VOL. IV, 2018

A STATE OF DECAY

ARE OLDER AMERICANS COMING OF AGE WITHOUT ORAL HEALTHCARE?

WISDOM TOOTH PROJECT®

A PROGRAM OF

oha ORAL HEALTH AMERICA

Oral Health America graciously acknowledges the DentaQuest Foundation for their support of *A State of Decay,* Vol. IV.

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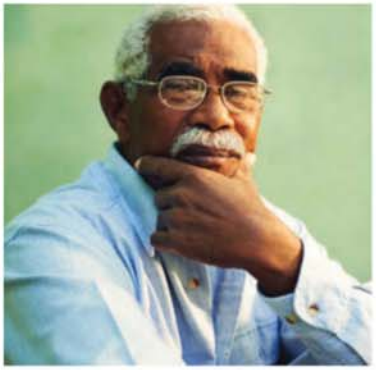


Executive Summary

In the decade and a half since publication of the first volume of *A State of Decay* in 2003, Oral Health America (OHA) has learned much about the challenges and frustrations of older adults when it comes to maintaining a healthy mouth. This volume reports progress in states throughout the country as oral health stakeholders and advocates have increased the frequency and intensity of their efforts.

For the first time, this volume of *A State of Decay* adds a national analysis of the CDC individual data on severe tooth loss and recent dental visits by considering associations with sociodemographic factors such as income, education, age, and gender.

The recognized resource describing the oral health status of Americans who have reached age 65 years, *A State of Decay* combines information gathered by OHA staff in surveys of state dental directors with data from publicly available sources. For this 2018 report, six variables were included in the state analysis. State dental directors reported whether they have State Oral Health Plans (SOHPs) and whether those plans include SMART objectives (specific, measurable, achievable, realistic, and time-scaled) that mention or include older adults. The directors also reported whether they have developed and completed Basic Screening Surveys (BSSs), and whether those are local pilots or statewide efforts and whether they include older adults.

From the Centers for Disease Control and Prevention (CDC) come data for three variables: Individual data on severe tooth loss among community-dwelling older adults and dental visits within the past year among community-dwelling older adults, and state data on community water fluoridation (CWF). The specifics on state adult Medicaid dental coverage of 13 services commonly used by older adults are provided by the MedicaidIMedicarelCHIP Services Dental Association (MDSA).

For the first time, this volume of *A State of Decay* adds a national analysis of the CDC individual data on severe tooth loss and recent dental visits by considering associations with sociodemographic factors such as income, education, age, and gender.

State data for the six variables show that seven states emerge as leaders in both Volumes III and IV of *A State of Decay*. Minnesota is again at the top of the state rankings, as it was in 2016 and 2013. Other states ranked in the top 10 in 2016 and 2018 are Wisconsin, North Dakota, Connecticut, Rhode Island, Michigan, and Colorado. From middle-of-the-pack positions in 2016, Iowa and California jumped into the top 10 at numbers 3 and 9, respectively. Other states whose scores changed by more than 20 places include Alabama (climbing from 50th to 29th), Arkansas (falling from 20th to 45th), and Delaware (falling from 12th to 42nd). The Story Spotlights in this report provide details on the improvement efforts in Alabama, California, and Iowa, and ways in which Mississippi is addressing its ongoing challenges related to poverty and health.

Overall, the CWF variable increased from a state average of 71.9% in 2016 to 72.6% in this volume, a national increase of about 2.2 million people served by CWF. Medicaid coverage of oral health benefits also increased, with two states that provided no benefits in 2016 adding some of the 13 services measured in this survey (Delaware, with two services, and South Dakota, with 11). State oral health officials have been busy including older adults in SOHPs and administering the BSS for seniors. The 2018 data show 34 states have SOHPs; 31 include older adults, and 12 use SMART objectives. Similarly, 34 states either have completed a BSS for older adults or are planning to do so, 10 states completed a statewide BSS between 2013 and 2017, and another 6 states conducted a local pilot BSS.

The severe tooth loss and recent dental visit data, analyzed individually on a national basis, showed a consistent, linear association with household income. Low household income covaries with predicted measures of poor oral health. As income levels rose, so did the probability of good oral health. Other interesting associations were that women were somewhat more likely than men to have seen a dentist in the past year and do not have as much severe tooth loss, that increased education level correlated with better oral health, and that divorced, widowed, and separated older adults were more likely to have poor oral health than married individuals.

Based on the findings in this volume of *A State of Decay* and other research conducted as part of the Wisdom Tooth Project®, OHA makes these recommendations for advocates to take action to improve oral health in older adults:

- Reinstate, establish, or maintain an extensive adult Medicaid dental benefit
- Integrate comprehensive dental coverage in Medicare
- Sustain or expand community water fluoridation
- Include specific objectives for older adults in all State Oral Health Plans
- Conduct Basic Screening Surveys of older adults in all states

Through publication of *A State of Decay* and provision of guidelines for action, OHA continues to lead the way toward healthier mouths for older adults. States, advocates, and public health coalitions that share OHA's commitment can use these recommendations to push forward policies needed to positively impact the health and oral health of older adults.

The severe tooth loss and recent dental visit data, analyzed individually on a national basis, showed a consistent, linear association with household income.

