

Change Over Time Methodology and Analysis

Measuring Change in Performance

One of the main goals of this report is to assess how state long-term services and supports (LTSS) systems improved or declined between the 2014 *Scorecard* and the 2017 *Scorecard*.

Baseline year data (typically 2 to 4 years prior to the most current data) are available for 23 of the 25 indicators in the *Scorecard*. For these 23 indicators, the *Scorecard* reports both current data and baseline data, and identifies meaningful change (either positive or negative). Note that the period of time covered by the data varies by indicator. Some measures have significant data lag, so the change measured by the 2017 *Scorecard* may have occurred prior to the publication of the 2014 *Scorecard*.

Of these 23 indicators with trends, 12 are repeated from the 2014 *Scorecard* with no change in data definition, and the baseline data are the 2014 *Scorecard* data. Another 9 indicators are repeated from the 2014 *Scorecard* but have a change in methodology or data source so that the baseline data do not match the data in 2014 *Scorecard*. Two trending indicators (subsidized housing opportunities and transportation policies) are new measures.

Each of the 23 indicators with trends is labeled in the Appendix A data tables with a green check mark for substantial improvement, a red X for a substantial decline in performance, and a black two-headed arrow for little or no change. For most measures, a threshold of 10 percent or more was used (10 percent change in the odds ratio for indicators that have a percentage scale). For policy composite indicators, indicator-specific thresholds were used to identify states with any real changes in policy.

Comparing across *Scorecards*

State ranks should not be directly compared between the current *Scorecard* and the 2011 and 2014 *Scorecards*. There are significant changes in the methodology and indicator sets between *Scorecards* and changes in rank may not reflect actual changes in relative performance, and should not be interpreted as such. Fewer than half of the indicators in the 2014 *Scorecard* are repeated without any changes in the indicator specifications. The Support for Family Caregivers dimension is also calculated differently, and the weighting of the Quality of Life and Quality of Care dimension has been changed.

Exhibit 1 on the next page shows how the set of indicators in the current *Scorecard* differs from the set in the 2014 *Scorecard*. See the *State LTSS Scorecard Ranking Methodology and Detailed Indicator Descriptions* for more detail on the changes in the indicator set.

Exhibit 1 Comparison of Indicator Set between 2014 and 2017 Scorecards

2014 Scorecard Indicator	2017 Scorecard Indicator	Comments*
Affordability and Access		
Nursing Home Cost	Nursing Home Cost	
Home Care Cost	Home Care Cost	
Long-Term Care Insurance	Long-Term Care Insurance	Changed
Low-Income PWD with Medicaid	Low-Income PWD with Medicaid	
Low-Income PWD with Medicaid LTSS	PWD with Medicaid LTSS	Changed
ADRC Functions	ADRC/ No Wrong Door Functions	Changed; no revised baseline
Choice of Setting and Provider		
Medicaid LTSS Balance: Spending	Medicaid LTSS Balance: Spending	
Medicaid LTSS Balance: New Users	Medicaid LTSS Balance: New Users	Changed
Participant Direction	Participant Direction	Changed; no revised baseline
Home Health Aide Supply	Home Health Aide Supply	Changed
Assisted Living Supply	Assisted Living Supply	Changed
	Subsidized Housing Opportunities	New indicator
Quality of Life and Quality of Care		
PWD Getting Needed Support		Dropped; data not available
PWD Satisfied with Life		Dropped; data not available
PWD Rate of Employment	PWD Rate of Employment	
Nursing Home Pressure Sores	Nursing Home Pressure Sores	
Nursing Home Staffing Turnover		Dropped; data not available
Nursing Home Antipsychotic Use	Nursing Home Antipsychotic Use	
Support for Family Caregivers		
Legal and System Supports	Supporting Working Caregivers	Changed, split into two indicators
	Person- and Family-Centered Care	
Nurse Delegation and Scope of Practice	Nurse Delegation and Scope of Practice	Changed
Elements of Caregiver Well-Being		Dropped; data not available
	Transportation Policies	New indicator
Effective Transitions		
Nursing Home Low Care Needs	Nursing Home Low Care Needs	
Home Health Hospital Admissions	Home Health Hospital Admissions	
Nursing Home Hospital Admissions	Nursing Home Hospital Admissions	
Burdensome Transitions	Burdensome Transitions	Changed
Long Nursing Home Stays	Long Nursing Home Stays	
Transitions Back to Community	Transitions Back to Community	

* “Changed” refers to a change in definition and/or data source. See the *State LTSS Scorecard Ranking Methodology and Detailed Indicator Descriptions* document for more detail. The data are not comparable with those reported in the 2014 Scorecard, though a revised baseline is usually available.

