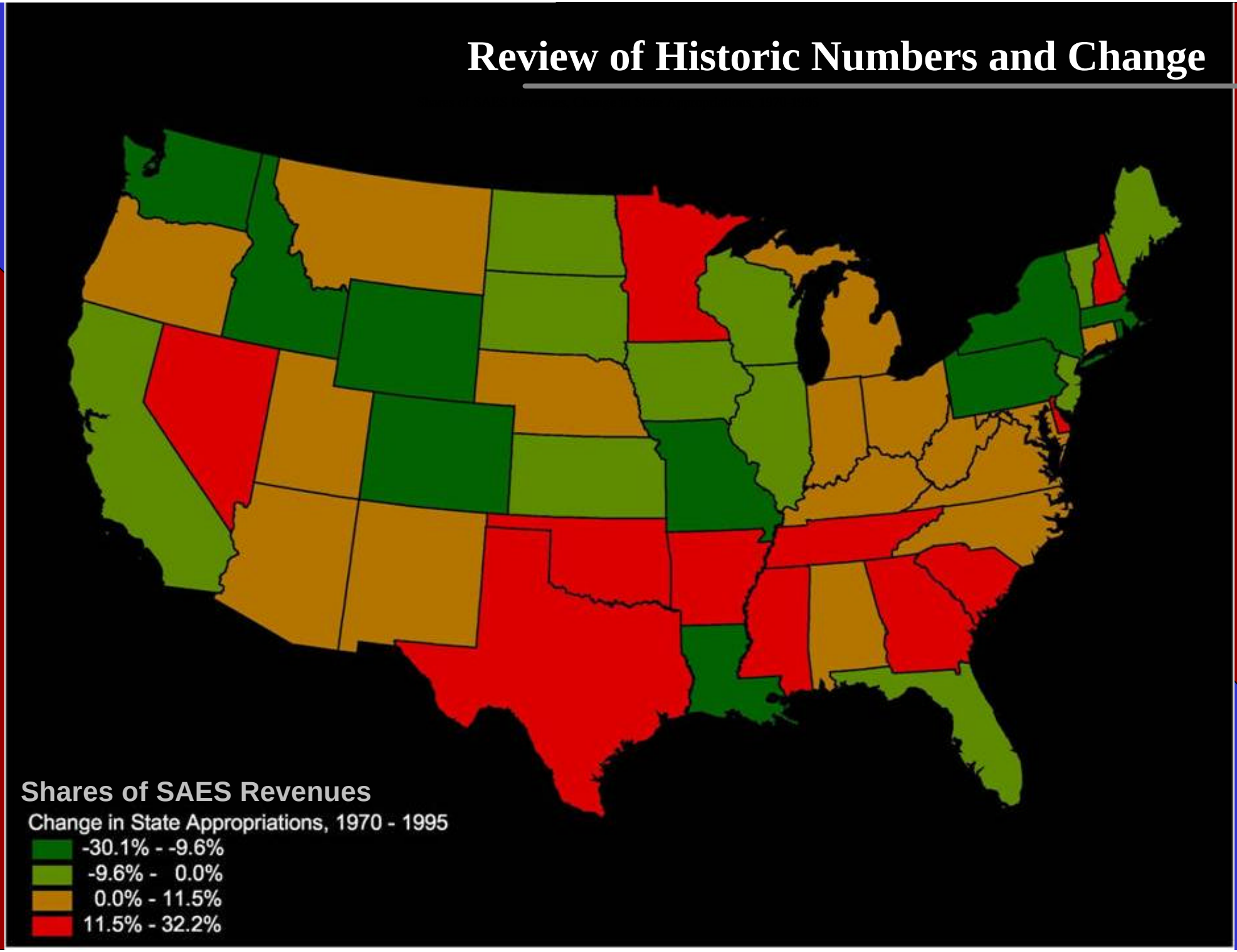

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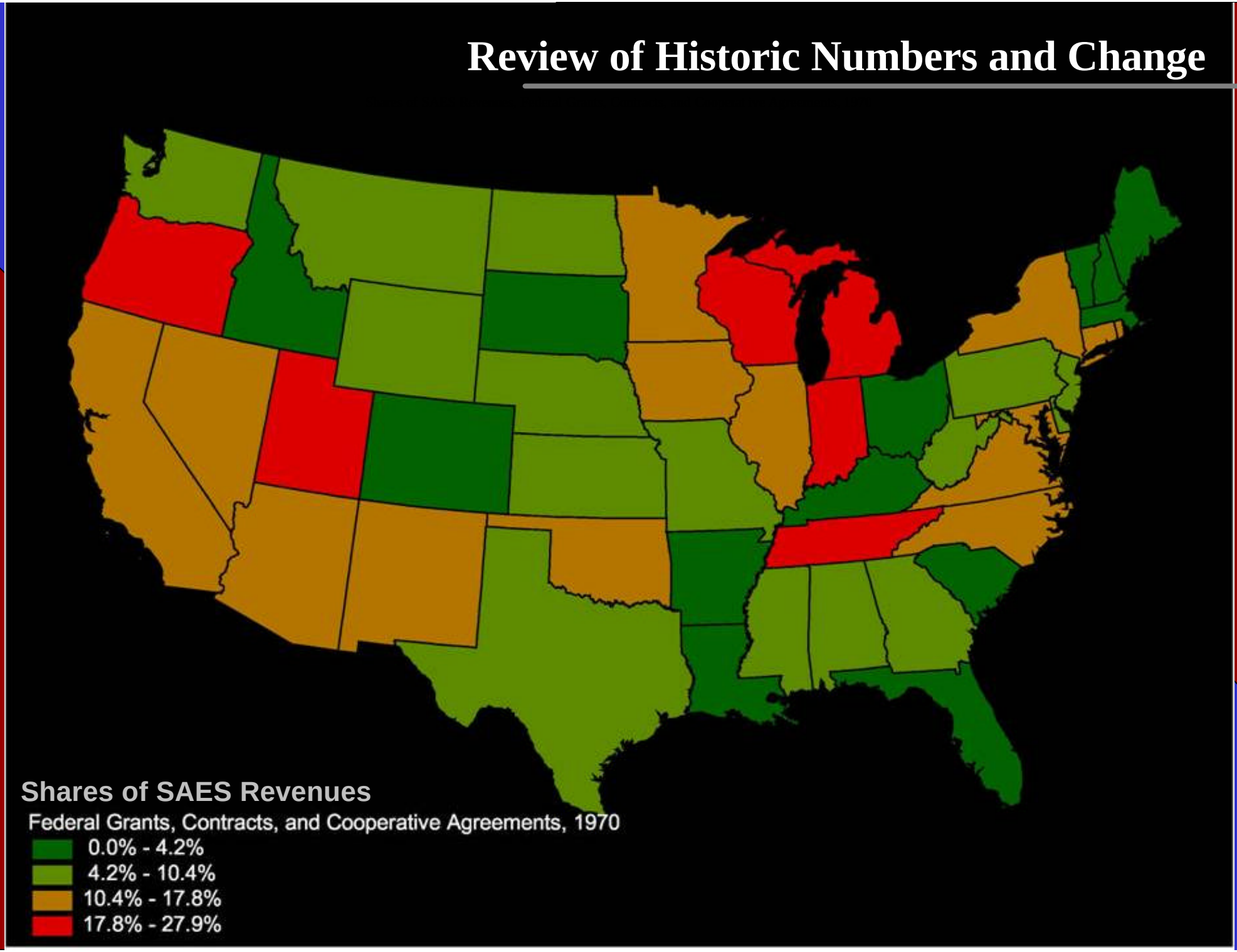

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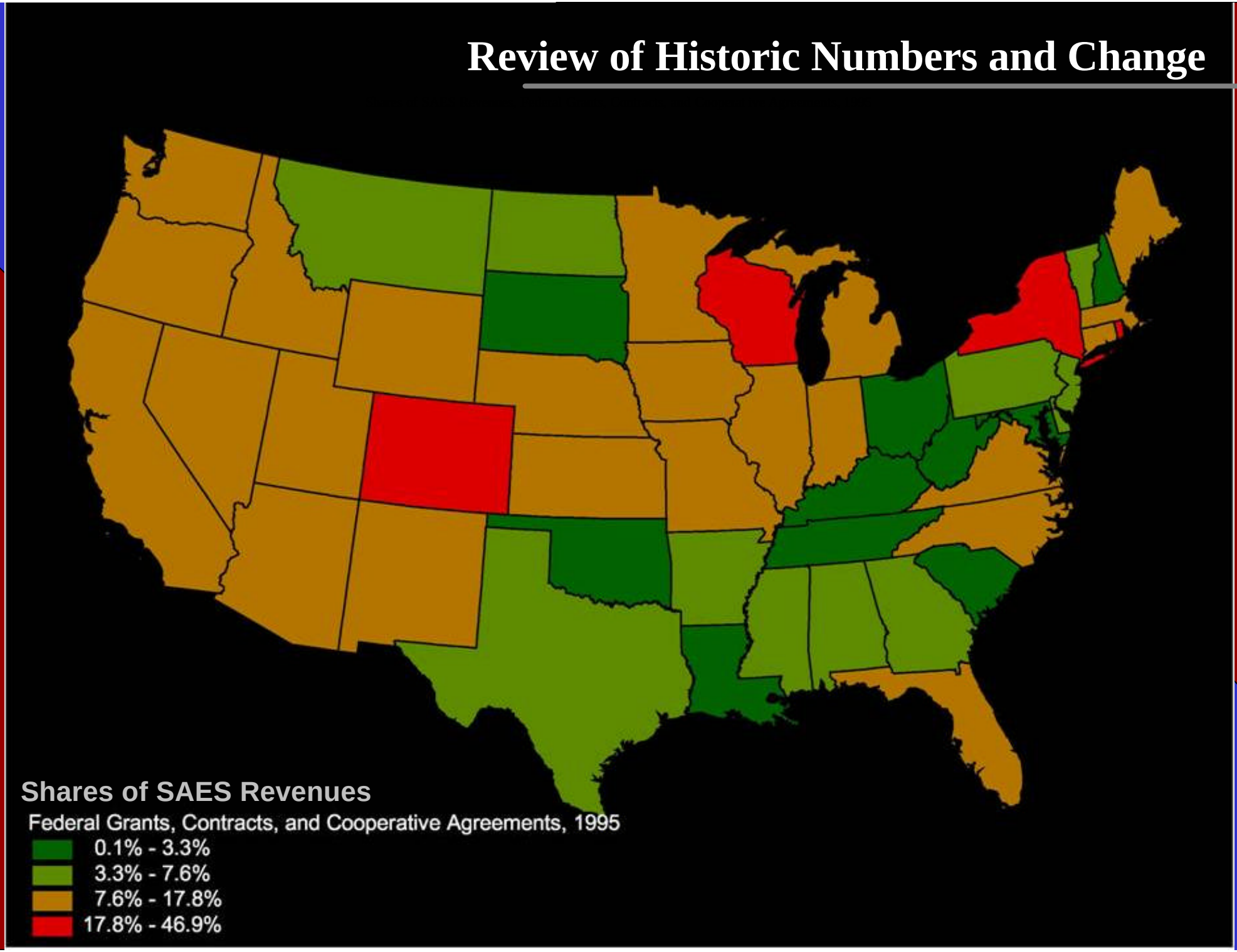

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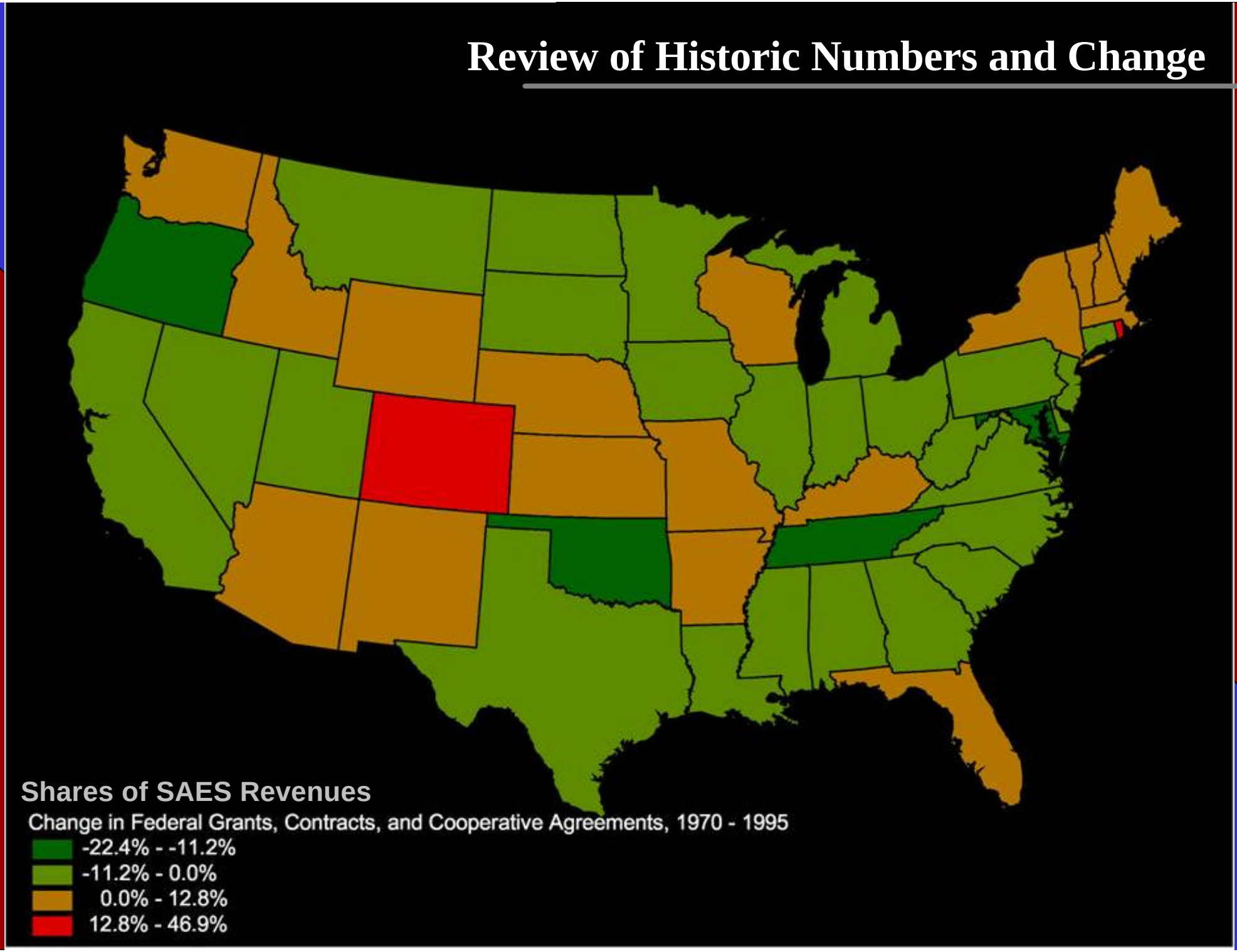

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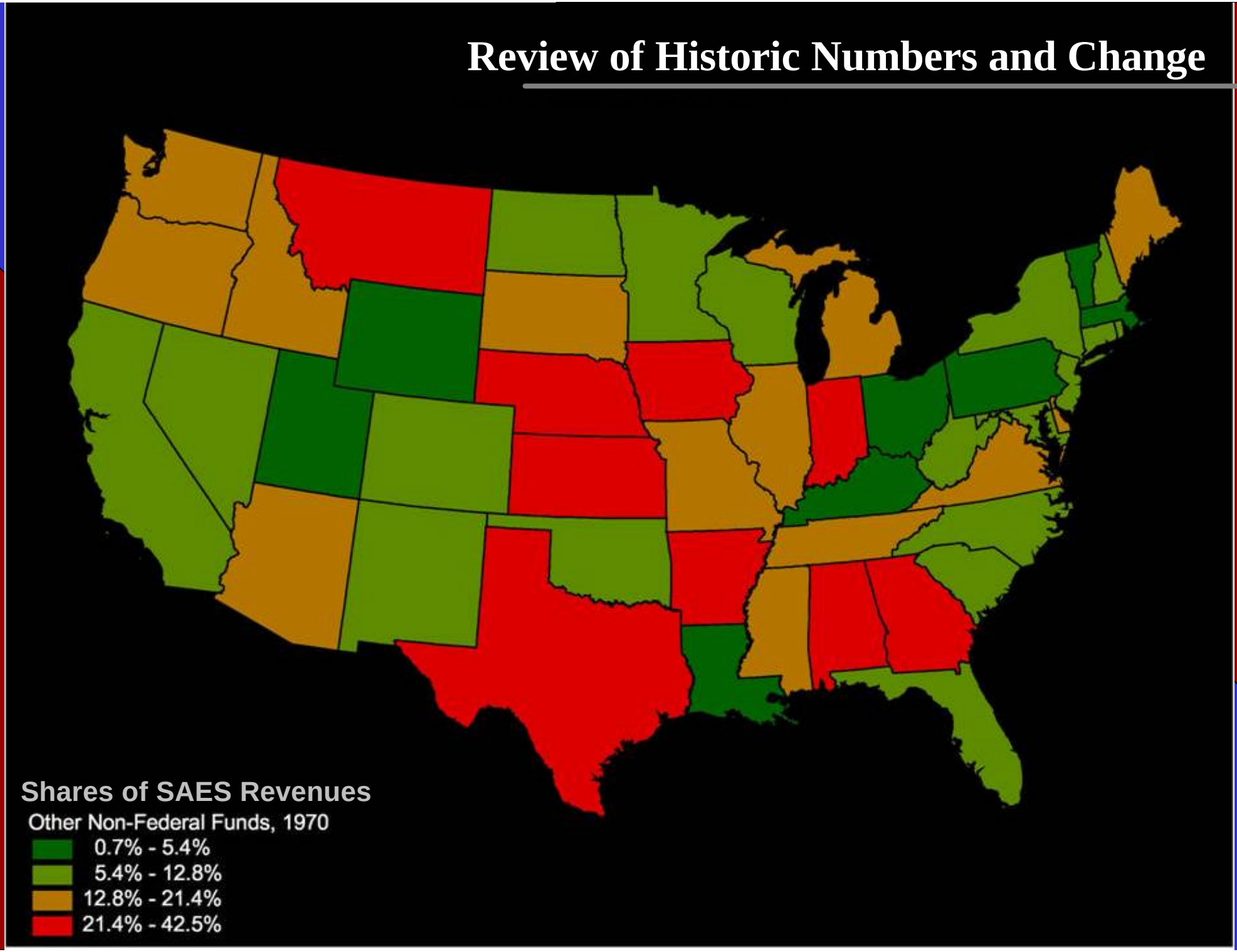