Foreword

"Nobody ages like anybody else." This quote by Germaine Greer is becoming increasingly clear as we consider our nation's fast-changing and increasingly diverse aging community. In 2029, the oldest baby boomers will be 83 years old and will have significantly different health and oral health needs than those at the end of this generation who will turn 65 that year. While many seniors will continue to age in place, the same opportunity won't be available for those adversely affected by sociodemographic factors, such as income, race, gender, and education, which will keep independence out of reach.

We need to act now to address the underlying issues. *The purpose of Oral Health America's A State of Decay series is to assist professionals and consumers to shine a light on the adversities at the state and national level and rally others to change both conditions and outcomes.*

In 2003, Oral Health America commissioned the *A State of Decay* series to provide the public with data describing the oral health status of adults aged 65+ in each state. *A State of Decay*, Vol. I, focused solely on the cost of services and financial reimbursement rates as the primary contributing factor to older adults' oral health. While cost continues to be the greatest barrier to accessing oral healthcare, there are many complex variables at play. Thus, beginning in 2013, the *A State of Decay* report expanded to highlight both public health and healthcare delivery factors.

The 2013 report proclaimed the oral health of older adults in the United States was in "a state of decay." The National Institute of Dental and Craniofacial Research reported in 2014 that dental caries, both treated and untreated, in adults aged 65+ declined from the early 1970s until the most recent report from the National Health and Nutrition Examination Survey (1999–2004).[1] Considering that the decreases were significant in all population subgroups, what is the merit of this claim? Significant disparities are still found in some population groups. For example, 18% of seniors have untreated dental decay, but African American and Hispanic seniors are two times more likely to have untreated decay than their Caucasian counterparts: 37% and 41% versus 16%. Additionally, among all states, this 2018 volume of *A State of Decay* found that more than one-third of older adults — 33% — have lost 6 or more teeth.

But there is good news: state advocates have taken action. Since 2016, Oral Health America has observed an increasing number of states taking intentional steps to advance the oral health of older adults in their communities. More states have commissioned surveys to measure the provision of oral health services to older adults (Basic Screening Surveys), added goals for older adults to State Oral Health Plans, increased the percentage of people in areas served by community water fluoridation, and covered a greater number of adult dental services under Medicaid. Throughout the report, you'll find articles describing how Alabama, California, Iowa, and Mississippi have worked to improve oral health of older adults since the 2016 report.

Hellen Keller said, "Alone we can do so little; together we can do so much." This report includes a set of policy recommendations, designed as a guide for states, advocates, and public health coalitions to push forward policies needed to positively impact the health and oral health of seniors. Oral Health America believes *A State of Decay*, Vol. IV, illustrates that existing gaps in healthcare can begin to close when advocates across multidisciplinary sectors engage decision-makers through collective action, with a shared commitment to creating a healthier older adult population.

This report includes a set of policy recommendations, designed as a guide for states, advocates, and public health coalitions to push forward policies needed to positively impact the health and oral health of seniors.

Methods and Definitions of Variables

To continue the progress made through prior volumes of *A State of Decay,* scientific advisory committee members convened in June 2017 to determine what variables would be included in Vol. IV, discuss refinements in the methodology, establish the formula for calculation of state rankings, evaluate the possibility of including national oral health data, and set criteria for information sources.

SELECTION OF STATE VARIABLES

For the state rankings, the scientific advisory committee suggested these criteria for Vol. IV: Data must be current (less than 5 years old), regularly measured, credible, representative of the population, valid, reliable, relevant, and actionable. Two changes were suggested in state variables:

Change of *Edentulism* to *Severe Tooth Loss*: replacement of edentulism, or percentage of adults 65+ with no natural teeth, with percentage of adults 65+ *missing 6 or more teeth because of disease or decay* (referred to as *severe tooth loss* in this report)

Addition of *Dental Visit*: percentage of older adults 65+ with a *recent dental visit* (within the past 12 months).

The other four variables for the state rankings are the same as in Vol. III:

Adult Medicaid Dental Benefit. The extent to which a state Medicaid program covers the 13 Medicaid dental services listed in Figure A1 of the Appendix. These services were selected because they are most commonly used by persons 65+.

Note: In this analysis, the most recent Medicaid data available at the time were used. These data were compiled by Medicaid|Medicare|CHIP Services Dental Association (MDSA) in 2015. States' adult dental benefits in Medicaid may have changed since then, and thus the score in this report may, in some instances, not reflect the state's *current* coverage for adult Medicaid dental benefits.

Community Water Fluoridation (CWF). Persons receiving fluoridated water divided by persons served by community water, expressed as a percentage.

State Oral Health Plan (SOHP). Existence and extent to which a state plan contains immediate or recent strategies to improve the oral health of its older adults, expressed using the following scale:

0 - State does not have a State Oral Health Plan in 2017.

1 - State has a State Oral Health Plan in 2017, but it does not mention or include older adults.

2 - State has a State Oral Health Plan in 2017 that mentions older adults but does not include SMART (specific, measurable, achievable, realistic, and time-scaled) objectives.

3 - State has a State Oral Health Plan in 2017 that includes SMART objectives for older adults.