Note: PWD = People with disabilities; ADRC = Aging and Disability Resource Center

Quantifying Change in Performance

To aid in interpreting change over time, a threshold of 10 percent was used to identify states with a meaningful change in performance for most indicators.

For count- or ratio-scaled data, usually indicators of the form (number of elements)/(population subgroup), a threshold of 10 percent change in the ratio was used. For example, if a state had a baseline rate of 20 assisted living units per 1,000 people ages 75 and older, a ratio of 18 or lower in 2012/13 would be classified as a decline, and a ratio of 22 or higher would be classified as an improvement. A ratio of 19, 20, or 21 would be classified as “little or no change” so as not to highlight small changes in the data that may not reflect meaningful change. This is particularly important for indicators based on survey data (e.g., the American Community Survey) where sampling error is present in the measure.

For percentage data, a threshold of 10 percent change in the odds was used in order for meaningful change to be possible for any starting value, and for the indication of change to be the same whether the indicator is expressed in a positive or negative way. The odds (or odds ratio) is the ratio of the probability of something happening (or the proportion of the time that it happens) to the probability of it not happening, or more generally, $Odds = P/(1 - P)$, where P is the proportion, percentage, or probability. For example, a percentage of 20 percent corresponds to an odds of $20\%/80\% = 0.25$, and a percentage of 60 percent corresponds to an odds of $60\%/40\% = 1.5$.

Several indicators were measured as a percent scale but were actually count/ratio data (nursing home cost and home health cost); for these, a 10 percent change in ratio was used as a threshold. Similarly, several indicators are not true proportions but act approximately like a percentage (long-term care insurance, people with disabilities rate of employment); for these indicators, a 10 percent change in the odds was used for a threshold after converting to the appropriate scale.

The Support for Family Caregivers dimension contains policy composite measures. A threshold of 0.15 was used to indicate change in each area of performance in this measure. Since some policies are scored against national minimum and maximum values, there could be a slight change in score even if state policy is unchanged. A small threshold of 0.15 points was used so as not to indicate meaningful change as a result. Exhibit 2 on the following page shows the threshold used to indicate significant change for each indicator with trend data.

Exhibit 2

Change Thresholds by Indicator for 2017 Scorecard

Indicator	Threshold	Detail
Affordability and Access		
Nursing Home Cost	+/- 10%	
Home Care Cost	+/- 10%	
Long-Term Care Insurance	+/- 10% odds	
Low-Income PWD with Medicaid	+/- 10% odds	
PWD with Medicaid LTSS	+/- 10%	
Choice of Setting and Provider		
Medicaid LTSS Balance: Spending	+/- 10% odds	
Medicaid LTSS Balance: New Users	+/- 10% odds	
Home Health Aide Supply	+/- 10%	
Assisted Living Supply	+/- 10%	
Subsidized Housing Opportunities	+/- 10% odds	
Quality of Life and Quality of Care		
PWD Rate of Employment	+/- 10% odds	
Nursing Home Pressure Sores	+/- 10% odds	
Nursing Home Antipsychotic Use	+/- 10% odds	
Support for Family Caregivers		
Supporting Working Caregivers	Special	0.15
Person- and Family-Centered Care	Special	0.15
Nurse Delegation and Scope of Practice	Special	0.15
Transportation Policies	Special	0.15
Effective Transitions		
Nursing Home Low Care Needs	+/- 10% odds	
Home Health Hospital Admissions	+/- 10% odds	
Nursing Home Hospital Admissions	+/- 10% odds	
Burdensome Transitions	+/- 10% odds	
Long Nursing Home Stays	+/- 10% odds	
Transitions Back to Community	+/- 10% odds	

Note: PWD = people with disabilities.