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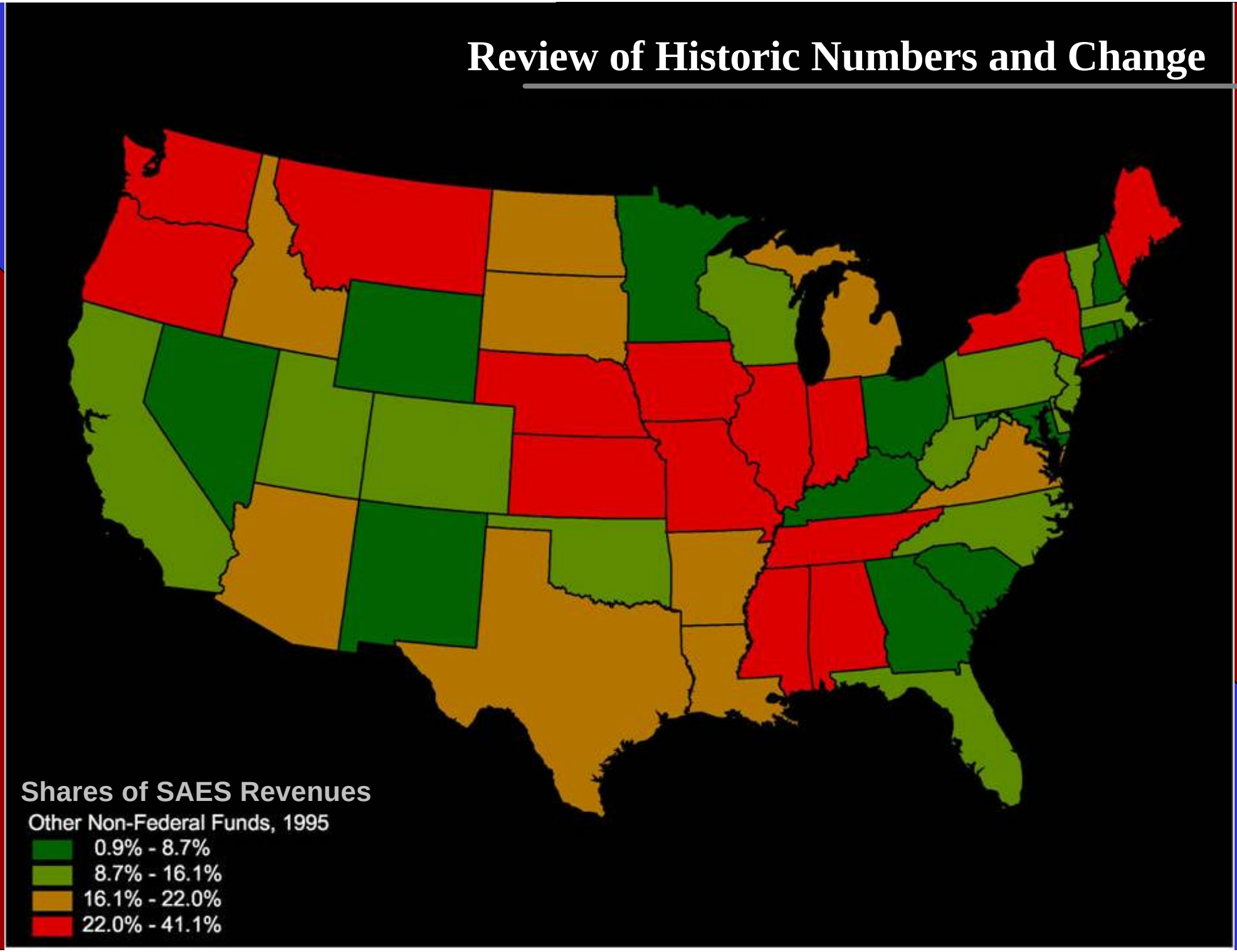

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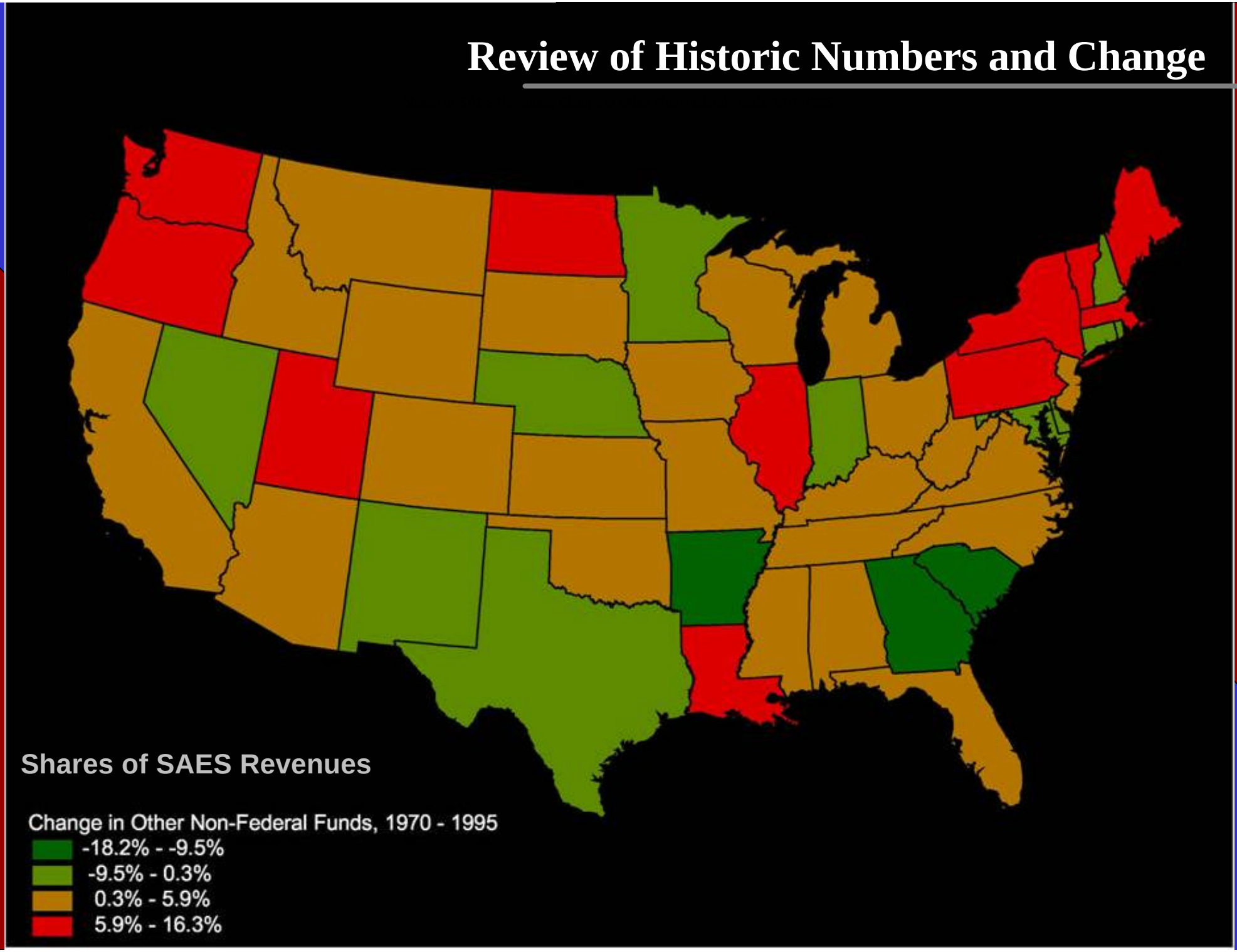

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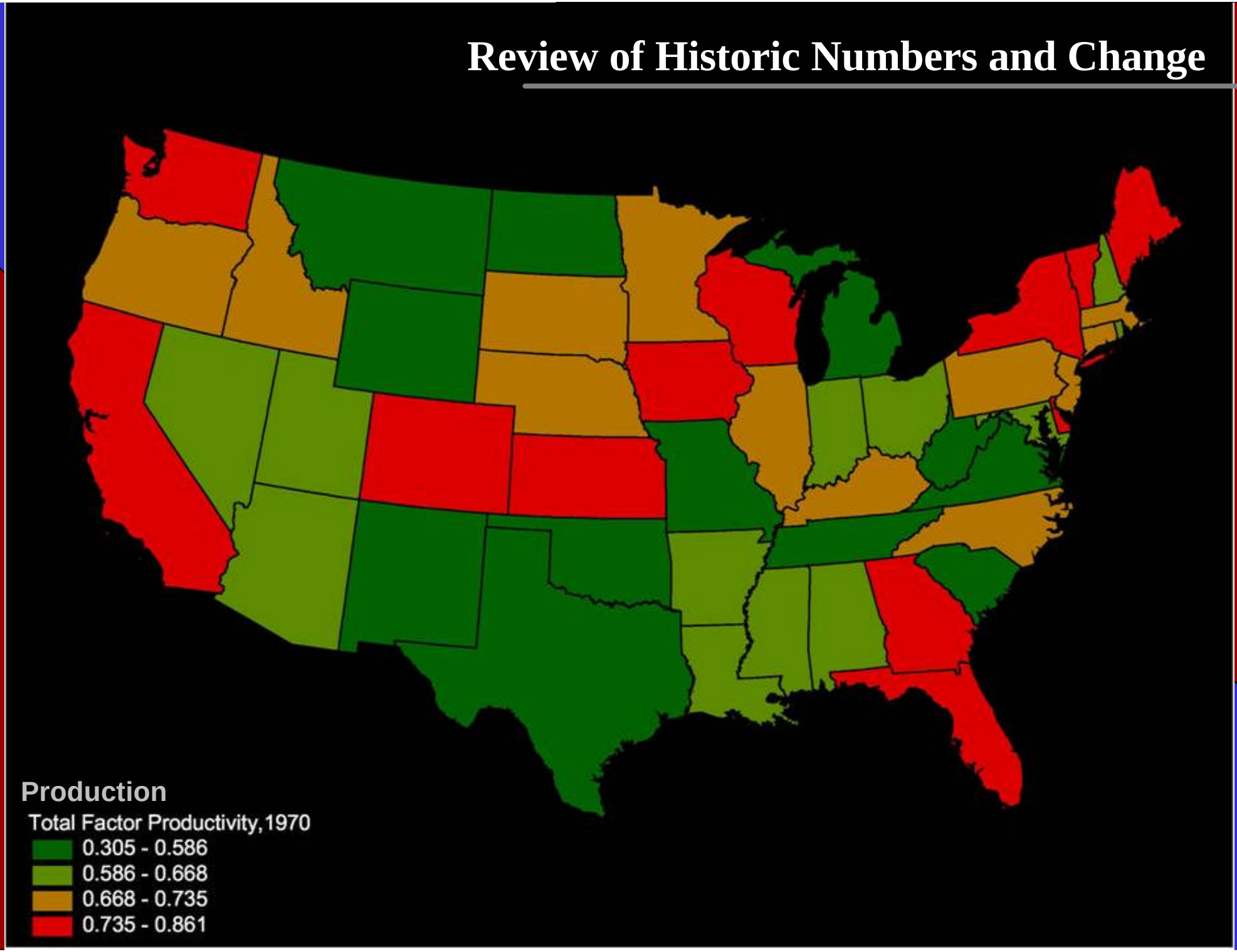

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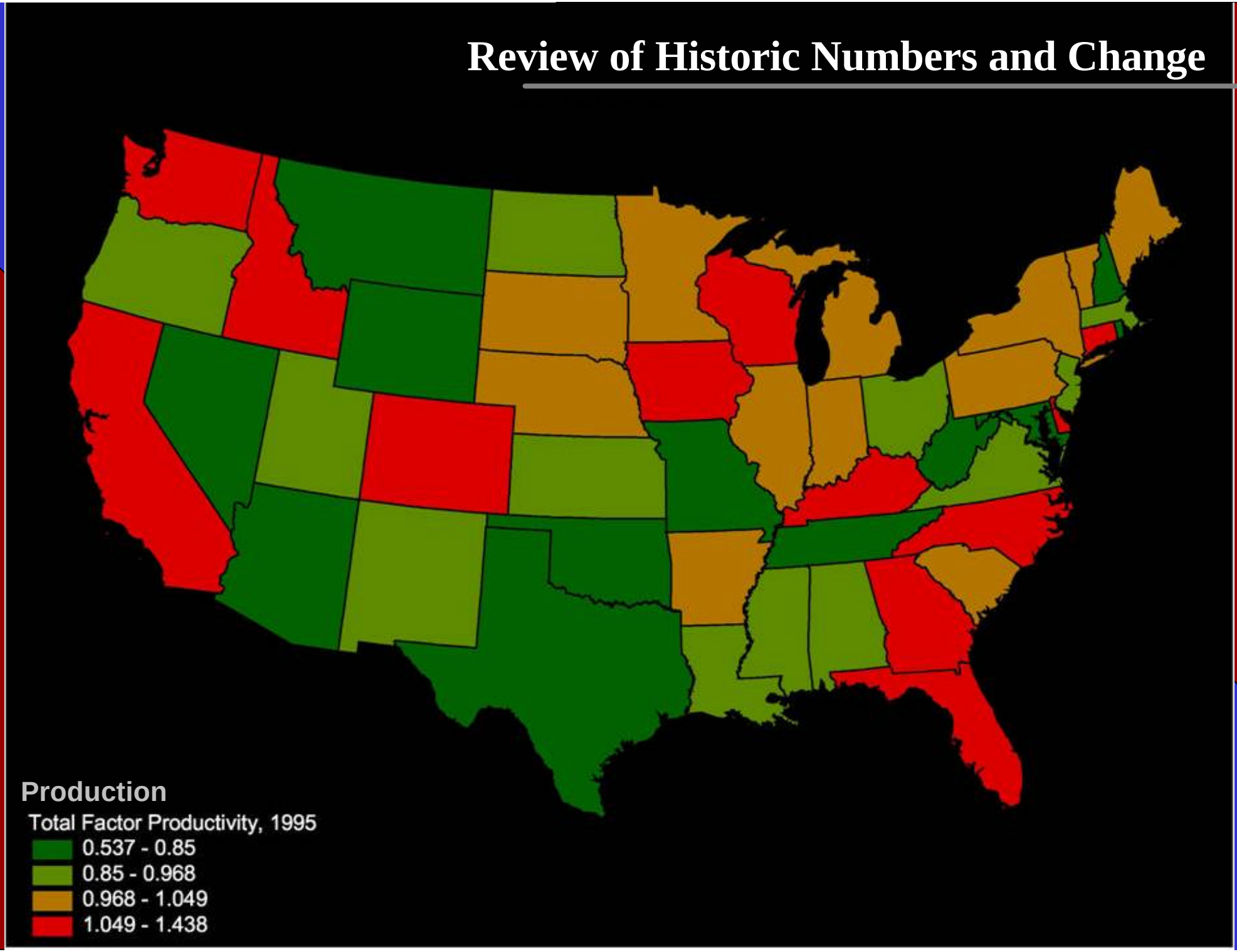