Basic Screening Survey (BSS). Status of a state's Basic Screening Survey (BSS), expressed using the following scale:

0 - State has never completed a BSS for older adults and has no plan to do so.

1 - State has never completed a BSS for older adults but is currently planning a BSS for older adults for 2018 (statewide or local pilot).

2 - State completed a local pilot BSS for older adults in 2012 or earlier.

3 - State completed a statewide BSS for older adults in 2012 or earlier.

4 - State completed a local pilot BSS for older adults between 2013 and 2017.

5 - State completed a statewide BSS for older adults between 2013 and 2017.

Data sources are also detailed below. Higher scores indicate better performance for all variables except Severe Tooth Loss. For determining the overall state rankings, the value of Severe Tooth Loss is reversed so that higher scores are more favorable.

The state overall score is calculated based on the six variables, equally weighted. To combine the six scores with different scales, the scores of the states are manipulated statistically to produce an overall state score and ranking. This process is described further in the online supplement to this report, available at astateofdecay.org.

INTRODUCTION OF NATIONAL VARIABLES

For the first time, the advisory committee outlined a procedure for analyzing national data. In Vol. IV of *A State of Decay*, the analysis looked at the 2016 Behavioral Risk Factor Surveillance System (BRFSS) data for 153,350 adults aged 65 and older.[2] This national analysis used two outcome variables: no severe tooth loss (the person had not lost 6 or more natural teeth to disease or decay) and having visited a dentist within the past 12 months. These favorable outcomes indicating better oral health care were examined based on their association with a person's education, gender, income, race, residence in a metropolitan area, marital status, and age category. The national results begin on page 12.

DATA SOURCES FOR VARIABLES

Severe Tooth Loss

2016 Behavioral Risk Factor Surveillance System (BRFSS). Secondary analysis of publicly available data sets downloaded from https://www.cdc.gov/brfss/annual_data/annual_2016.html on November 13, 2017.

All results were generated using the complex survey procedures in SAS 9.3 and have been appropriately adjusted for the complex sampling design.

Dental Visit

2016 Behavioral Risk Factor Surveillance System (BRFSS). Secondary analysis of publicly available data sets downloaded from https://www.cdc.gov/brfss/annual_data/annual_2016.html on November 13, 2017.

All results were generated using the complex survey procedures in SAS 9.3 and have been appropriately adjusted for the complex sampling design.

Adult Medicaid Dental Benefit

Medicaid|Medicare|CHIP Services Dental Association (MSDA) 2015 National Profile of State Medicaid and CHIP Dental Programs. http://www.msdanationalprofile.com/

Community Water Fluoridation

Water system data reported by states to the CDC Water Fluoridation Reporting System as of December 31, 2014, and the U.S. Census Bureau state population estimates for July 2014. Revised July 2016.

State Oral Health Plan

State Dental Directors Survey conducted by Oral Health America in October and November 2017 via Survey Monkey.

Basic Screening Survey

State Dental Directors Survey conducted by Oral Health America in October and November 2017 via Survey Monkey.

TABLE 1. STATE PERFORMANCE ON MEASURED VARIABLES[a]

STATE	% 65+ w/severe tooth loss	% 65+ w/dental visit	Number of covered Medicaid services	% Population with CWF	SOHP	BSS
Alabama	45.1%	60.9%	0	78.6%	3	4
Alaska	31.2%	67.0%	13	49.3%	0	0
Arizona	32.7%	67.5%	0	57.8%	1	2
Arkansas	45.9%	55.7%	12	70.3%	0	3
California	27.8%	70.8%	13	63.7%	3	1
Colorado	25.6%	71.3%	13	74.0%	3	3
Connecticut	30.6%	75.4%	11	89.5%	3	3
Delaware	38.7%	70.1%	2	87.1%	0	0
District of Columbia	33.3%	72.4%	13	100.0%	0	1
Florida	36.9%	68.5%	5	77.6%	0	5
Georgia	44.5%	61.0%	2	96.2%	2	4
Hawaii	24.7%	77.7%	2	11.7%	0	1
Idaho	32.0%	64.3%	11	31.9%	2	0
Illinois	37.4%	63.9%	7	98.5%	2	2
Indiana	39.8%	61.4%	12	94.7%	2	0
Iowa	35.4%	70.3%	13	92.7%	3	5
Kansas	31.2%	68.4%	0	63.5%	3	2
Kentucky	50.5%	58.5%	8	99.9%	1	3
Louisiana	44.9%	55.2%	3	44.2%	2	4
Maine	36.8%	67.4%	9	79.3%	0	0
Maryland	34.7%	70.3%	0	96.4%	0	0
Massachusetts	36.6%	71.1%	8	70.4%	0	3
Michigan	35.2%	72.8%	8	91.7%	2	5
Minnesota	28.1%	76.1%	10	98.8%	2	5
Mississippi	55.1%	52.9%	2	60.0%	2	1
Missouri	43.0%	62.4%	9	76.8%	3	2
Montana	33.9%	67.6%	13	33.7%	0	1
Nebraska	30.8%	69.0%	13	71.6%	0	1
Nevada	33.4%	63.7%	7	73.7%	0	1
New Hampshire	31.8%	74.3%	2	46.6%	2	4
New Jersey	34.5%	70.8%	12	14.6%	0	0
New Mexico	37.1%	63.5%	10	77.0%	2	0
New York	35.3%	68.9%	12	71.4%	3	0
North Carolina	43.3%	63.1%	11	87.8%	2	5
North Dakota	37.2%	64.9%	13	96.7%	3	5
Ohio	39.4%	66.0%	12	92.7%	0	0
Oklahoma	43.0%	57.6%	4	62.6%	2	1
Oregon	29.6%	70.4%	12	22.6%	2	4
Pennsylvania	40.7%	65.9%	11	54.6%	2	0
Rhode Island	32.7%	74.7%	9	84.5%	2	5
South Carolina	41.7%	60.1%	6	93.6%	2	0
South Dakota	38.6%	65.1%	11	93.6%	3	0
Tennessee	45.9%	56.7%	0	88.1%	2	0
Texas	32.4%	62.9%	0	79.0%	0	1
Utah	26.4%	72.8%	2	51.7%	1	0
Vermont	36.8%	71.0%	11	56.3%	3	4
Virginia	37.8%	70.3%	3	95.9%	2	5
Washington	28.0%	71.1%	11	63.9%	0	0
West Virginia	57.5%	52.5%	3	90.5%	3	5
Wisconsin	30.5%	75.9%	13	88.9%	2	5
Wyoming	35.4%	67.9%	8	57.1%	0	0
Mean	*36.7%*	*66.7%*	*7.75*	*72.6%*	*1.51*	*2.08*
Standard Deviation	*7.1%*	*6.2%*	*4.69*	*22.9%*	*1.19*	*1.98*