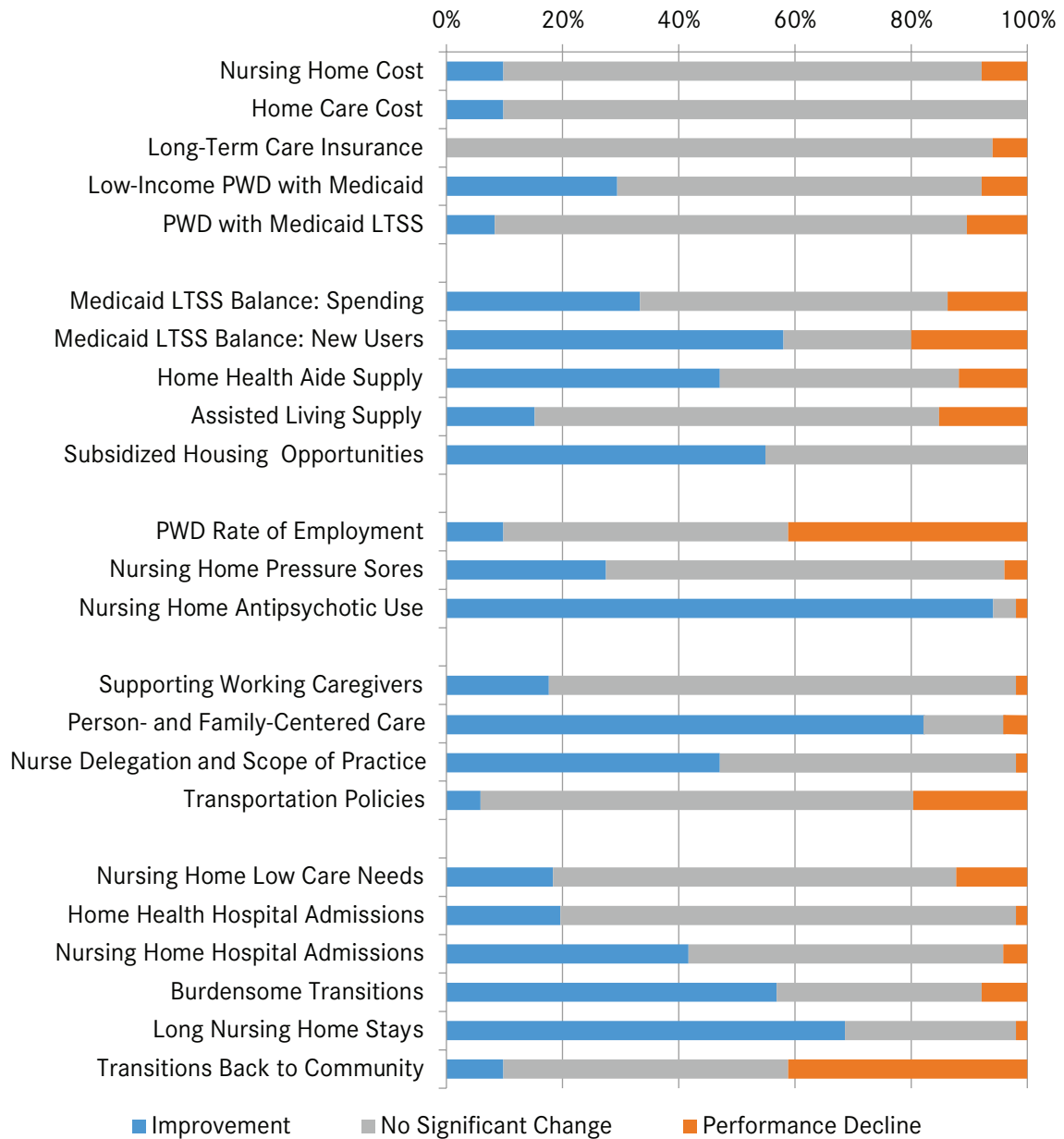
Summary of Change by Indicator

Exhibit 3 Change in State Performance on 23 Indicators from the 2014 to 2017 Scorecards