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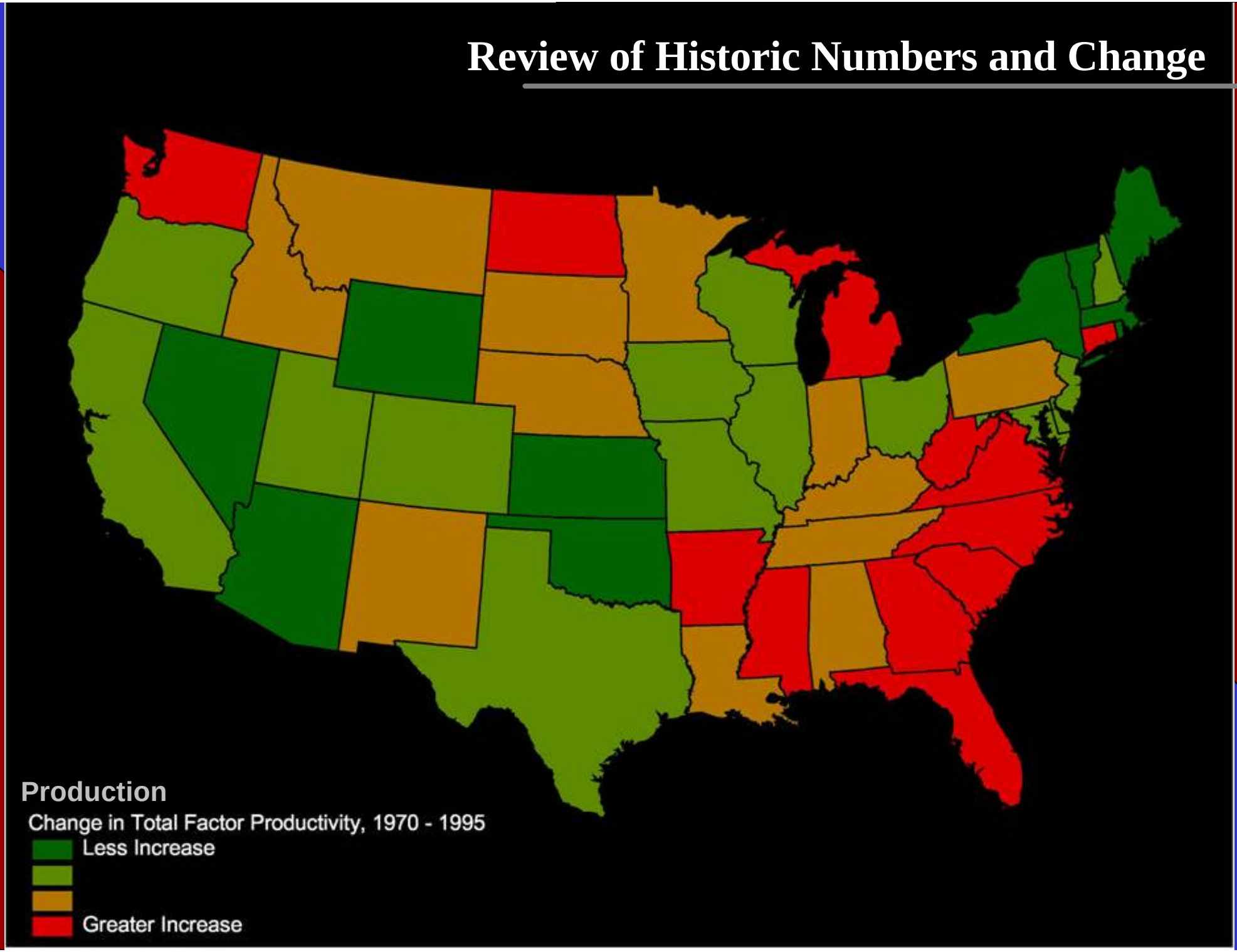

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Table 1: Review of Historical Numbers and Change, 1970 - 1995

State Name	Share of SAES Revenues from Federal Formula Funds, 1970	Share of SAES Revenues from Federal Formula Funds, 1995	Change in Share of SAES Revenues from Federal Formula Funds, 1970 - 1995	Share of SAES Revenues from State Appropriations, 1970	Share of SAES Revenues from State Appropriations, 1995	Change in Share of SAES Revenues from State Appropriations, 1970 - 1995	Share of SAES Revenues from Federal Grants, Contracts, and Cooperative Agreements, 1970	Share of SAES Revenues from Federal Grants, Contracts, and Cooperative Agreements, 1995	Change in Share of SAES Revenues from Federal Grants, Contracts, and Cooperative Agreements, 1970 - 1995	Share of SAES Revenues from Other, Non-Federal Funds, 1970	Share of SAES Revenues from Other, Non-Federal Funds, 1995	Change in Share of SAES Revenues from Other, Non-Federal Funds, 1970 - 1995	Agricultural Total Factor Productivity, 1970	Agricultural Total Factor Productivity, 1995	Change in Agricultural Total Factor Productivity, 1970 - 1995
Alabama	0.262	0.194	-0.068	0.371	0.416	0.045	0.065	0.062	-0.004	0.301	0.328	0.028	0.594	0.925	0.443
Arizona	0.135	0.096	-0.038	0.579	0.585	0.007	0.122	0.144	0.022	0.165	0.175	0.009	0.629	0.821	0.266
Arkansas	0.241	0.179	-0.062	0.461	0.597	0.136	0.026	0.047	0.021	0.272	0.177	-0.095	0.639	1.045	0.492
California	0.054	0.051	-0.003	0.696	0.692	-0.004	0.178	0.145	-0.033	0.072	0.111	0.040	0.770	1.061	0.321
Colorado	0.326	0.110	-0.216	0.569	0.268	-0.301	0.000	0.469	0.469	0.106	0.153	0.047	0.785	1.059	0.299
Connecticut	0.152	0.236	0.085	0.627	0.632	0.005	0.156	0.092	-0.064	0.065	0.039	-0.026	0.735	1.327	0.591
Delaware	0.380	0.276	-0.104	0.361	0.505	0.144	0.082	0.057	-0.025	0.177	0.161	-0.015	0.861	1.146	0.286
Florida	0.070	0.055	-0.015	0.771	0.710	-0.062	0.042	0.104	0.062	0.117	0.131	0.014	0.860	1.438	0.514
Georgia	0.240	0.126	-0.114	0.451	0.746	0.296	0.049	0.049	0.000	0.260	0.078	-0.182	0.775	1.302	0.519
Idaho	0.256	0.173	-0.084	0.574	0.475	-0.100	0.005	0.133	0.128	0.164	0.220	0.055	0.706	1.145	0.484
Illinois	0.194	0.228	0.034	0.517	0.437	-0.081	0.133	0.091	-0.042	0.156	0.243	0.088	0.675	0.976	0.369
Indiana	0.164	0.141	-0.023	0.350	0.402	0.052	0.210	0.178	-0.032	0.276	0.279	0.003	0.639	0.997	0.445
Iowa	0.165	0.192	0.026	0.442	0.407	-0.035	0.160	0.131	-0.029	0.233	0.270	0.037	0.830	1.186	0.357
Kansas	0.130	0.119	-0.011	0.518	0.463	-0.055	0.100	0.135	0.035	0.252	0.284	0.031	0.750	0.915	0.199
Kentucky	0.397	0.306	-0.091	0.579	0.644	0.066	0.000	0.013	0.013	0.024	0.036	0.012	0.671	1.066	0.463
Louisiana	0.146	0.103	-0.043	0.793	0.697	-0.096	0.042	0.025	-0.017	0.019	0.175	0.156	0.594	0.932	0.450
Maine	0.371	0.271	-0.100	0.415	0.347	-0.069	0.028	0.098	0.070	0.185	0.285	0.099	0.808	0.988	0.201
Maryland	0.217	0.280	0.063	0.572	0.636	0.064	0.134	0.005	-0.129	0.077	0.078	0.002	0.636	0.850	0.290
Massachusetts	0.352	0.319	-0.033	0.637	0.452	-0.185	0.000	0.116	0.116	0.011	0.113	0.102	0.700	0.888	0.238
Michigan	0.179	0.174	-0.005	0.481	0.495	0.015	0.200	0.133	-0.067	0.141	0.198	0.057	0.530	1.002	0.637
Minnesota	0.210	0.141	-0.069	0.553	0.687	0.134	0.135	0.102	-0.033	0.102	0.071	-0.031	0.700	1.049	0.405
Mississippi	0.349	0.160	-0.190	0.361	0.543	0.183	0.083	0.045	-0.038	0.207	0.253	0.045	0.590	0.965	0.492
Missouri	0.226	0.225	-0.001	0.486	0.370	-0.116	0.094	0.152	0.058	0.195	0.254	0.059	0.576	0.779	0.302
Montana	0.204	0.160	-0.043	0.446	0.511	0.065	0.091	0.037	-0.054	0.259	0.291	0.033	0.528	0.797	0.412
Nebraska	0.116	0.107	-0.009	0.379	0.383	0.005	0.081	0.099	0.018	0.425	0.411	-0.014	0.674	1.028	0.422
Nevada	0.307	0.222	-0.085	0.427	0.572	0.145	0.142	0.127	-0.015	0.123	0.079	-0.044	0.668	0.800	0.180
New Hampshire	0.614	0.485	-0.129	0.309	0.457	0.148	0.000	0.007	0.007	0.078	0.051	-0.027	0.588	0.845	0.363
New Jersey	0.149	0.219	0.070	0.640	0.570	-0.070	0.097	0.056	-0.041	0.114	0.155	0.041	0.674	0.962	0.356
New Mexico	0.301	0.170	-0.131	0.479	0.594	0.115	0.134	0.149	0.014	0.086	0.087	0.001	0.573	0.869	0.416
New York	0.121	0.100	-0.020	0.643	0.406	-0.237	0.132	0.240	0.108	0.104	0.254	0.150	0.761	0.983	0.256
North Carolina	0.217	0.145	-0.072	0.491	0.594	0.104	0.164	0.105	-0.060	0.128	0.156	0.028	0.695	1.345	0.660
North Dakota	0.222	0.127	-0.094	0.633	0.601	-0.032	0.059	0.054	-0.005	0.087	0.219	0.131	0.527	0.891	0.525
Ohio	0.249	0.225	-0.025	0.724	0.747	0.023	0.020	0.014	-0.006	0.007	0.015	0.008	0.619	0.895	0.369
Oklahoma	0.248	0.172	-0.075	0.531	0.664	0.133	0.145	0.033	-0.112	0.076	0.130	0.055	0.564	0.677	0.183
Oregon	0.135	0.120	-0.015	0.418	0.513	0.095	0.279	0.111	-0.168	0.168	0.257	0.088	0.669	0.968	0.369
Pennsylvania	0.284	0.312	0.027	0.584	0.466	-0.118	0.081	0.076	-0.005	0.051	0.147	0.096	0.683	1.044	0.424
Rhode Island	0.399	0.297	-0.102	0.357	0.256	-0.101	0.132	0.390	0.258	0.112	0.057	-0.055	0.647	0.836	0.256
South Carolina	0.419	0.204	-0.215	0.464	0.786	0.322	0.003	0.001	-0.002	0.114	0.009	-0.105	0.586	1.020	0.554
South Dakota	0.234	0.267	0.033	0.572	0.515	-0.056	0.036	0.029	-0.008	0.158	0.189	0.030	0.678	1.003	0.392
Tennessee	0.295	0.279	-0.016	0.248	0.446	0.198	0.243	0.019	-0.224	0.214	0.256	0.042	0.484	0.747	0.434
Texas	0.201	0.116	-0.086	0.440	0.625	0.185	0.104	0.058	-0.046	0.255	0.201	-0.054	0.563	0.778	0.323
Utah	0.279	0.183	-0.096	0.461	0.553	0.093	0.206	0.127	-0.079	0.054	0.137	0.082	0.636	0.892	0.338
Vermont	0.551	0.400	-0.150	0.435	0.407	-0.028	0.000	0.055	0.055	0.014	0.138	0.124	0.806	0.992	0.208
Virginia	0.244	0.175	-0.069	0.434	0.520	0.086	0.162	0.098	-0.064	0.160	0.206	0.047	0.533	0.878	0.499
Washington	0.200	0.138	-0.062	0.554	0.401	-0.154	0.070	0.123	0.052	0.175	0.339	0.163	0.765	1.266	0.504
West Virginia	0.499	0.481	-0.017	0.336	0.380	0.045	0.059	0.018	-0.041	0.106	0.120	0.014	0.305	0.537	0.566
Wisconsin	0.167	0.136	-0.032	0.507	0.472	-0.035	0.219	0.261	0.042	0.107	0.131	0.024	0.807	1.077	0.289
Wyoming	0.295	0.344	0.048	0.618	0.517	-0.101	0.059	0.098	0.039	0.028	0.042	0.014	0.527	0.614	0.153

Review of Shares for Simulation Inputs

This section contains maps representing the average values of the data for the time period 1970 through 1995 that was used in the modeling simulations. The maps present the shares of SAES revenues by source (Federal and State Appropriations, Federal Grants, Contracts, and Cooperative Agreements, and Other, Non-Federal Funds) and Total SAES Revenues (in 1984 $'s). The maps visualize the average value of each component for the time period (1970 – 1990).

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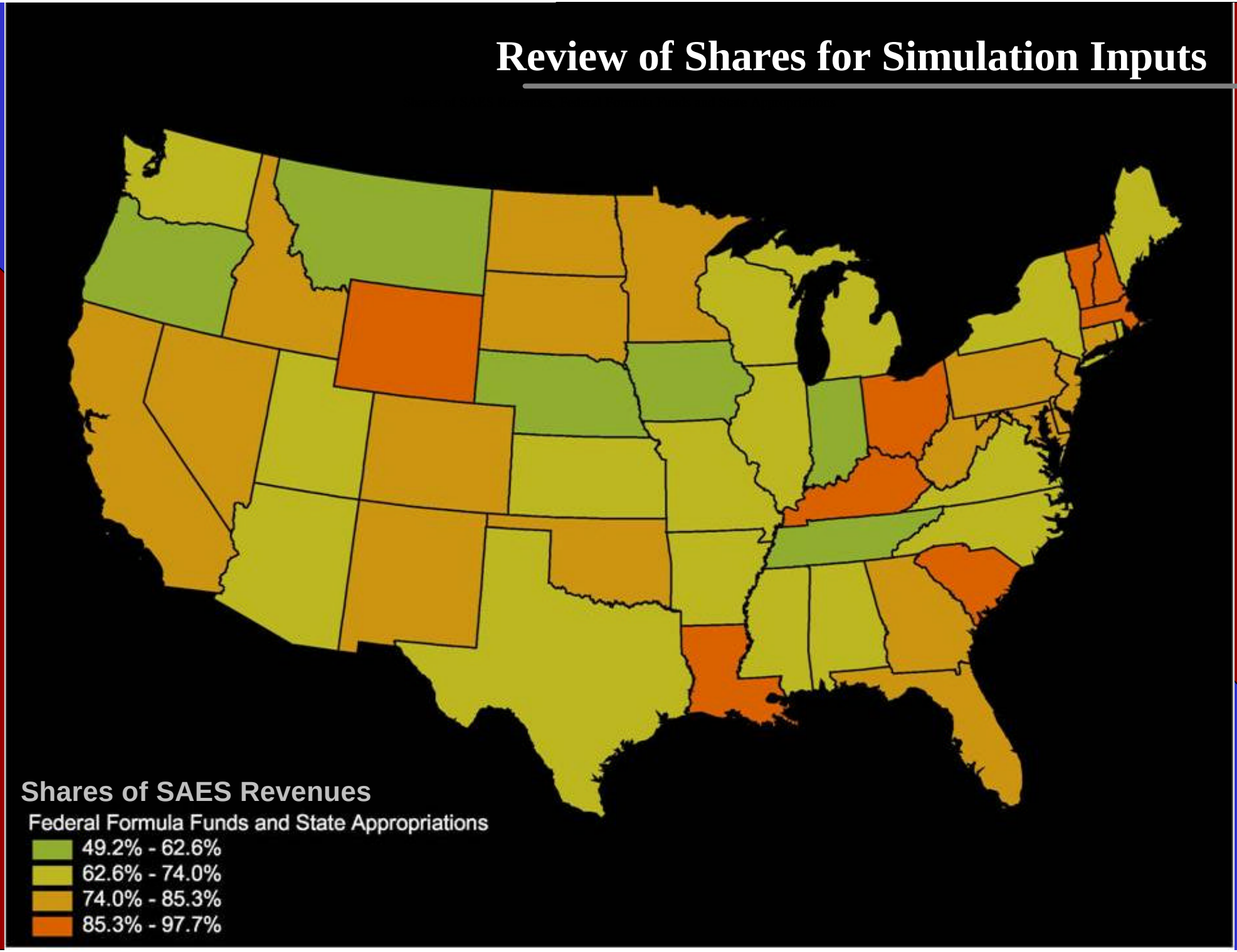
Review of Shares for Simulation Inputs



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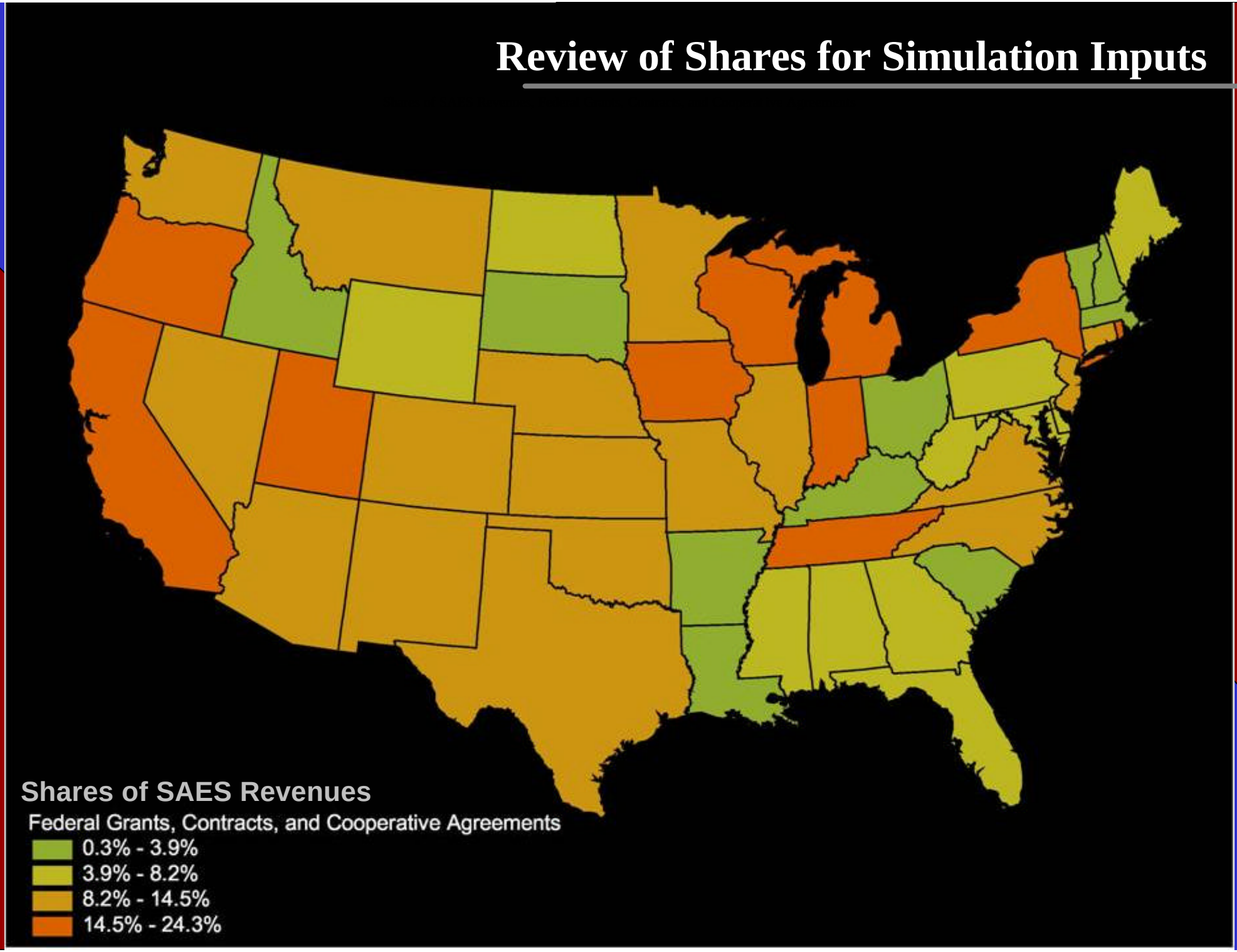