Abbreviations used: CWF = community water fluoridation, SOHP = State Oral Health Plan, BSS = Basic Screening Survey.
[a]See previous page for definitions of variables.

KEY HIGHLIGHTS

IOWA *Big jump to number 3 ranking came from a new emphasis on oral care of older adults — see page 14 for details on the State Spotlights.*

CALIFORNIA *Rebounding from years of recession, renewed attention on oral health propelled a rise into Top 10 — see page 15.*

ALABAMA *A low ranking in the last volume got the attention of state officials, led to creation of a plan and commitment to goals in five key areas — see page 16.*

MISSISSIPPI *The rankings don't tell the whole story, as exemplified by efforts to overcome ingrained challenges through the creation of a "culture of health" — see page 17.*

Key Results

The 2018 results included in *A State of Decay,* Vol. IV, show continuation of state efforts to expand and improve the oral health of older Americans. The 2018 score includes new variables, making it a richer indicator of older adults' oral health. Performance in several categories evaluated previously show modest but definite improvements. In those areas where direct comparisons are possible with results in 2013 and 2016, consistency in the data indicate reliability of the information sources and agreement with known trends among oral health services and programs.

Performance in several categories evaluated previously show modest but definite improvements.

STATE PERFORMANCE ON KEY MEASURES

Of the six key performance measures included in the 2018 calculations, four are policy variables that result from decisions made at the state level, and two are factors largely affected by individual attitudes, experiences, and actions. State legislators and executives, with input from departments of oral health or public health, are responsible for policy matters, while health promotion and interventions as well as public education and programming can be implemented within communities to improve individual health and behaviors.