Indicator	Number of States showing:			
	Improved Performance	Performance Decline	No Significant Change	Missing Data
Affordability and Access				
Nursing Home Cost	5	4	42	0
Home Care Cost	5	0	46	0
Long-Term Care Insurance	0	3	47	1
Low-Income PWD with Medicaid	15	4	32	0
PWD with Medicaid LTSS	4	5	39	3
Choice of Setting and Provider				
Medicaid LTSS Balance: Spending	17	7	27	0
Medicaid LTSS Balance: New Users	29	10	11	1
Home Health Aide Supply	24	6	21	0
Assisted Living Supply	7	7	32	5
Subsidized Housing Opportunities	28	0	23	0
Quality of Life and Quality of Care				
PWD Rate of Employment	5	21	25	0
Nursing Home Pressure Sores	14	2	35	0
Nursing Home Antipsychotic Use	48	1	2	0
Support for Family Caregivers				
Supporting Working Caregivers	9	1	41	0
Person- and Family-Centered Care	42	2	7	0
Nurse Delegation and Scope of Practice	24	1	26	0
Person- and Family-Centered Care	42	2	7	0
Transportation Policies	3	10	38	0
Effective Transitions				
Nursing Home Low Care Needs	9	6	34	2
Home Health Hospital Admissions	10	1	40	0
Nursing Home Hospital Admissions	20	2	26	3
Burdensome Transitions	29	4	18	0
Long Nursing Home Stays	35	1	15	0
Transitions Back to Community	5	21	25	0

Note: PWD = people with disabilities.

Exhibit 4 Change in State Performance by Indicator: Percentage of States



PWD = People with disabilities

Source: State Long-Term Services and Supports Scorecard, 2017

Summary of Change by State and Dimension

Exhibit 5 All Change Across Dimensions by State

Across All Dimensions, Number of Indicators for Which States Improved, Declined, or Stayed About the Same:					Affordability and Access				
	Improve	Decline	Same	No Trend		Improve	Decline	Same	No Trend
United States	6	1	16	0	United States	0	0	5	0
Alabama	7	4	12	0	Alabama	0	0	5	0
Alaska	8	4	9	2	Alaska	2	0	3	0
Arizona	7	4	12	0	Arizona	0	1	4	0
Arkansas	8	1	14	0	Arkansas	1	0	4	0
California	6	1	16	0	California	1	0	4	0
Colorado	8	2	12	1	Colorado	0	0	4	1
Connecticut	7	2	13	1	Connecticut	0	0	5	0
Delaware	10	3	10	0	Delaware	1	1	3	0
District of Columbia	6	2	12	3	District of Columbia	0	1	3	1
Florida	6	1	15	1	Florida	0	1	4	0
Georgia	9	5	9	0	Georgia	0	1	4	0
Hawaii	7	2	13	1	Hawaii	1	0	4	0
Idaho	7	2	13	1	Idaho	0	0	4	1
Illinois	10	2	10	1	Illinois	0	0	5	0
Indiana	6	3	14	0	Indiana	0	0	5	0
Iowa	6	2	14	1	Iowa	0	1	4	0
Kansas	4	2	17	0	Kansas	0	0	5	0
Kentucky	9	2	12	0	Kentucky	2	1	2	0
Louisiana	8	3	12	0	Louisiana	0	0	5	0
Maine	4	4	14	1	Maine	0	0	4	1
Maryland	7	1	15	0	Maryland	0	0	5	0
Massachusetts	8	3	12	0	Massachusetts	0	0	5	0
Michigan	5	0	18	0	Michigan	1	0	4	0
Minnesota	7	1	14	1	Minnesota	0	0	5	0
Mississippi	11	1	11	0	Mississippi	0	0	5	0
Missouri	6	3	14	0	Missouri	1	0	4	0
Montana	6	3	14	0	Montana	0	1	4	0
Nebraska	9	3	11	0	Nebraska	1	0	4	0
Nevada	6	4	13	0	Nevada	0	1	4	0
New Hampshire	7	2	14	0	New Hampshire	2	0	3	0
New Jersey	6	1	16	0	New Jersey	0	0	5	0
New Mexico	7	1	14	1	New Mexico	1	0	4	0
New York	12	1	10	0	New York	0	0	5	0
North Carolina	7	5	11	0	North Carolina	0	1	4	0
North Dakota	4	4	15	0	North Dakota	1	1	3	0
Ohio	9	1	13	0	Ohio	1	0	4	0
Oklahoma	8	2	13	0	Oklahoma	0	1	4	0
Oregon	7	2	14	0	Oregon	1	0	4	0
Pennsylvania	8	1	14	0	Pennsylvania	0	0	5	0
Rhode Island	10	1	12	0	Rhode Island	2	0	3	0
South Carolina	6	2	15	0	South Carolina	0	1	4	0
South Dakota	7	3	13	0	South Dakota	1	0	4	0
Tennessee	13	1	9	0	Tennessee	1	0	4	0
Texas	6	2	15	0	Texas	0	0	5	0
Utah	9	3	11	0	Utah	2	2	1	0
Vermont	7	4	12	0	Vermont	3	0	2	0
Virginia	8	0	15	0	Virginia	0	0	5	0
Washington	7	3	13	0	Washington	0	0	5	0
West Virginia	11	3	9	0	West Virginia	2	0	3	0
Wisconsin	10	2	11	0	Wisconsin	0	0	5	0
Wyoming	10	5	8	0	Wyoming	1	1	3	0