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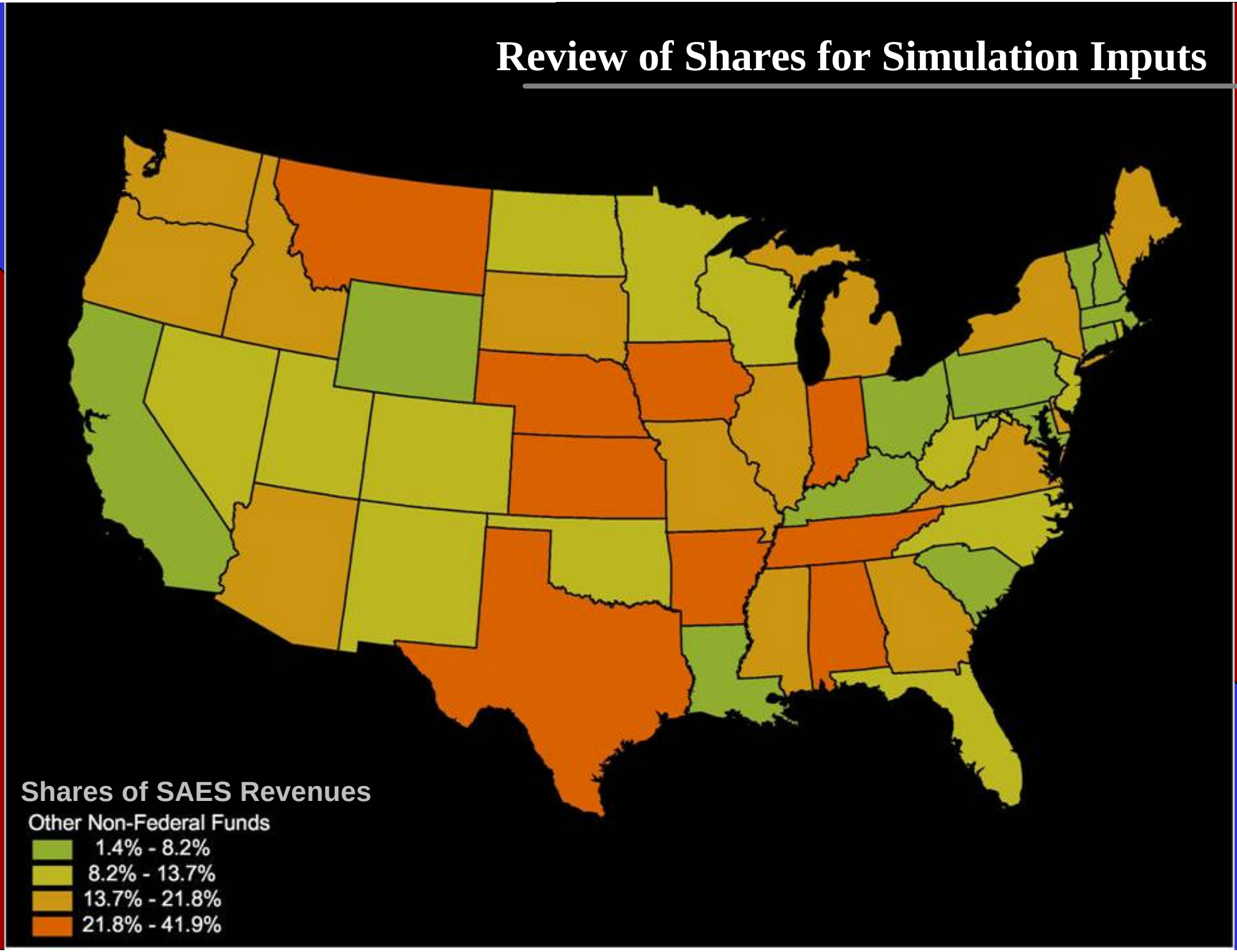

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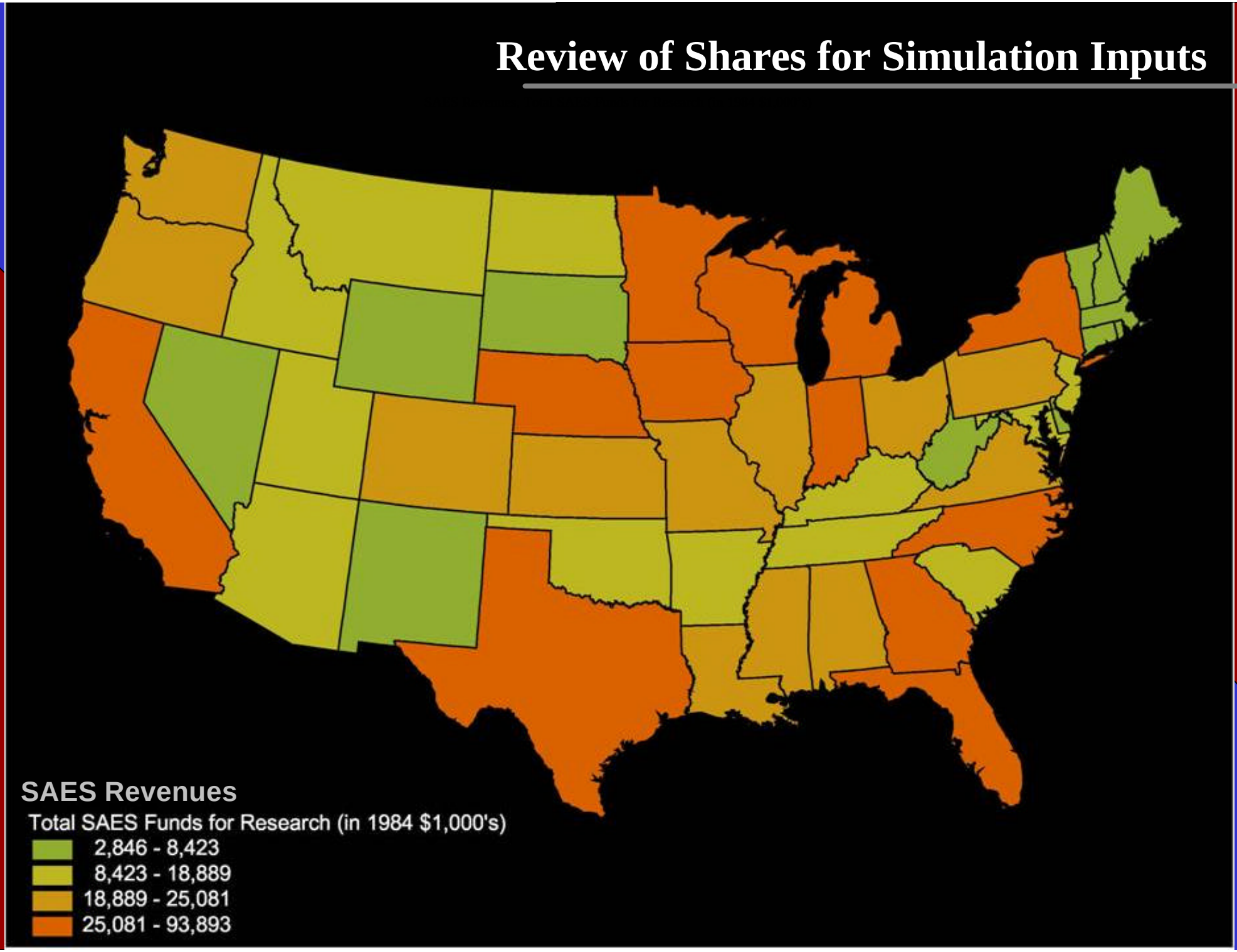

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Table 2: Review of Simulation Inputs

State Name	Lagged Share of SAES Revenues from Federal Formula Funds and State Appropriations, 1970 - 1995	Lagged Share of SAES Revenues from Federal Formula Funds, 1970 - 1995	Lagged Share of SAES Revenues from State Appropriations, 1970 - 1995	Lagged Share of SAES Revenues from Federal Grants, Contracts, and Cooperative Agreements, 1970 - 1995	Lagged Share of SAES Revenues from Other, Non-Federal Funds, 1970 - 1995	Lagged Total SAES Funds for Research (in 1984 $1,000's)
Alabama	0.643	0.241	0.402	0.059	0.298	$19,613.5
Arizona	0.739	0.125	0.614	0.114	0.147	$18,889.2
Arkansas	0.731	0.217	0.514	0.030	0.239	$18,841.6
California	0.751	0.053	0.698	0.168	0.081	$93,893.8
Colorado	0.765	0.249	0.516	0.132	0.103	$19,041.3
Connecticut	0.815	0.201	0.614	0.130	0.055	$7,431.6
Delaware	0.759	0.363	0.396	0.059	0.182	$4,433.6
Florida	0.831	0.065	0.766	0.055	0.114	$50,735.3
Georgia	0.771	0.204	0.567	0.043	0.187	$30,529.2
Idaho	0.788	0.227	0.561	0.036	0.176	$10,091.0
Illinois	0.703	0.207	0.496	0.112	0.185	$21,734.6
Indiana	0.527	0.161	0.366	0.202	0.271	$29,136.0
Iowa	0.600	0.176	0.424	0.149	0.251	$29,067.5
Kansas	0.649	0.132	0.517	0.093	0.258	$24,471.4
Kentucky	0.977	0.357	0.619	0.003	0.020	$14,899.9
Louisiana	0.911	0.134	0.777	0.036	0.053	$25,081.2
Maine	0.740	0.341	0.399	0.057	0.203	$6,996.0
Maryland	0.853	0.243	0.610	0.071	0.076	$10,334.7
Massachusetts	0.914	0.376	0.538	0.039	0.047	$5,916.0
Michigan	0.665	0.171	0.494	0.177	0.158	$29,139.2
Minnesota	0.802	0.183	0.619	0.109	0.089	$31,081.3
Mississippi	0.714	0.278	0.436	0.068	0.218	$22,699.9
Missouri	0.699	0.222	0.477	0.100	0.201	$20,036.4
Montana	0.626	0.186	0.440	0.091	0.283	$10,416.9
Nebraska	0.492	0.110	0.382	0.089	0.419	$28,440.3
Nevada	0.760	0.283	0.476	0.103	0.137	$4,804.2
New Hampshire	0.916	0.570	0.346	0.003	0.082	$2,851.3
New Jersey	0.786	0.152	0.634	0.090	0.123	$14,530.0
New Mexico	0.809	0.292	0.516	0.097	0.094	$7,116.1
New York	0.684	0.116	0.568	0.160	0.156	$44,844.7
North Carolina	0.735	0.191	0.544	0.135	0.130	$40,734.5
North Dakota	0.820	0.188	0.632	0.055	0.125	$15,007.9
Ohio	0.962	0.235	0.727	0.024	0.014	$23,249.6
Oklahoma	0.790	0.229	0.561	0.118	0.092	$15,243.5
Oregon	0.579	0.126	0.453	0.223	0.198	$22,795.0
Pennsylvania	0.840	0.294	0.546	0.082	0.078	$19,905.2
Rhode Island	0.720	0.373	0.347	0.189	0.091	$2,846.5
South Carolina	0.924	0.346	0.579	0.004	0.072	$14,050.5
South Dakota	0.795	0.239	0.557	0.039	0.166	$8,423.5
Tennessee	0.604	0.289	0.315	0.157	0.238	$16,569.9
Texas	0.664	0.172	0.492	0.089	0.247	$48,496.0
Utah	0.721	0.247	0.474	0.176	0.103	$9,141.6
Vermont	0.931	0.494	0.437	0.022	0.047	$3,156.2
Virginia	0.692	0.218	0.474	0.145	0.164	$24,567.0
Washington	0.708	0.175	0.533	0.094	0.198	$21,492.3
West Virginia	0.837	0.488	0.349	0.053	0.110	$5,347.7
Wisconsin	0.657	0.157	0.499	0.243	0.100	$35,080.5
Wyoming	0.879	0.308	0.571	0.059	0.062	$4,790.6

* Values represent a moving average for the time period and are lagged 12 years.

Simulation 1: Total Formula Fund Shift

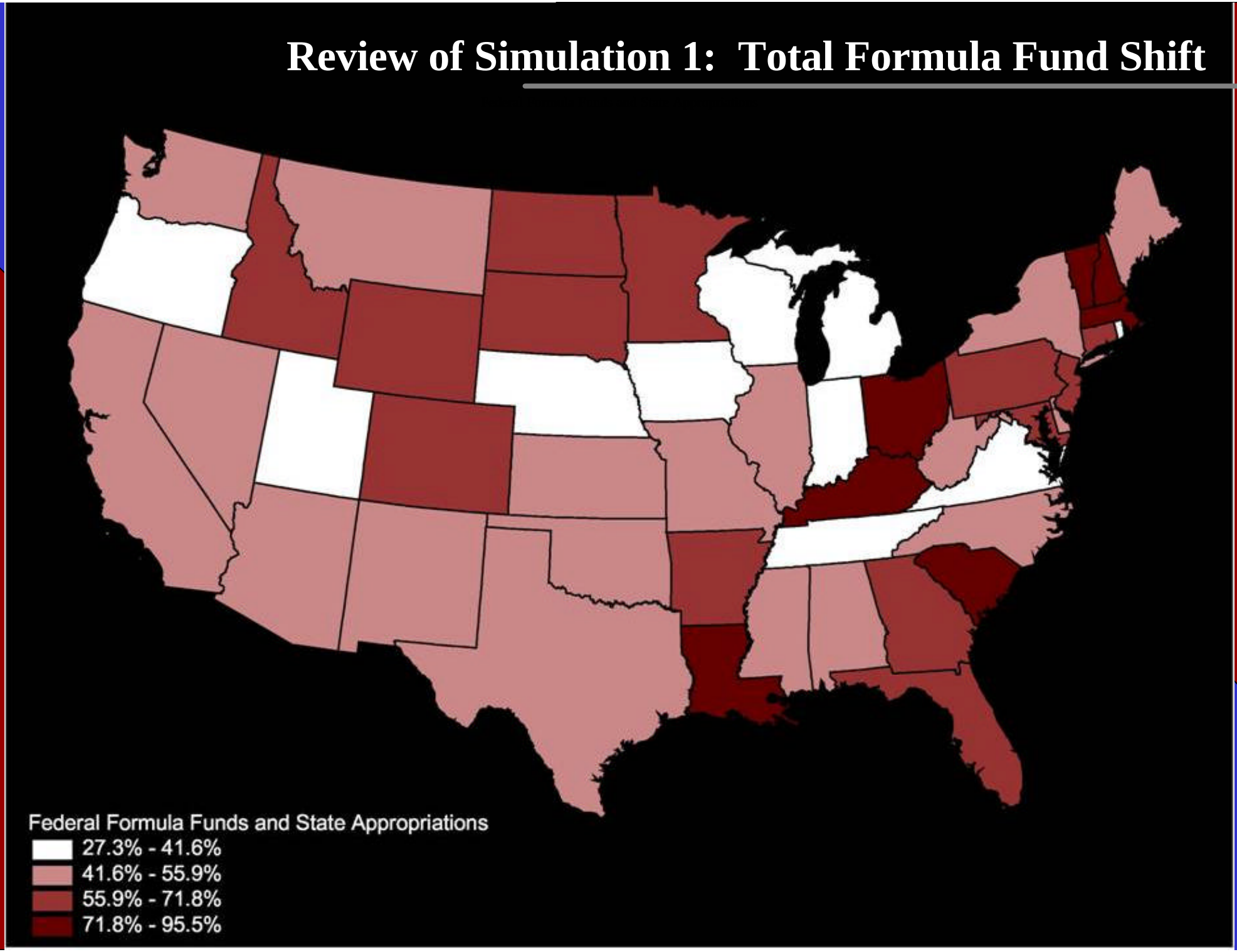
All Formula Funds Shifted to Competitive Grant Program

This section contains maps representing the resulting values of Simulation 1, a total shift of funds from the Formula Funds allocation to the competitive grants programs. The simulated values are compared with the baseline data to examine the predicted changes in the simulation and the impact of the allocation change.

The maps present the shares of SAES revenues by source (Federal and State Appropriations, and Federal Grants, Contracts, and Cooperative Agreements) and Total SAES Funds for Research (in 1984 $'s) for the simulated change in fund allocation, as well as the difference between the simulation and baseline data in funding allocation, total funds for research available, and the Total Factor Productivity.