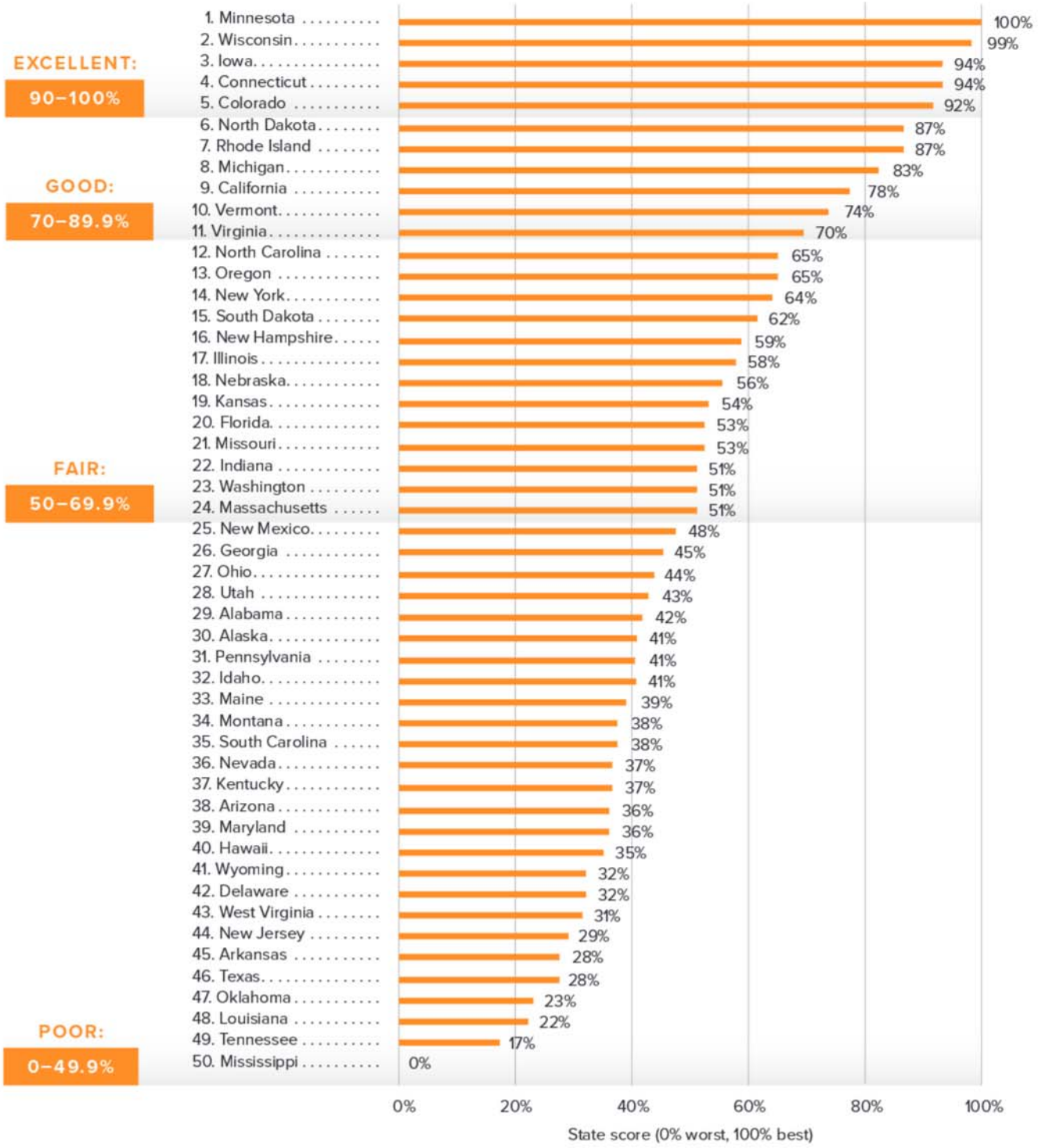
As shown in Table 1, the four policy variables are the percentage of state residents with access to a fluoridated community water supply, the number of 13 oral health services covered by Medicaid, inclusion of older adults in an SOHP, and completion of an older adult BSS. A slight increase in the state average for the CWF variable, from 71.9% to 72.6%, may not sound like much, but with a population of 320 million in the United States, that represents about 2.2 million people. Details on the states' CWF scores are shown in Figure A2 of the Appendix that begins on page 20 of this report.

Medicaid coverage of oral health benefits also increased, with two states that provided no benefits in 2016 adding some of the 13 services measured in this survey (Delaware, with two services, and South Dakota, with 11; see Figures A1 and A3 in the Appendix for state-level data). As described in the California State Spotlight on page 15, an improvement in the state budget allowed restoration of oral health services under Medicaid. Core messages about the link between oral and systemic health also are being delivered to policymakers and legislators, and these can increase the awareness of how dollars spent on oral health are helping people control their medications.

State oral health officials have been busy including older adults in SOHPs (Figure A4) and BSSs (Figure A5). The 2018 data show 34 states have SOHPs, 31 of those include older adults, and 12 use SMART objectives. Similarly, 34 states either have completed a BSS for older adults or are planning to do so; 10 states completed a statewide BSS between 2013 and 2017, and another 6 states conducted a local pilot BSS.*

*This data includes the District of Colombia

FIGURE 1. STATE OVERALL SCORES ON PERCENTAGE SCALE



The two individual-oriented variables are new to the rankings. As shown in Table 1 and detailed in Figures A6 and A7 of the Appendix and in the online supplement to this report, the states with the greatest number of people with severe tooth loss (6 or more teeth lost to disease or tooth decay) also tend to have low percentages of older adults who have seen a dentist.

Despite the ingrained challenges states face in oral health, the scores do not tell the entire story. Sidebars throughout the Key Results section share stories from the states about the actions behind the numbers.