Choice of Setting and Provider					Quality of Life and Quality of Care				
	Improve	Decline	Same	No Trend		Improve	Decline	Same	No Trend
United States	1	0	4	0	United States	1	0	2	0
Alabama	1	3	1	0	Alabama	1	0	2	0
Alaska	2	1	2	0	Alaska	1	2	0	0
Arizona	2	0	3	0	Arizona	2	1	0	0
Arkansas	2	1	2	0	Arkansas	2	0	1	0
California	1	1	3	0	California	1	0	2	0
Colorado	2	0	3	0	Colorado	2	1	0	0
Connecticut	2	0	2	1	Connecticut	1	1	1	0
Delaware	2	0	3	0	Delaware	2	0	1	0
District of Columbia	2	1	2	0	District of Columbia	1	0	2	0
Florida	3	0	1	1	Florida	1	0	2	0
Georgia	3	1	1	0	Georgia	1	1	1	0
Hawaii	2	0	3	0	Hawaii	1	1	1	0
Idaho	2	1	2	0	Idaho	2	1	0	0
Illinois	3	0	1	1	Illinois	2	1	0	0
Indiana	1	2	2	0	Indiana	1	1	1	0
Iowa	4	0	0	1	Iowa	2	0	1	0
Kansas	1	1	3	0	Kansas	1	0	2	0
Kentucky	2	1	2	0	Kentucky	1	0	2	0
Louisiana	1	0	4	0	Louisiana	2	1	0	0
Maine	2	1	2	0	Maine	1	1	1	0
Maryland	1	0	4	0	Maryland	1	1	1	0
Massachusetts	2	1	2	0	Massachusetts	1	1	1	0
Michigan	0	0	5	0	Michigan	1	0	2	0
Minnesota	2	0	2	1	Minnesota	1	0	2	0
Mississippi	4	0	1	0	Mississippi	1	1	1	0
Missouri	2	0	3	0	Missouri	1	1	1	0
Montana	2	0	3	0	Montana	1	1	1	0
Nebraska	2	1	2	0	Nebraska	2	0	1	0
Nevada	1	2	2	0	Nevada	2	0	1	0
New Hampshire	2	0	3	0	New Hampshire	1	0	2	0
New Jersey	1	1	3	0	New Jersey	2	0	1	0
New Mexico	2	0	2	1	New Mexico	1	0	2	0
New York	3	1	1	0	New York	1	0	2	0
North Carolina	2	2	1	0	North Carolina	1	0	2	0
North Dakota	0	1	4	0	North Dakota	0	1	2	0
Ohio	3	0	2	0	Ohio	1	0	2	0
Oklahoma	2	1	2	0	Oklahoma	1	0	2	0
Oregon	2	0	3	0	Oregon	1	0	2	0
Pennsylvania	3	0	2	0	Pennsylvania	1	0	2	0
Rhode Island	2	0	3	0	Rhode Island	3	0	0	0
South Carolina	2	1	2	0	South Carolina	1	0	2	0
South Dakota	3	0	2	0	South Dakota	1	1	1	0
Tennessee	3	0	2	0	Tennessee	1	1	1	0
Texas	1	1	3	0	Texas	1	1	1	0
Utah	2	0	3	0	Utah	1	0	2	0
Vermont	2	0	3	0	Vermont	1	1	1	0
Virginia	3	0	2	0	Virginia	1	0	2	0
Washington	2	1	2	0	Washington	2	1	0	0
West Virginia	1	1	3	0	West Virginia	2	0	1	0
Wisconsin	5	0	0	0	Wisconsin	1	1	1	0
Wyoming	3	2	0	0	Wyoming	3	0	0	0