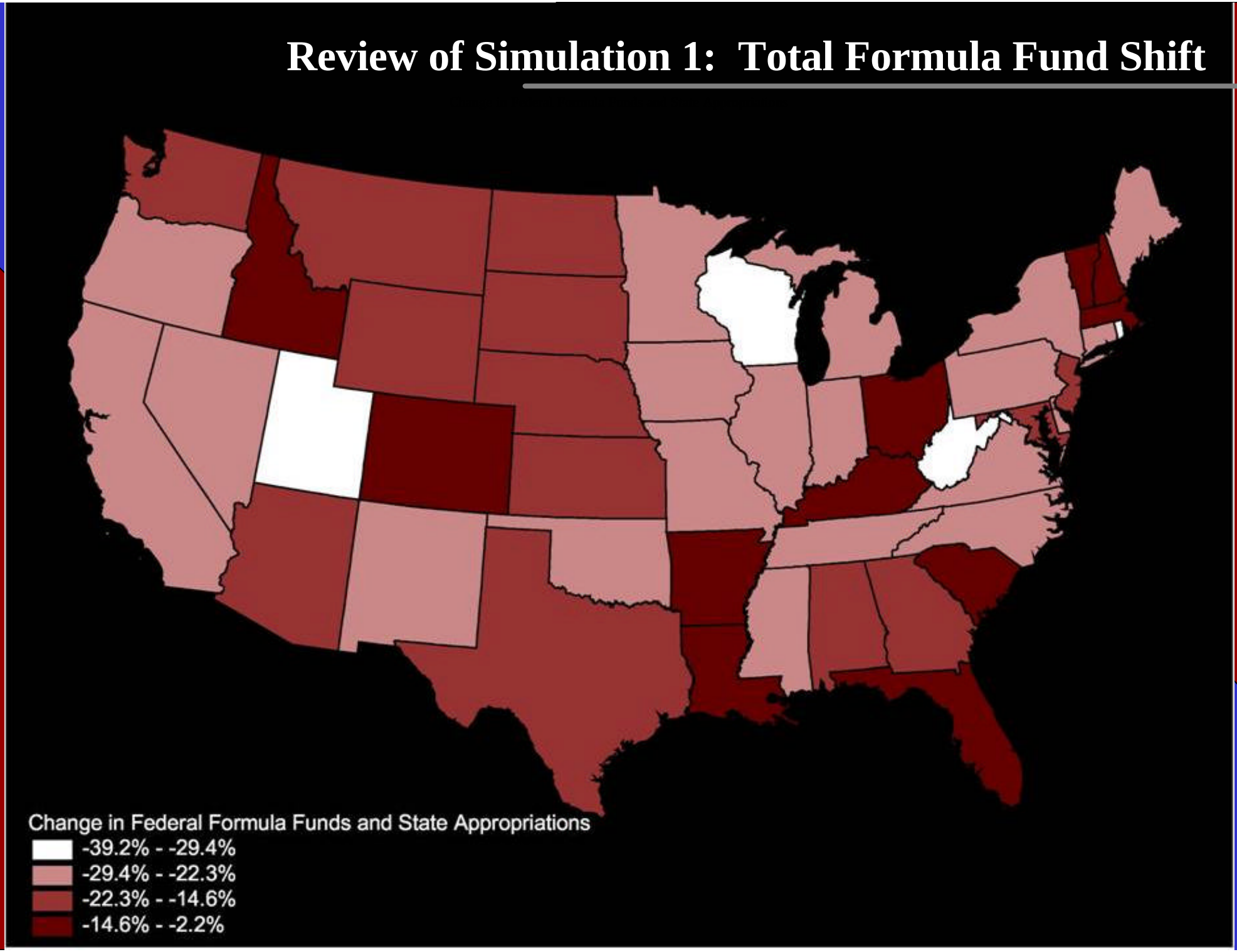
The Monitor Lab, Social Science Research Center, Mississippi State University, 2002

Review of Simulation 1: Total Formula Fund Shift



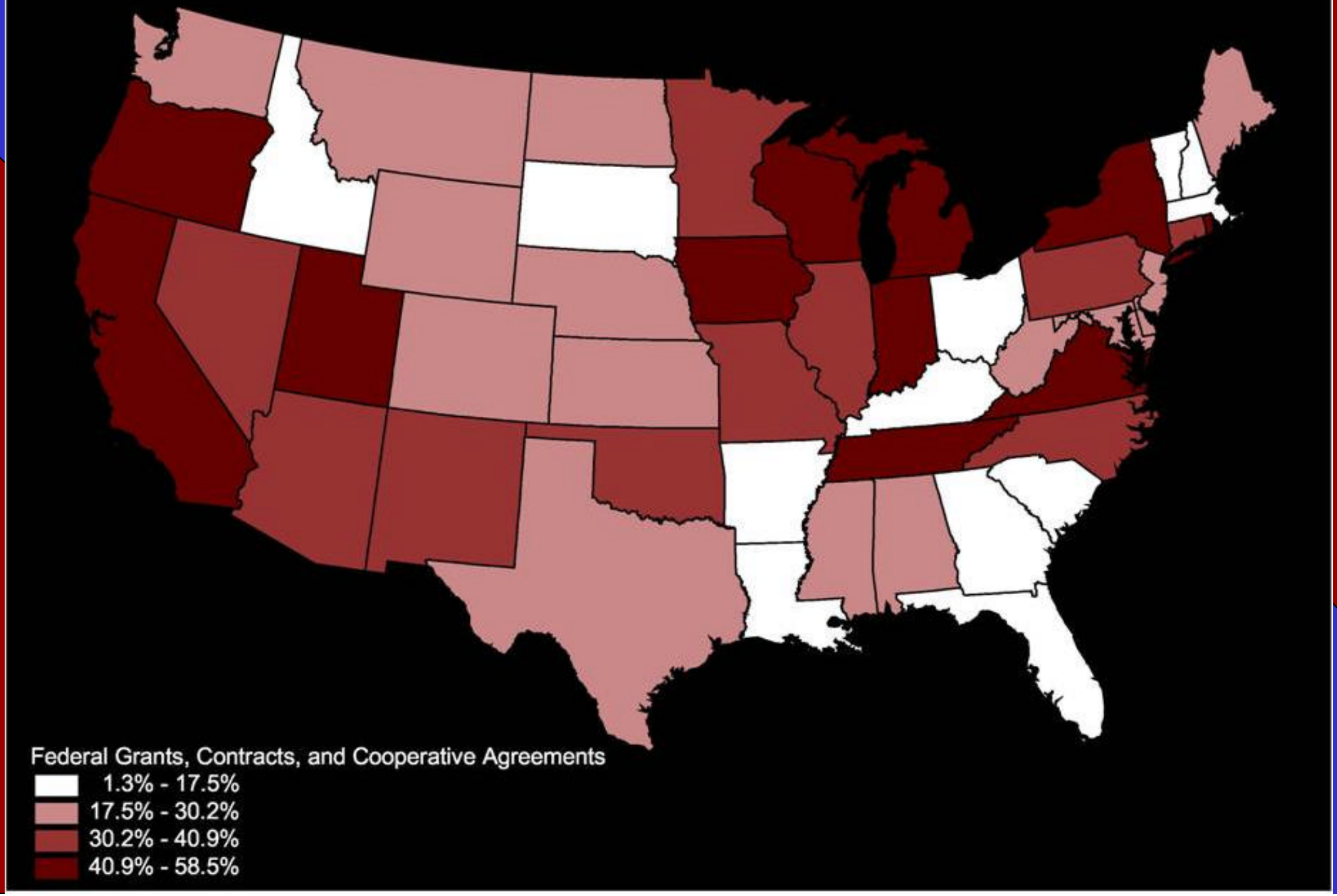
The Monitor Lab, Social Science Research Center, Mississippi State University, 2002

Review of Simulation 1: Total Formula Fund Shift



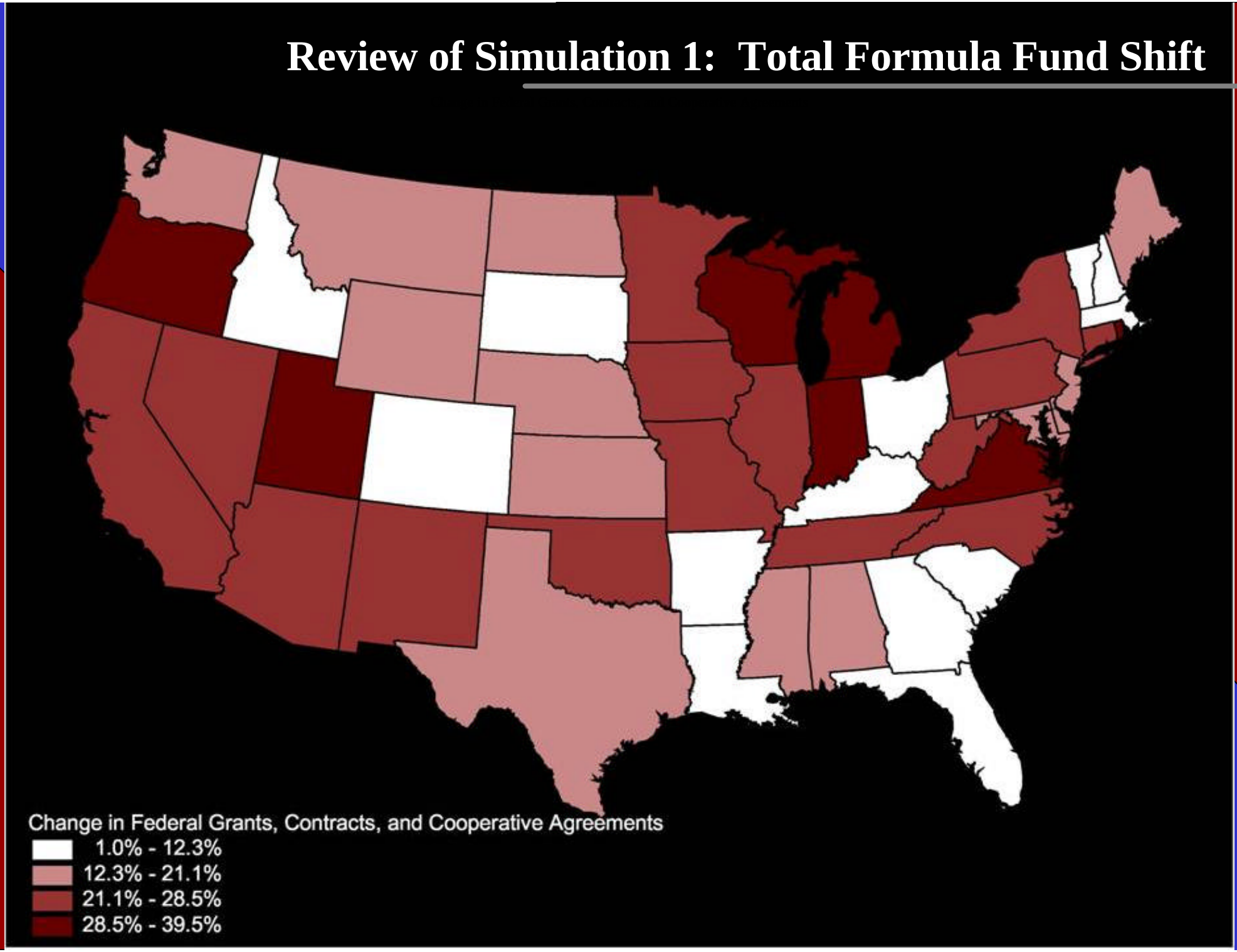
The Monitor Lab, Social Science Research Center, Mississippi State University, 2002

Review of Simulation 1: Total Formula Fund Shift



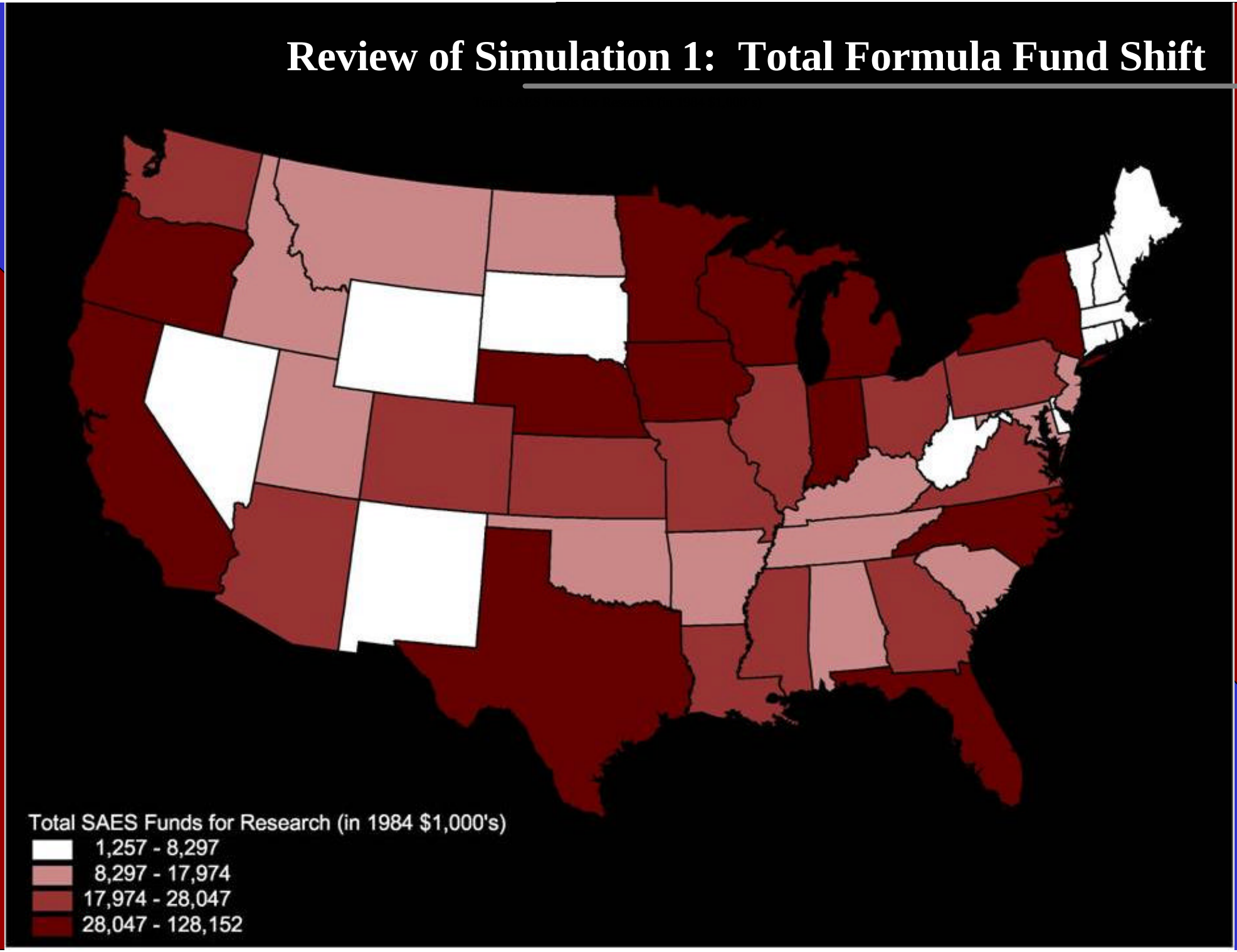
The Monitor Lab, Social Science Research Center, Mississippi State University, 2002

Review of Simulation 1: Total Formula Fund Shift



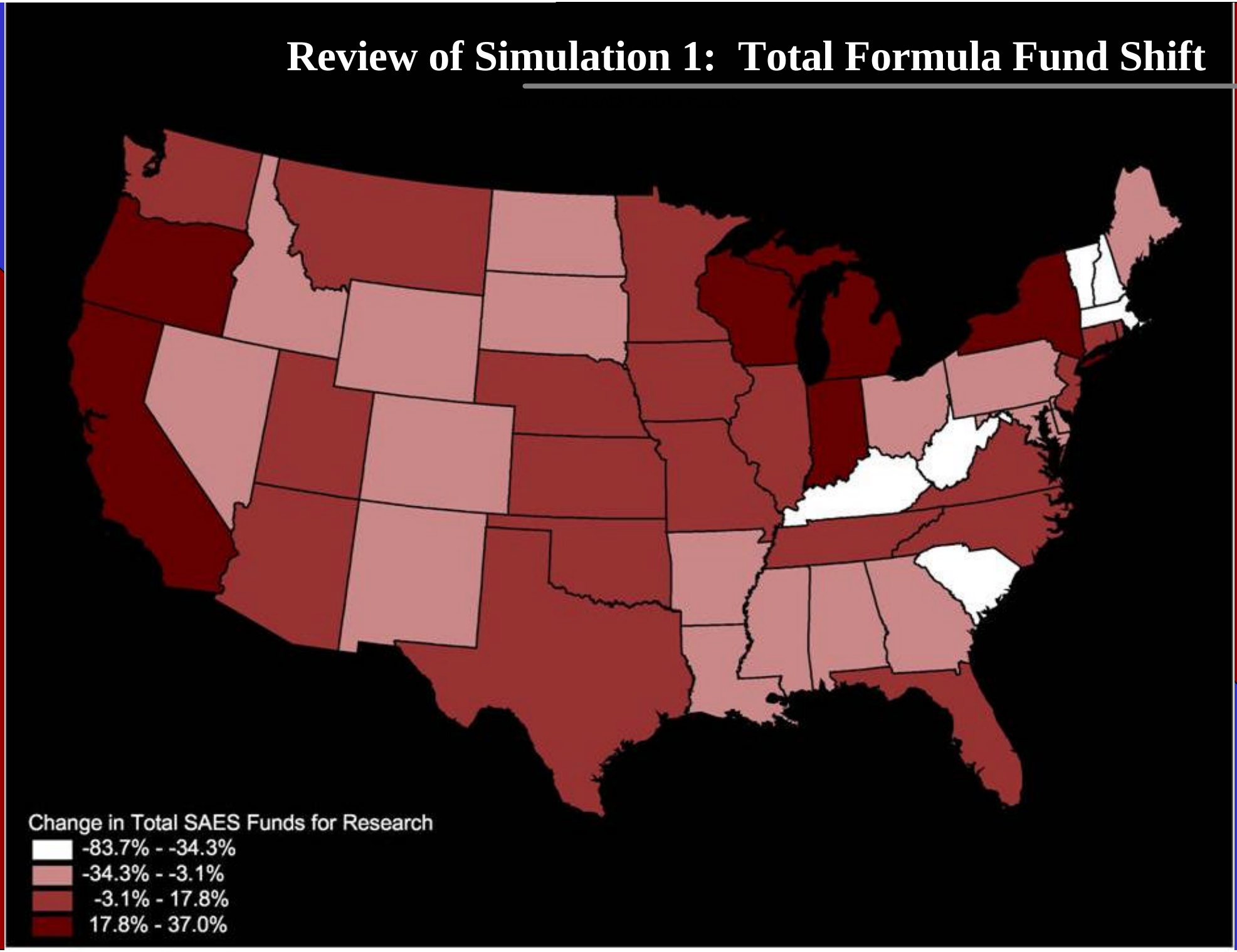
The Monitor Lab, Social Science Research Center, Mississippi State University, 2002