STATE RANKINGS ON PERCENTAGE BASIS

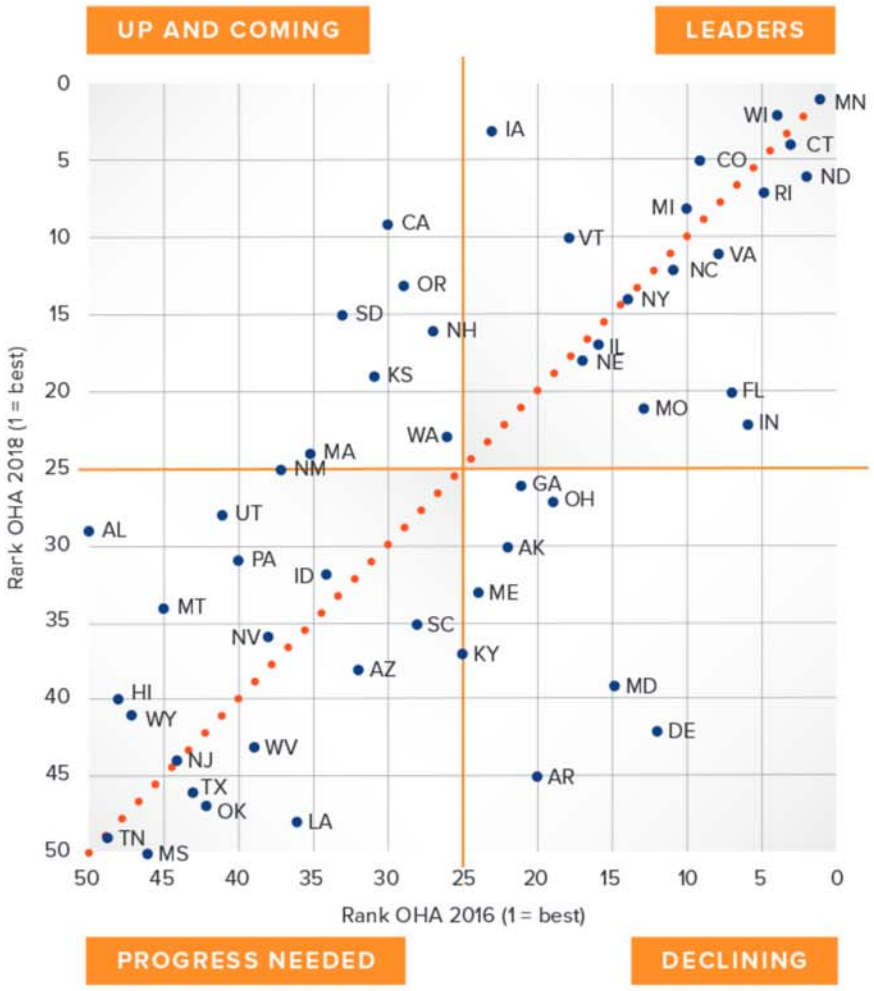
As in 2013 and 2016, Minnesota remains the top-ranked state. In fact, seven of the top 10 from 2016 repeated in the new rankings. In addition to Minnesota, they are Wisconsin (number 4 in 2016), North Dakota (2), Connecticut (3), Rhode Island (5), Michigan (10), and Colorado (9).

State rankings from 2016 and 2018 are displayed graphically in Figure 2. Most states' overall performances were similar to their 2016 scores, as reflected in the bunching of states along the line going from bottom left to upper right. The closer states are to this line, the closer they were in the two rankings. Those in the upper right quadrant were consistent leaders, while those in the lower left were in the bottom half of the rankings in both volumes. Up-and-coming states are in the upper left, and those falling between 2016 and 2018 are in the lower right quadrant.

Iowa and California, whose stories are shared on pages 14 and 15, jumped from middle-of-the-pack positions into the top 10 at numbers 3 and 9, respectively. Other states whose scores changed by more than 20 places include Alabama (jumping from 50th to 29th; see page 16), Arkansas (falling from 20th to 45th), and Delaware (falling from 12th to 42nd).

Near the lower left end of the red line in Figure 2 are states that placed in the bottom 10 in both volumes. Despite the ingrained challenges these states face in oral health, the scores do not tell the entire story. As described on page 17, Mississippi has challenges and has scored low in the rankings, but much work is going on there to improve the outcomes in older adults.

FIGURE 2. COMPARISON OF STATE RANKINGS BETWEEN 2016 AND 2018 *A STATE OF DECAY* VOLUMES



Notes: Ranking excludes the District of Columbia, which lacked complete data for 2016. States above the red diagonal line improved in ranking; those below the line ranked lower in 2018. States in the upper right quadrant were in the top half of states in both 2016 and 2018, and those in the upper left quadrant moved from the lower to the upper half. States in the lower right quadrant fell from the top half to the bottom half, and those in the lower left quadrant were in the lower half in both volumes.

LEADERS

MINNESOTA *Leading the "Leaders": This state repeated as number 1 for 2018, keeping it at the top of seven consistently high-performing states.*

UP AND COMING

SOUTH DAKOTA *Addition of Medicaid coverage for 11 of the 13 scored services fueled a jump from 33rd to 15th place in this "Up-and-Coming" state.*

DECLINING

ARKANSAS *Exemplifying situations in "Declining" states, not keeping the SOHP updated and poor severe tooth loss/dental visit scores were responsible for a fall from 20th to 45th in 2018.*

PROGRESS NEEDED

NEW JERSEY *Lack of CWF at the local level and planning at the state level (SOHP, BSS) combined to keep rankings low in this "Progress Needed" state.*

BEYOND THE STATES: AN ANALYSIS OF NATIONAL DATA

The two BRFSS variables: no severe tooth loss and dental visit, were examined further based on individual sociodemographic characteristics. The BRFSS dataset[2] was chosen for these analyses because it permits state indicators to be included as adjustors. An important question addressed by the logic models used for analysis is the extent to which state efforts have affected the two outcomes, after adjustment for individual-level characteristics.

These models confirmed previous research showing that the strongest characteristic association affecting oral health in older adults was household income. As shown in Figure 3, there was a consistent, linear relationship between household income and the probability for an individual seeing a dentist and for having no severe tooth loss. Low household income covaries with predicted measures of poor oral health. As income levels rose, so did the probability of good oral health.