	Support for Family Caregivers				Effective Transitions				
	Improve	Decline	Same	No Trend	Improve	Decline	Same	No Trend	
United States	2	1	1	0	United States	2	0	4	0
Alabama	1	0	3	0	Alabama	4	1	1	0
Alaska	1	0	3	0	Alaska	2	1	1	2
Arizona	1	1	2	0	Arizona	2	1	3	0
Arkansas	1	0	3	0	Arkansas	2	0	4	0
California	2	0	2	0	California	1	0	5	0
Colorado	1	0	3	0	Colorado	3	1	2	0
Connecticut	2	0	2	0	Connecticut	2	1	3	0
Delaware	2	0	2	0	Delaware	3	2	1	0
District of Columbia	2	0	2	0	District of Columbia	1	0	3	2
Florida	1	0	3	0	Florida	1	0	5	0
Georgia	1	1	2	0	Georgia	4	1	1	0
Hawaii	1	0	3	0	Hawaii	2	1	2	1
Idaho	1	0	3	0	Idaho	2	0	4	0
Illinois	1	1	2	0	Illinois	4	0	2	0
Indiana	1	0	3	0	Indiana	3	0	3	0
Iowa	0	0	4	0	Iowa	0	1	5	0
Kansas	1	1	2	0	Kansas	1	0	5	0
Kentucky	1	0	3	0	Kentucky	3	0	3	0
Louisiana	1	1	2	0	Louisiana	4	1	1	0
Maine	1	0	3	0	Maine	0	2	4	0
Maryland	3	0	1	0	Maryland	2	0	4	0
Massachusetts	2	0	2	0	Massachusetts	3	1	2	0
Michigan	2	0	2	0	Michigan	1	0	5	0
Minnesota	3	0	1	0	Minnesota	1	1	4	0
Mississippi	2	0	2	0	Mississippi	4	0	2	0
Missouri	0	1	3	0	Missouri	2	1	3	0
Montana	2	0	2	0	Montana	1	1	4	0
Nebraska	2	1	1	0	Nebraska	2	1	3	0
Nevada	1	0	3	0	Nevada	2	1	3	0
New Hampshire	1	0	3	0	New Hampshire	1	2	3	0
New Jersey	2	0	2	0	New Jersey	1	0	5	0
New Mexico	2	0	2	0	New Mexico	1	1	4	0
New York	2	0	2	0	New York	6	0	0	0
North Carolina	2	2	0	0	North Carolina	2	0	4	0
North Dakota	2	0	2	0	North Dakota	1	1	4	0
Ohio	1	0	3	0	Ohio	3	1	2	0
Oklahoma	2	0	2	0	Oklahoma	3	0	3	0
Oregon	2	0	2	0	Oregon	1	2	3	0
Pennsylvania	2	0	2	0	Pennsylvania	2	1	3	0
Rhode Island	1	0	3	0	Rhode Island	2	1	3	0
South Carolina	1	0	3	0	South Carolina	2	0	4	0
South Dakota	2	1	1	0	South Dakota	0	1	5	0
Tennessee	2	0	2	0	Tennessee	6	0	0	0
Texas	2	0	2	0	Texas	2	0	4	0
Utah	2	1	1	0	Utah	2	0	4	0
Vermont	1	1	2	0	Vermont	0	2	4	0
Virginia	2	0	2	0	Virginia	2	0	4	0
Washington	1	0	3	0	Washington	2	1	3	0
West Virginia	2	0	2	0	West Virginia	4	2	0	0
Wisconsin	2	1	1	0	Wisconsin	2	0	4	0
Wyoming	2	1	1	0	Wyoming	1	1	4	0