Review of Simulation 1: Total Formula Fund Shift



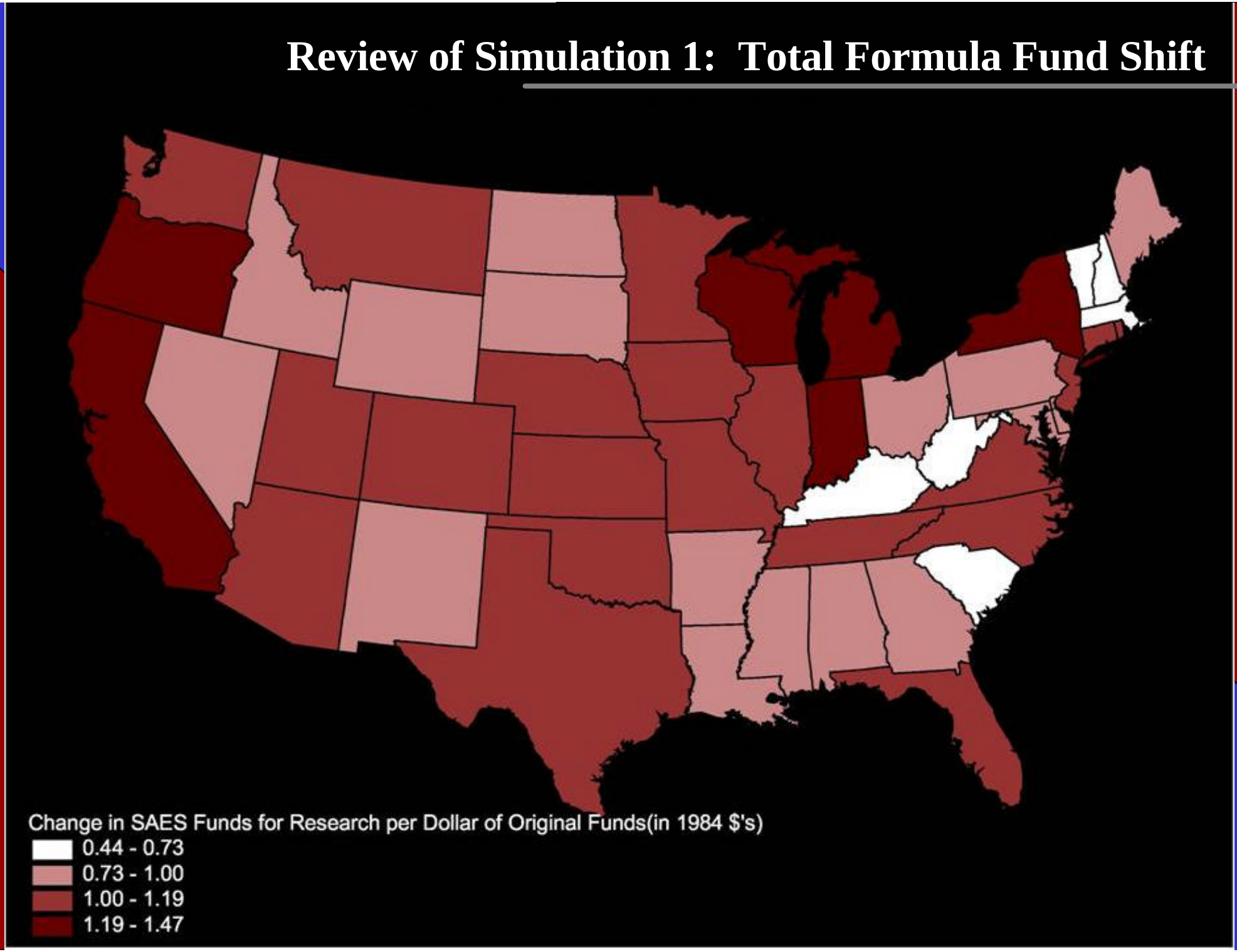
The Monitor Lab, Social Science Research Center, Mississippi State University, 2002

Review of Simulation 1: Total Formula Fund Shift



The Monitor Lab, Social Science Research Center, Mississippi State University, 2002

Review of Simulation 1: Total Formula Fund Shift



The Monitor Lab, Social Science Research Center, Mississippi State University, 2002

Review of Simulation 1: Total Formula Fund Shift

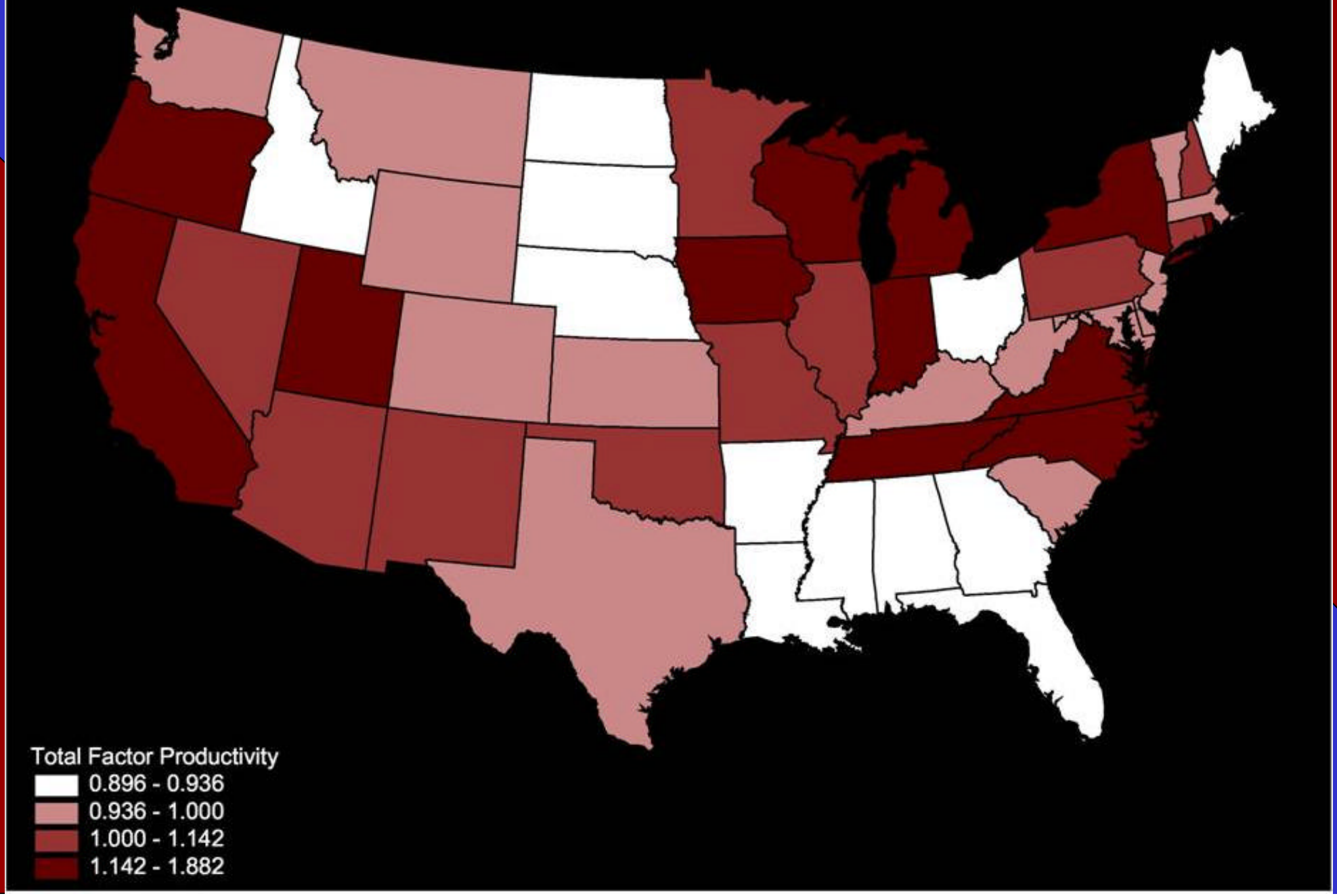


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Table 3: Simulation 1 - Total Formula Fund Shift

State Name	Share of SAES Revenues from Federal Formula Funds and State Appropriations	Change in Share of SAES Revenues from Federal Formula Funds and State Appropriations	Share of SAES Revenues from Federal Grants, Contracts, and Cooperative Agreements	Change Share of SAES Revenues from Federal Grants, Contracts, and Cooperative Agreements	Total SAES Funds for Research (in 1984 $1,000's)	Change in Total SAES Funds for Research	Change in Total SAES Funds for Research per Dollar of Original Funds (in 1984 $)	Natural Log of the Change in Total Factor Productivity (< 1 = loss and > 1 = gain)
Alabama	44.40%	-19.90%	22.62%	16.74%	$17,803.6	-10.02%	$0.91	0.896
Arizona	53.41%	-20.46%	33.97%	22.52%	$22,114.2	14.66%	$1.17	1.056
Arkansas	59.63%	-13.47%	12.23%	9.19%	$16,286.4	-15.38%	$0.86	0.908
California	51.06%	-24.05%	43.02%	26.20%	$128,152.7	31.25%	$1.36	1.300
Colorado	65.72%	-10.76%	23.19%	10.02%	$20,616.7	-5.67%	$1.08	0.994
Connecticut	57.56%	-23.93%	37.60%	24.58%	$8,298.0	9.66%	$1.12	1.137
Delaware	51.15%	-24.74%	25.37%	19.45%	$3,454.0	-24.66%	$0.78	0.938
Florida	71.77%	-11.36%	17.54%	12.08%	$54,800.6	6.78%	$1.08	0.932
Georgia	62.50%	-14.57%	16.57%	12.30%	$27,676.5	-10.30%	$0.91	0.912
Idaho	67.15%	-11.64%	12.36%	8.71%	$8,939.6	-16.03%	$0.89	0.925
Illinois	46.31%	-23.99%	36.22%	25.01%	$23,177.7	6.87%	$1.07	1.075
Indiana	27.33%	-25.40%	52.46%	32.30%	$39,040.9	29.45%	$1.34	1.508
Iowa	35.47%	-24.52%	43.40%	28.54%	$34,485.3	17.76%	$1.19	1.217
Kansas	47.53%	-17.37%	28.89%	19.63%	$26,863.3	9.21%	$1.10	0.972
Kentucky	95.48%	-2.21%	1.30%	1.03%	$9,779.2	-43.55%	$0.66	0.969
Louisiana	81.16%	-9.91%	13.33%	9.68%	$24,015.2	-4.34%	$0.96	0.931
Maine	51.65%	-22.35%	22.99%	17.25%	$5,748.3	-23.38%	$0.82	0.923
Maryland	68.78%	-16.53%	22.74%	15.66%	$9,253.0	-8.84%	$0.90	0.963
Massachusetts	78.35%	-13.04%	15.68%	11.80%	$4,319.2	-34.27%	$0.73	0.942
Michigan	39.01%	-27.44%	48.44%	30.71%	$36,788.4	23.94%	$1.26	1.393
Minnesota	57.17%	-23.03%	34.76%	23.82%	$33,758.1	8.58%	$1.09	1.089
Mississippi	48.59%	-22.83%	27.03%	20.21%	$20,359.6	-11.54%	$0.90	0.934
Missouri	46.77%	-23.15%	33.61%	23.63%	$20,709.0	2.54%	$1.03	1.025
Montana	42.51%	-20.11%	30.22%	21.12%	$10,845.0	3.82%	$1.04	0.969
Nebraska	34.41%	-14.77%	27.84%	18.89%	$31,745.3	10.67%	$1.12	0.936
Nevada	49.79%	-26.18%	35.76%	25.42%	$4,659.7	-3.07%	$0.97	1.063
New Hampshire	79.31%	-12.29%	1.74%	1.49%	$1,257.5	-83.67%	$0.44	1.023
New Jersey	59.19%	-19.44%	29.20%	20.17%	$15,561.0	6.92%	$1.07	1.000
New Mexico	55.90%	-24.95%	33.88%	24.17%	$6,621.1	-6.02%	$0.93	1.053
New York	44.99%	-23.41%	43.16%	27.12%	$58,017.2	24.75%	$1.29	1.256
North Carolina	47.71%	-25.76%	40.91%	27.39%	$46,402.2	13.63%	$1.14	1.189
North Dakota	66.71%	-15.34%	20.29%	14.79%	$14,303.6	-5.29%	$0.95	0.932
Ohio	88.46%	-7.76%	9.85%	7.50%	$19,218.2	-19.54%	$0.83	0.930
Oklahoma	52.96%	-26.00%	38.34%	26.50%	$16,132.6	6.32%	$1.06	1.142
Oregon	32.53%	-25.37%	53.12%	30.82%	$32,252.5	35.18%	$1.41	1.553
Pennsylvania	60.00%	-24.03%	31.36%	23.19%	$18,043.7	-9.48%	$0.91	1.022
Rhode Island	32.77%	-39.23%	58.37%	39.46%	$3,064.2	7.96%	$1.08	1.664
South Carolina	86.10%	-6.34%	1.79%	1.44%	$9,584.1	-42.29%	$0.68	0.995
South Dakota	64.82%	-14.70%	15.82%	11.91%	$7,228.6	-15.25%	$0.86	0.914
Tennessee	32.72%	-27.69%	43.24%	27.50%	$17,974.1	6.48%	$1.08	1.185
Texas	46.89%	-19.51%	29.61%	20.71%	$50,896.6	4.96%	$1.05	0.971
Utah	39.96%	-32.15%	51.22%	33.62%	$10,853.5	17.45%	$1.19	1.474
Vermont	82.39%	-10.70%	10.27%	8.11%	$1,807.2	-60.70%	$0.57	0.940
Virginia	41.58%	-27.60%	44.12%	29.66%	$28,047.4	13.39%	$1.14	1.243
Washington	51.20%	-19.62%	30.12%	20.69%	$23,032.8	5.22%	$1.07	0.992
West Virginia	54.24%	-29.42%	28.58%	23.27%	$3,443.7	-44.03%	$0.64	0.949
Wisconsin	34.58%	-31.08%	58.45%	34.14%	$51,425.0	37.02%	$1.47	1.882
Wyoming	68.24%	-19.62%	24.34%	18.41%	$4,026.0	-17.74%	$0.84	0.960

* Change represents change from baseline data

Simulation 2: 10% Point Fund Shift

10% Points of the Formula Funds Allocation
Shifted to Competitive Grant Program

This section contains maps representing the resulting values of Simulation 2, a 10% point shift of funds from the Formula Funds allocation to the competitive grants programs. The simulated values are compared with the baseline data to examine the predicted changes in the simulation and the impact of the allocation change.

The maps present the shares of SAES revenues by source (Federal and State Appropriations, and Federal Grants, Contracts, and Cooperative Agreements) and Total SAES Funds for Research (in 1984 $'s) for the simulated change in fund allocation, as well as the difference between the simulation and baseline data in funding allocation, total funds for research available, and the Total Factor Productivity.