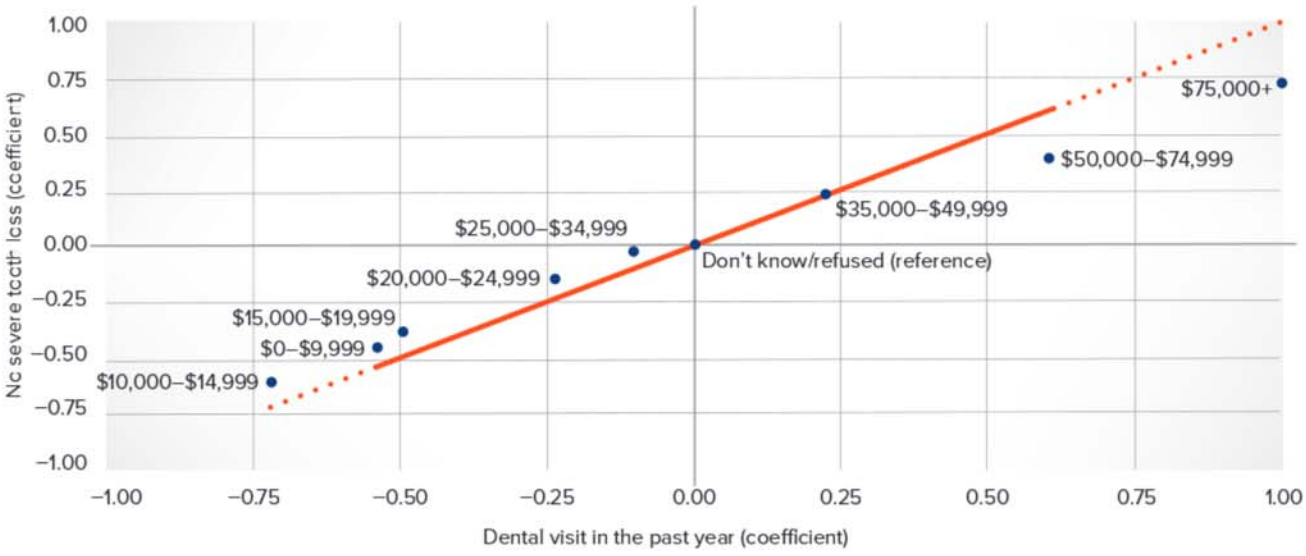
Other interesting associations that came from the analyses of national data are as follows:

- Women were somewhat more likely than men to see a dentist in the past year and to not have severe tooth loss.
- Education correlated with better oral health. Those with high school or less education were more likely to not see a dentist and to have severe tooth loss.
- Divorced, widowed, and separated older adults were more likely to have poor oral health than married individuals. Social isolation, depression, and lack of social support structures could be involved in this relationship, in addition to reduced income.[5]
- The relationship of age and oral health was interesting, but inconsistent. Compared with those 65 to 69 years of age, older adults in the 70–74 category were slightly more likely to see a dentist and to not have severe tooth loss. Both the proportion with severe tooth loss and the proportion who had a dental visit declined in the 75–79 group. But in those aged 80 years or older, both dental visits and tooth loss were higher. The reasons for this could be explored in future research.

More data from the national analysis are available in the online supplement to this report, available at astateofdecay.org.

As shown in Figure 3, there was a consistent, linear relationship between household income and the probability for an individual seeing a dentist and for having no severe tooth loss.

FIGURE 3. RELATIONSHIP BETWEEN VISITING A DENTIST AND NO SEVERE TOOTH LOSS BY HOUSEHOLD INCOME



This figure plots the coefficients of the 9 income categories in a logistic regression on the two individual outcomes. The associated trend line shows a strong positive association. The results show that higher incomes are associated with more favorable odds on both individual level variables.

Building on Solid Foundation, Iowa Jumps Into Top 5

In Northwestern Iowa just three counties south of the Minnesota line, Pocahontas County's population has dropped and dropped and dropped since boasting 15,000 pioneer descendants during the first half of the 20th century. Today, fewer than 7,000 people remain, and like much of Iowa, a disproportionate number are in the 65+ age group.

Thanks to efforts of the Iowa Department of Public Health, the growing population of at-risk older adults in Pocahontas and five adjacent counties have improving prospects for receiving oral health services. As reflected in the state rankings on page 9, such efforts have helped Iowa make huge strides since publication of *A State of Decay*, Vol. III, propelling the state from number 23 in the last volume to number 3 for 2018.

To address the needs of the 16% of its residents who are 65 years or older, Iowa has added a State Oral Health Plan with SMART objectives for older adults and completed a statewide older adult Basic Screening Survey. The state also has maintained its support for all 13 common dental benefits for Medicaid beneficiaries aged 65+ and has expanded its I-Smile Silver pilot program.

"Our success with our I-Smile program for children is what really gave us the platform for expanding into I-Smile Silver," said Bob Russell, DDS, MPH, Public Health Dental Director and Chief of Oral & Health Delivery Systems for the Iowa Department of Public Health. With dental hygienists as the "boots on the ground" in the area, the I-Smile Silver program helps older adults find providers, afford care, get transportation to dental appointments, and overcome barriers related to medical problems or mobility.