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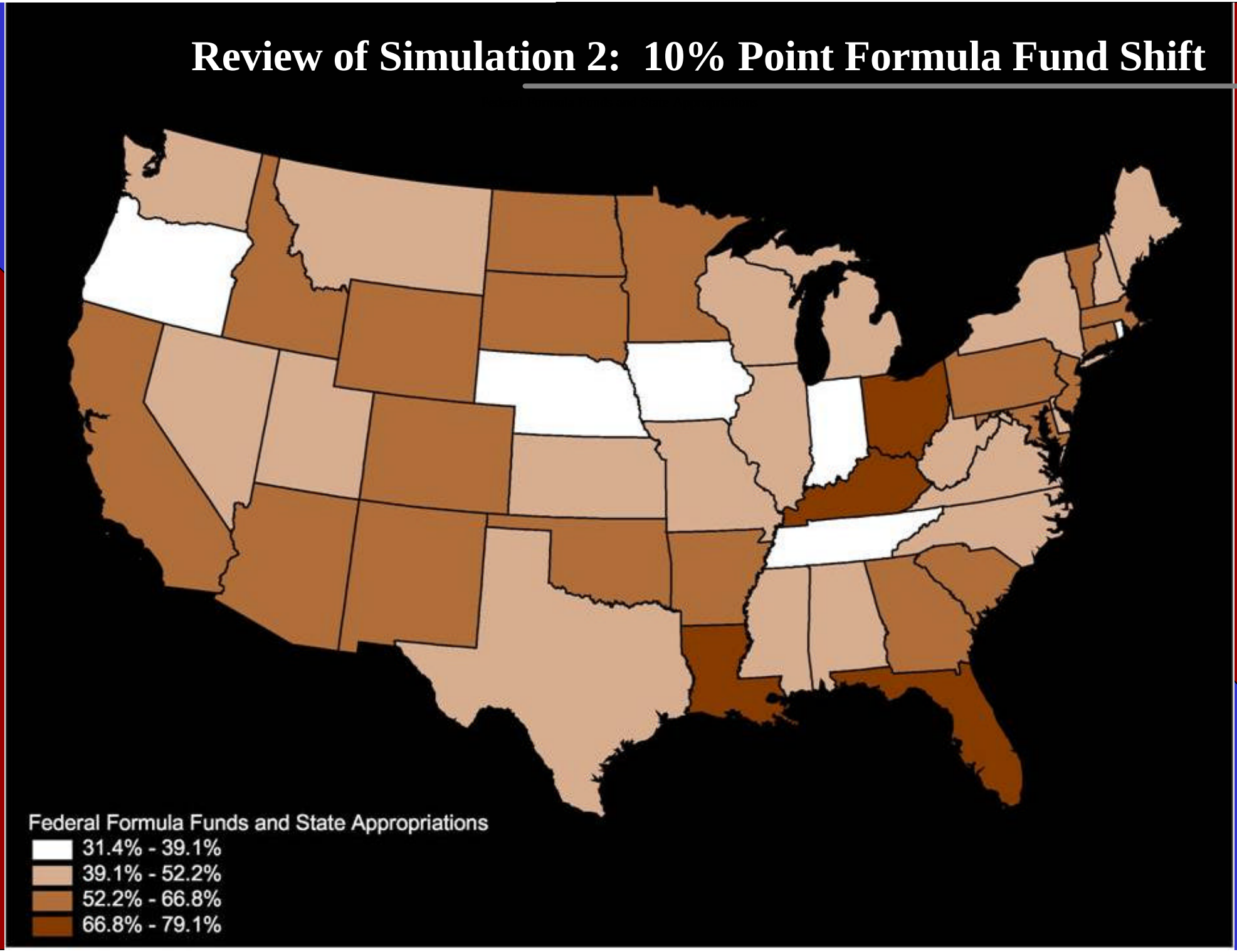
Review of Simulation 2: 10% Point Formula Fund Shift



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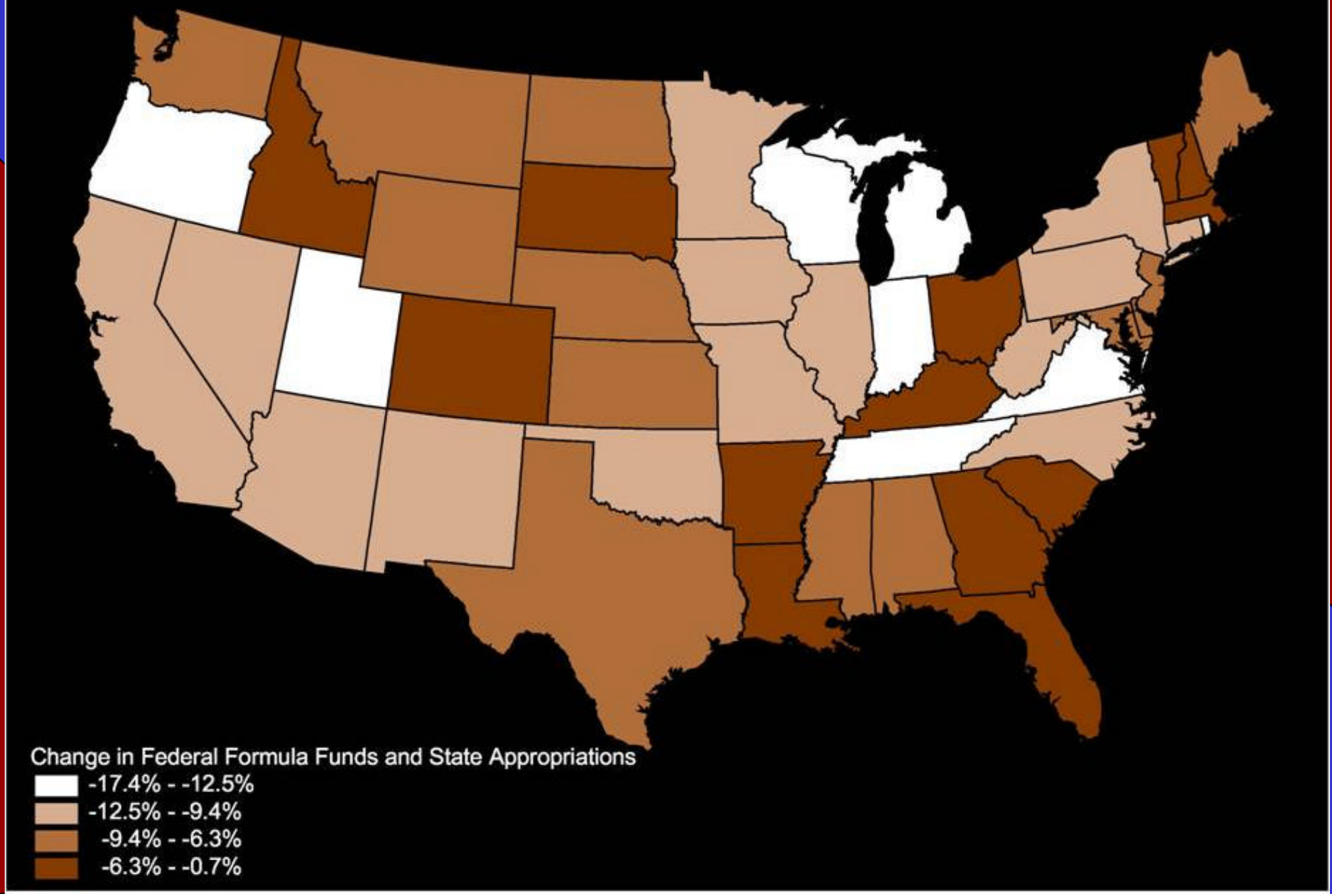
Review of Simulation 2: 10% Point Formula Fund Shift



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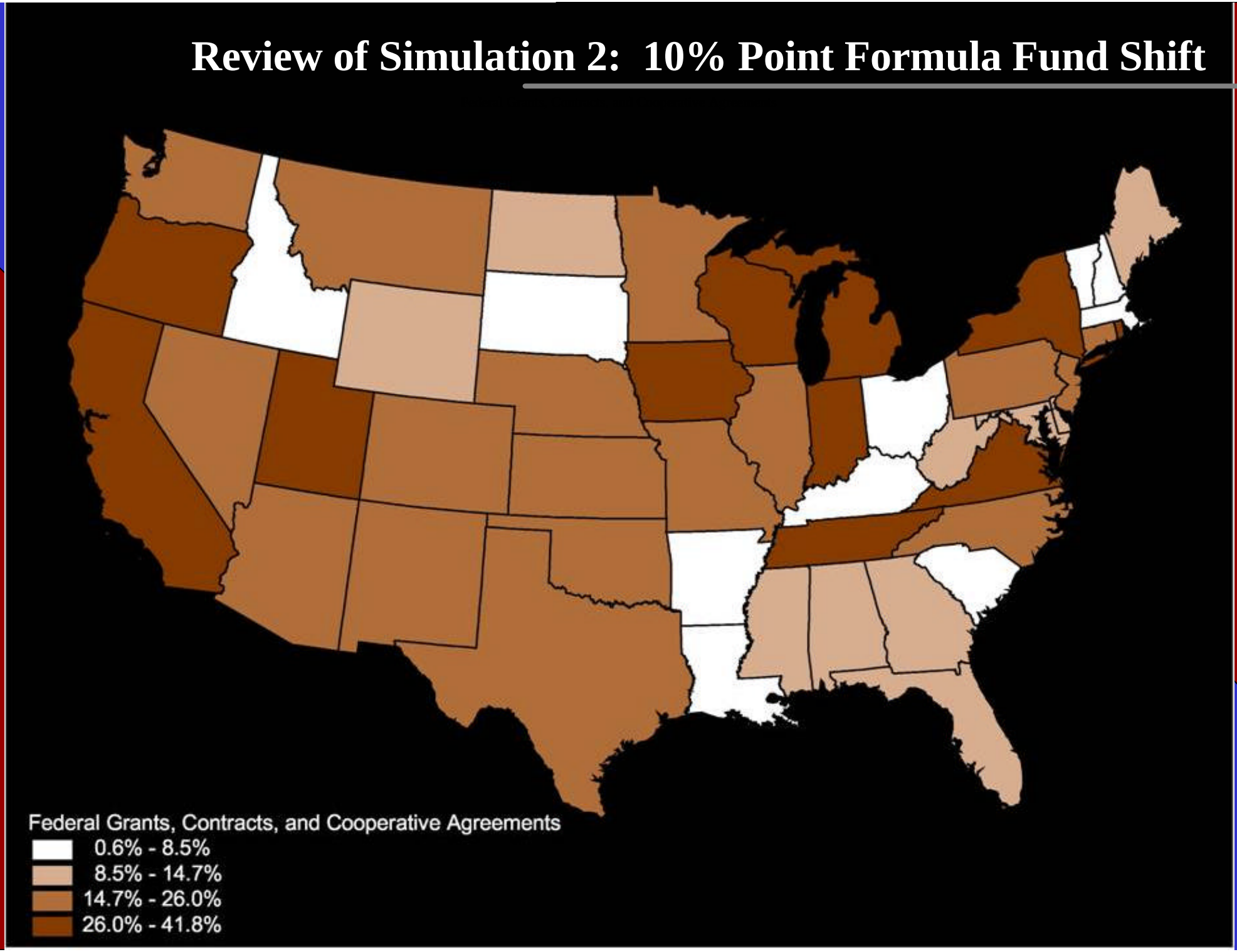
Review of Simulation 2: 10% Point Formula Fund Shift



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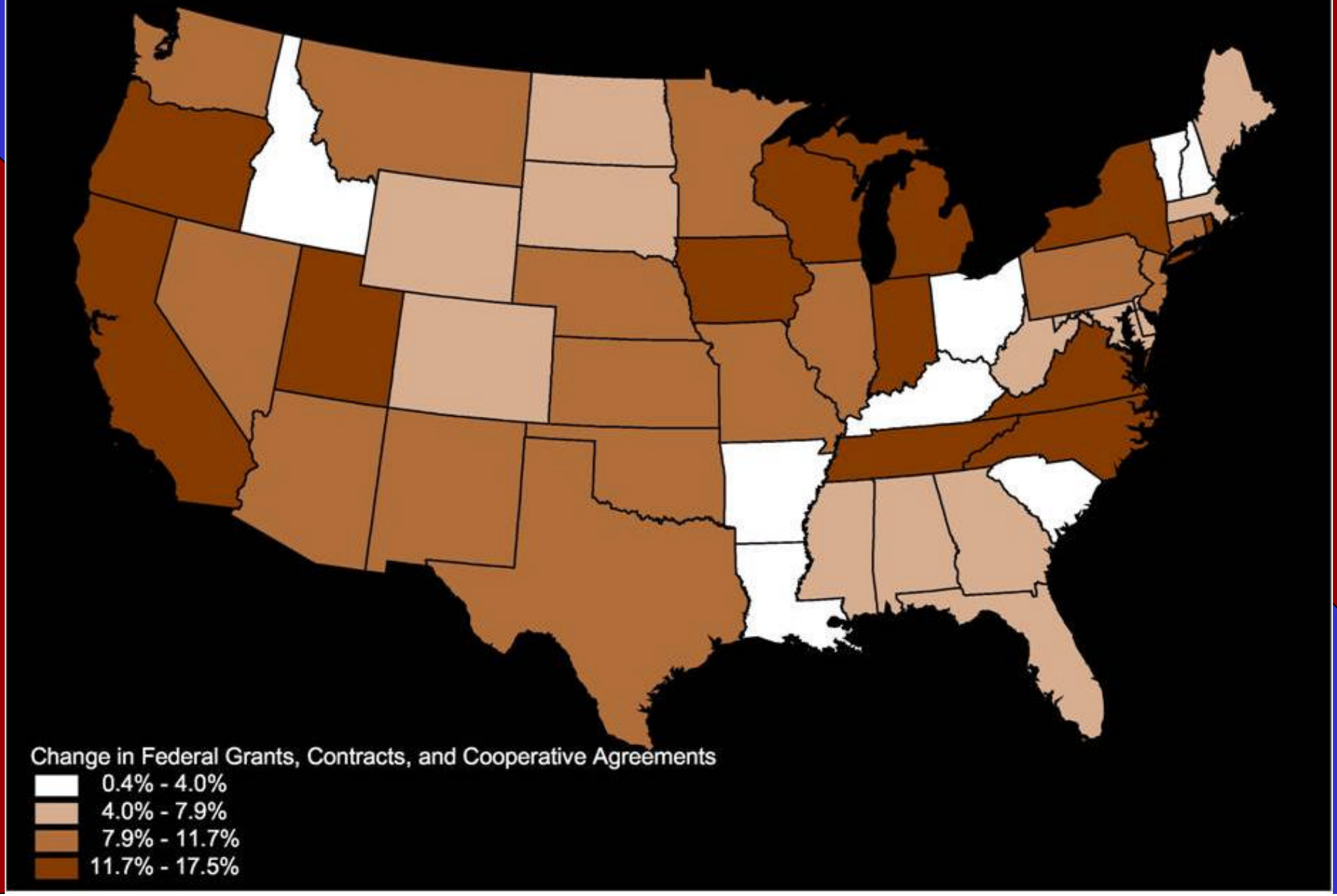
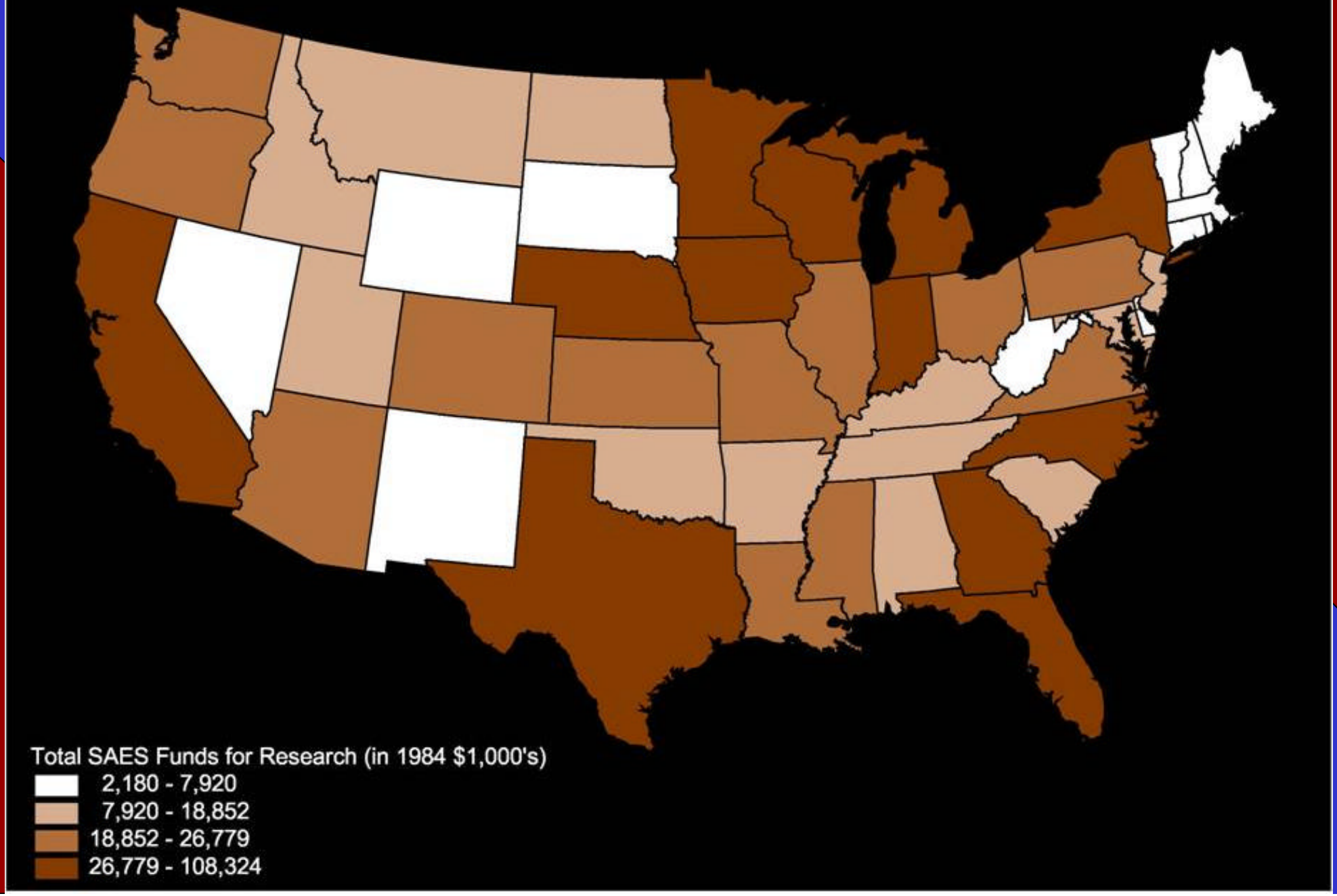
Review of Simulation 2: 10% Point Formula Fund Shift



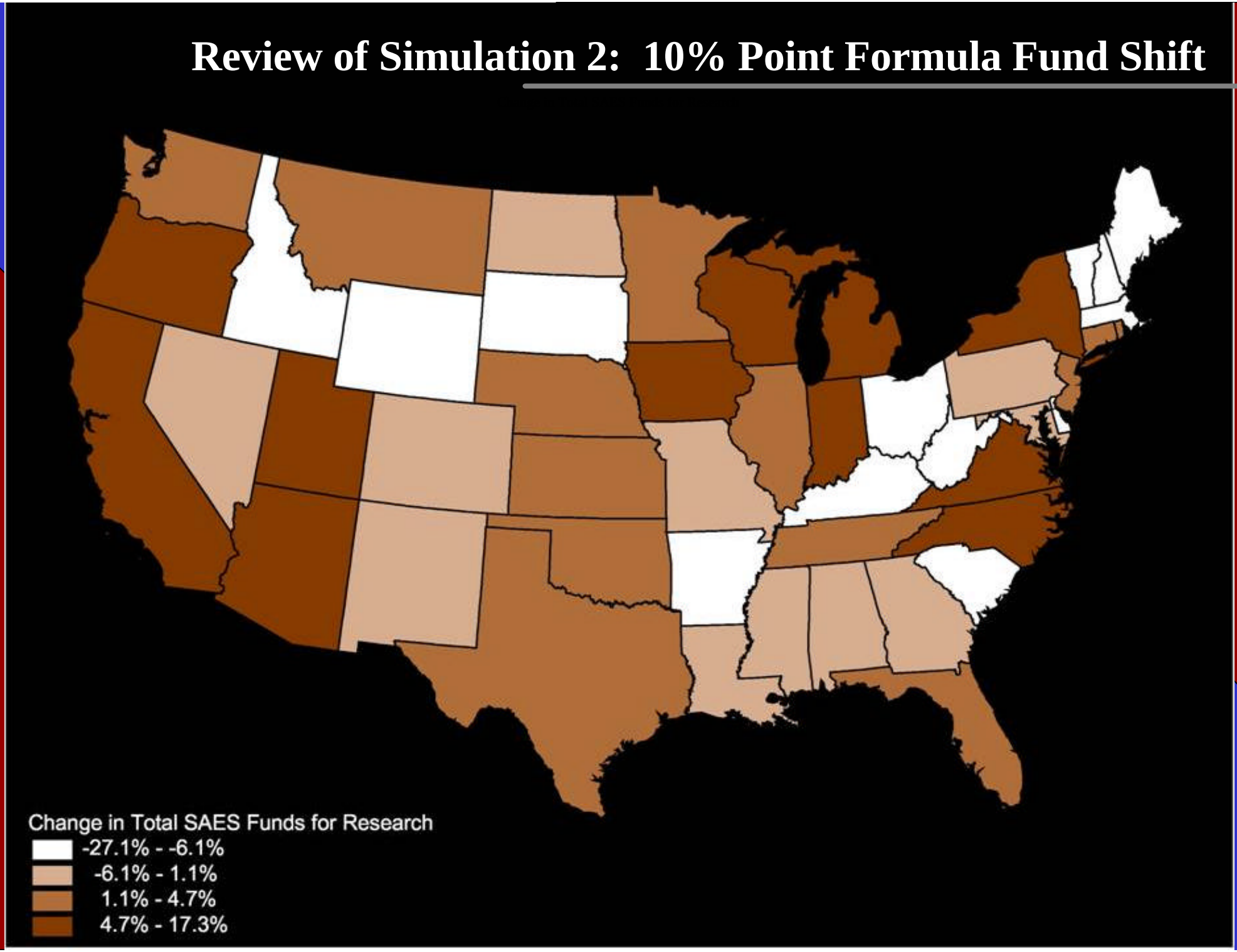
The Monitor Lab, Social Science Research Center, Mississippi State University, 2002

Review of Simulation 2: 10% Point Formula Fund Shift



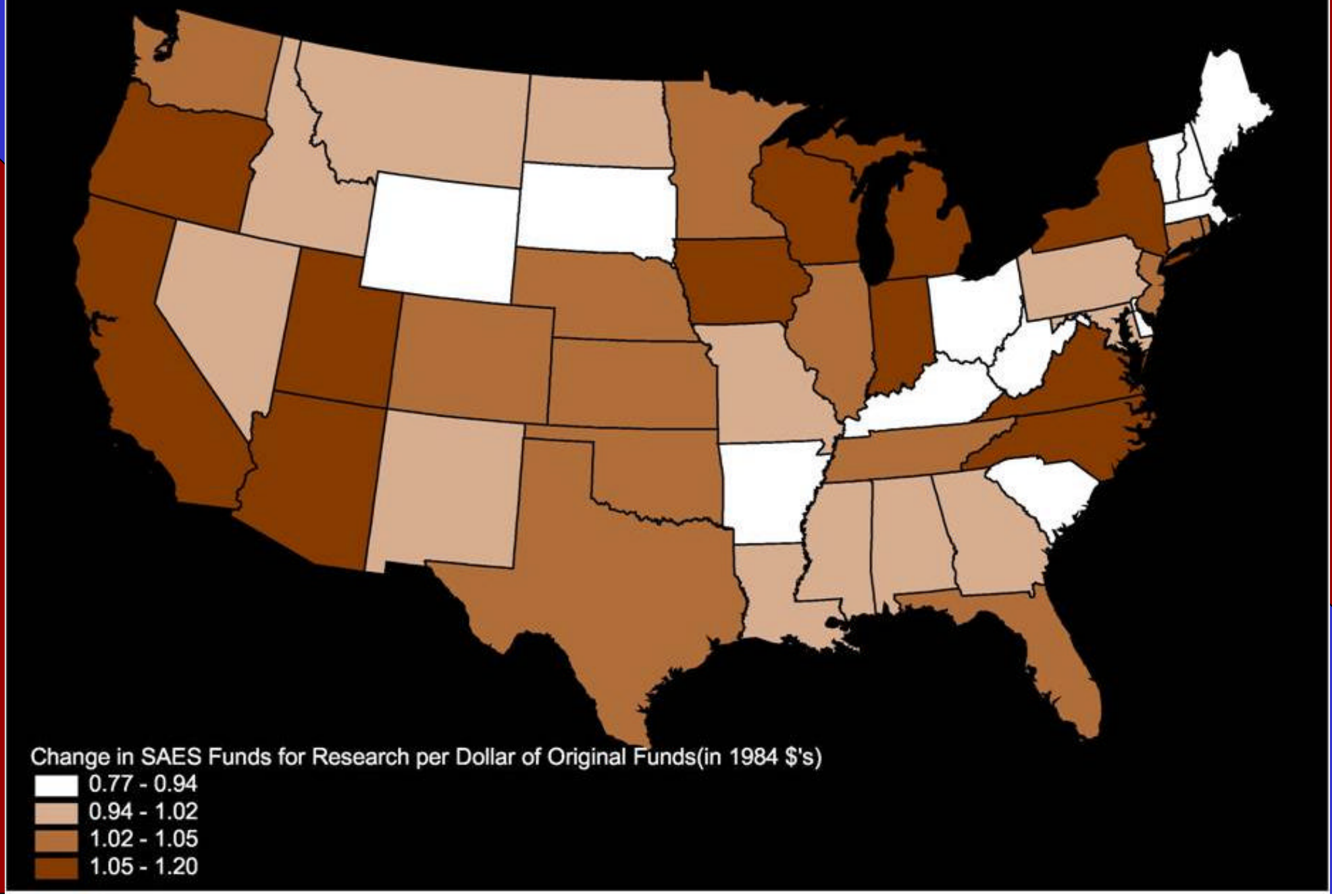
The Monitor Lab, Social Science Research Center, Mississippi State University, 2002

Review of Simulation 2: 10% Point Formula Fund Shift



The Monitor Lab, Social Science Research Center, Mississippi State University, 2002

Review of Simulation 2: 10% Point Formula Fund Shift



The Monitor Lab, Social Science Research Center, Mississippi State University, 2002

Review of Simulation 2: 10% Point Formula Fund Shift

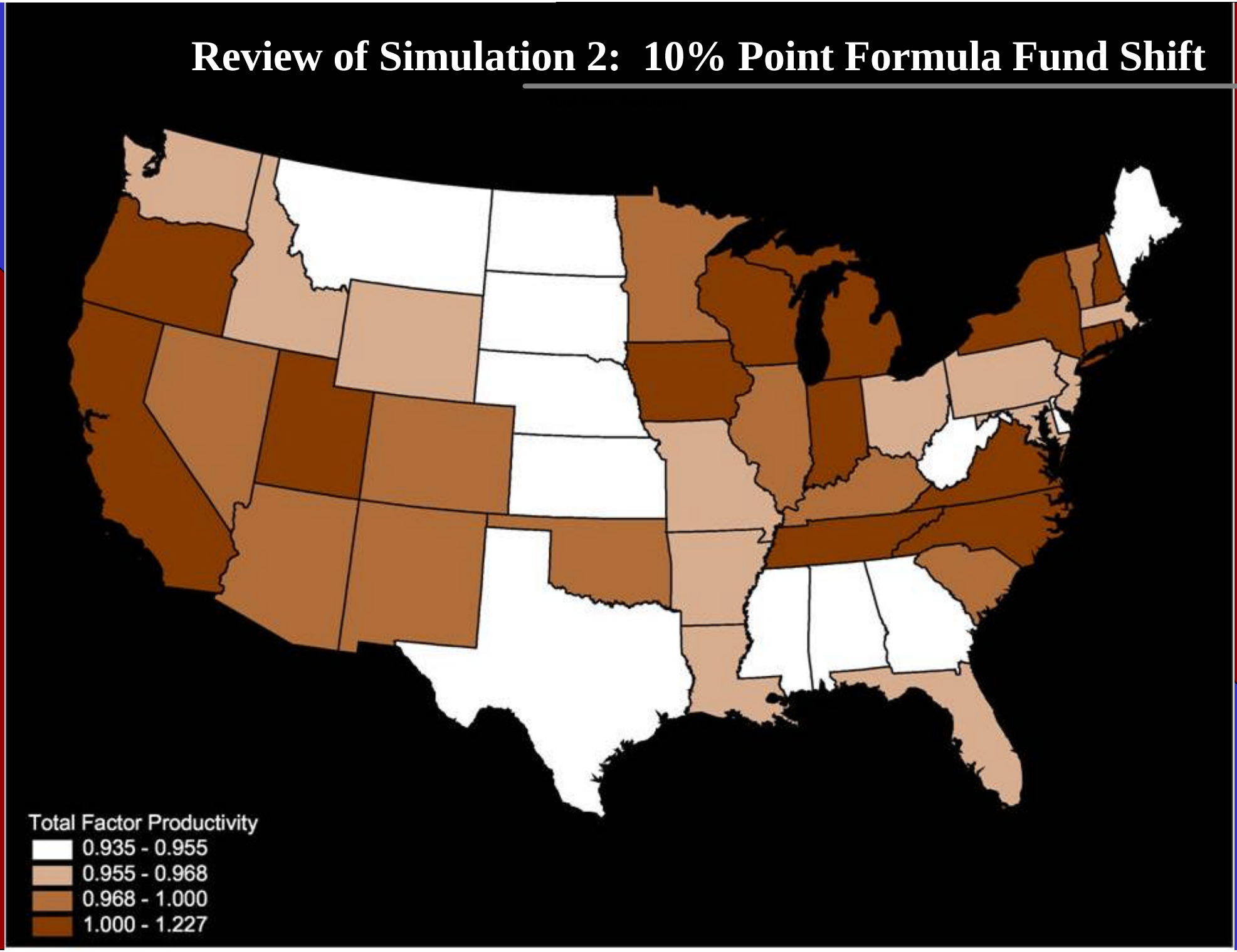


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Table 4: Simulation 2 - 10% Point Fund Shift

State Name	Share of SAES Revenues from Federal Formula Funds and State Appropriations	Change in Share of SAES Revenues from Federal Formula Funds and State Appropriations	Share of SAES Revenues from Federal Grants, Contracts, and Cooperative Agreements	Change Share of SAES Revenues from Federal Grants, Contracts, and Cooperative Agreements	Total SAES Funds for Research (in 1984 $1,000's)	Change in Total SAES Funds for Research	Change in Total SAES Funds for Research per Dollar of Original Funds (in 1984 $)	Natural Log of the Change in Total Factor Productivity (< 1 = loss and > 1 = gain)
Alabama	41.82%	-7.90%	12.55%	6.66%	$18,852.1	-4.07%	$0.96	0.935
Arizona	57.66%	-9.41%	21.82%	10.38%	$20,248.0	6.51%	$1.07	0.977
Arkansas	54.52%	-5.17%	6.60%	3.56%	$17,766.1	-6.15%	$0.94	0.957
California	60.44%	-12.00%	29.89%	13.07%	$108,324.7	14.37%	$1.15	1.058
Colorado	55.22%	-5.39%	18.89%	5.72%	$19,705.8	0.55%	$1.03	0.988
Connecticut	59.07%	-11.02%	24.38%	11.35%	$7,796.8	4.71%	$1.05	1.006
Delaware	43.67%	-9.09%	13.16%	7.24%	$4,021.3	-9.53%	$0.91	0.951
Florida	74.45%	-5.01%	10.80%	5.33%	$52,448.2	2.95%	$1.03	0.956
Georgia	58.96%	-5.76%	9.14%	4.87%	$29,328.8	-4.19%	$0.96	0.952
Idaho	59.95%	-4.68%	7.33%	3.69%	$9,606.5	-6.11%	$0.95	0.962
Illinois	48.12%	-10.54%	22.21%	11.00%	$22,343.4	3.01%	$1.03	0.972
Indiana	32.03%	-12.55%	36.13%	15.97%	$33,308.8	13.49%	$1.14	1.099
Iowa	39.15%	-11.41%	28.14%	13.28%	$31,350.5	7.89%	$1.08	1.009
Kansas	49.79%	-7.77%	18.06%	8.81%	$25,479.5	4.06%	$1.04	0.952
Kentucky	72.58%	-0.72%	0.62%	0.35%	$12,744.1	-16.01%	$0.86	0.988
Louisiana	79.12%	-4.07%	7.63%	3.98%	$24,632.9	-1.80%	$0.98	0.963
Maine	43.89%	-8.34%	12.34%	6.60%	$6,470.9	-8.89%	$0.92	0.949
Maryland	63.44%	-7.16%	13.98%	6.90%	$9,879.6	-3.14%	$0.96	0.962
Massachusetts	61.64%	-4.93%	8.40%	4.52%	$5,243.9	-12.69%	$0.89	0.966
Michigan	44.38%	-13.22%	32.52%	14.79%	$32,362.0	10.83%	$1.11	1.068
Minnesota	59.80%	-10.23%	21.53%	10.59%	$32,209.8	3.74%	$1.04	0.984
Mississippi	45.54%	-8.91%	14.72%	7.90%	$21,715.4	-4.65%	$0.96	0.940
Missouri	47.29%	-9.93%	20.13%	10.16%	$20,320.6	1.13%	$1.01	0.960
Montana	43.30%	-8.69%	18.25%	9.15%	$10,597.6	1.68%	$1.02	0.947
Nebraska	36.49%	-6.62%	17.44%	8.49%	$29,833.0	4.67%	$1.05	0.937
Nevada	48.37%	-11.01%	21.09%	10.75%	$4,743.6	-1.14%	$0.99	0.975
New Hampshire	45.26%	-2.95%	0.65%	0.40%	$2,180.3	-27.12%	$0.76	1.007
New Jersey	61.49%	-8.55%	17.91%	8.88%	$14,964.7	3.02%	$1.03	0.964
New Mexico	53.07%	-10.42%	19.87%	10.15%	$6,908.0	-2.25%	$0.97	0.973
New York	51.08%	-11.30%	29.18%	13.14%	$50,394.0	11.26%	$1.12	1.033
North Carolina	51.33%	-11.76%	26.03%	12.51%	$43,123.3	6.00%	$1.06	1.006
North Dakota	64.63%	-6.25%	11.53%	6.03%	$14,711.8	-2.17%	$0.98	0.953
Ohio	78.54%	-2.93%	5.18%	2.83%	$21,552.7	-7.74%	$0.93	0.968
Oklahoma	54.66%	-11.42%	23.49%	11.65%	$15,618.7	2.76%	$1.02	0.994
Oregon	38.72%	-13.03%	38.13%	15.83%	$26,779.1	16.54%	$1.17	1.136
Pennsylvania	56.74%	-9.58%	17.42%	9.25%	$19,122.3	-3.86%	$0.96	0.962
Rhode Island	33.64%	-17.38%	36.44%	17.53%	$2,938.4	3.81%	$1.03	1.107
South Carolina	66.76%	-1.95%	0.83%	0.48%	$12,170.2	-15.43%	$0.87	0.998
South Dakota	59.16%	-5.66%	8.51%	4.60%	$7,920.7	-6.12%	$0.94	0.955
Tennessee	31.36%	-12.77%	28.92%	13.18%	$17,162.3	3.70%	$1.04	1.014
Texas	48.22%	-8.46%	17.89%	8.98%	$49,508.7	2.13%	$1.02	0.947
Utah	43.92%	-14.97%	33.26%	15.66%	$9,863.1	7.78%	$1.08	1.081
Vermont	53.92%	-3.60%	4.98%	2.82%	$2,588.3	-20.73%	$0.82	0.974
Virginia	44.75%	-12.55%	27.95%	13.49%	$26,033.9	5.88%	$1.06	1.016
Washington	52.25%	-8.58%	18.53%	9.10%	$22,141.9	2.39%	$1.03	0.956
West Virginia	41.00%	-9.41%	12.77%	7.47%	$4,546.2	-16.22%	$0.85	0.947
Wisconsin	42.04%	-15.95%	41.83%	17.53%	$41,965.9	17.33%	$1.20	1.227
Wyoming	61.21%	-7.47%	12.95%	7.03%	$4,468.8	-7.00%	$0.93	0.958

* Change represents change from baseline data