I-Smile Silver has thus far been a remarkable success because of the cooperation and teamwork among nearly two dozen stakeholders that provide funding and support through the Lifelong Smiles Coalition, Russell explained. The 11-year experience with Iowa Medicaid and the I-Smile program for children was an especially important factor, as were funding sources through the Delta Dental of Iowa Foundation and grants from the Centers for Disease Control and Prevention and the Health Resources and Services Administration.

With dental hygienists as the "boots on the ground" in the area, the I-Smile Silver program helps older adults find providers, afford care, get transportation to dental appointments, and overcome barriers related to medical problems or mobility.

Yet Russell knows, given the oscillations that can occur in public programs, I-Smile Silver could disappear in any number of ways, including moving dental services into Iowa Medicaid's managed care program. "The next phase of this effort is to find ways for the program to be sustainable," he said.

Regardless of future challenges, Iowa is setting the stage to remain in the upper echelons in future state rankings in *A State of Decay*. Budgetary issues are just as problematic in Iowa as in nearly every other state, but Russell will be ready to deploy new data available through the I-Smile Silver performance system now in development.

"We've been fortunate to have the right mix of staff, relationships, and funding to be able to expand into oral health services for older adults," Russell said. "I look forward to the day when we can take this program to all 99 counties and make it a sustainable part of care for our vulnerable seniors."

Sources: I-Smile Silver newsletter, October 2016. Retrieved from: https://idph.iowa.gov/Portals/1/userfiles/34/ohc_i-smile-silver/I-Smile_Silver_Pilot_Project_102016.pdf. Lifelong Smiles Coalition. Retrieved from: http://www.lifelongsmilescoalition.com/partners.php.

Here to Stay! California Leaps to Number 9

After lower-half performances in the past two sets of the *A State of Decay* report rankings, California made a big move this time, jumping from 30th into the top 10 at number 9. With the full set of 13 Medicaid services now restored and a State Oral Health Plan (SOHP) with SMART objectives ready to carry the state through 2028, California is planning for a prolonged stay near the top of the national rankings.

Despite its traditional focus on healthy lifestyles, California's attention to oral health has been mixed. When the Great Recession hit the state budget particularly hard, dental benefits were eliminated from Medicaid. In 2000, fewer than 30% of state residents benefited from community water fluoridation (CWF), said Jayanth V. Kumar, DDS, MPH, Dental Director with the California Department of Public Health. But by 2015, the CWF coverage had reached 64%, the economy made its comeback, and two Medicaid benefits were added. The rest of the Medicaid services are now covered, and California now has solid scores on all but one variable used in the state rankings. Kumar and his team are working now on that — an older adult Basic Screening Survey. The Center for Oral Health, with support from the California Wellness Foundation (Cal Wellness) and the Archstone Foundation, is developing the first documentation of the oral health care needs of older adults in California. It should be available this year.

"Stakeholder engagement has been a major force behind many of these initiatives," Kumar said. The Senior Dental Center established by Mary and Gary West is providing care while it also gathers and analyzes data and publishes reports on its findings. South of San Francisco, the San Mateo County Peninsula Health District Initiative in Geriatric Oral Health seeks to ensure optimal oral health among older adults residing there.

Having recently moved into his current position from a similar one in New York, Kumar is accustomed to the special needs of a geographically dispersed, populous, and culturally diverse state. Still, California presents unique challenges, he explained. Even with funding and a state mandate in place, the complex water system in California makes fluoridation impossible in some communities because of factors such as multiple wells and water contamination by agricultural fertilizers and other chemicals. Drought conditions have also played into decisions to delay fluoridation. The good news right now is that the largest city in the country without fluoridation, San Jose, has begun fluoridating its water on a pilot basis, and all of its residents should soon be benefiting from this public health intervention.

The state's SOHP, the California Oral Health Plan 2018–2028, provides a roadmap for collaborative action going forward.

The state's SOHP, the California Oral Health Plan 2018–2028, provides a roadmap for collaborative action going forward. "The Oral Health Program will serve as the backbone for collective action," Kumar said. "The goals, objectives, and strategies provide a common agenda for all sectors." The plan calls for support of all 61 local health jurisdictions backed by an $18 million budget. Following a needs assessment and development of a community health improvement plan, the local jurisdictions will implement interventions to improve oral health in their communities. Funds are also being used at the state level to support oral health literacy initiatives, a surveillance system to track progress, and demonstration projects.

Kumar plans to leverage these activities in partnership with the state's dental association and other oral health stakeholders, all with the goal of improving the oral health of older adults. It's a winning formula – one that should keep California near the top of *A State of Decay* rankings in the next edition, and beyond.

Sources: West Health. Oral healthcare and care coordination. Retrieved from: http://www.westhealth.org/our-focus/chronic-care/oral-healthcare-care-coordination.

California Department of Public Health. California Oral Health Plan 2018–2028. Retrieved from: https://www.cdph.ca.gov/Documents/California Oral Health Plan 2018 FINAL 1 5 2018.pdf#search=The%20California%20Oral%20Health%20Plan%202018%2D2028.

San Mateo County. Oral health strategic plan 2017–2020. Retrieved from: http://www.smchealth.org/sites/main/files/file-attachments/oral_health_book_web_version.pdf.

Alabama's Big Leap in 2018 State Rankings

No one would have been surprised if the state in last place in the 2016 *A State of Decay* report rankings, and which tied for 48th place in 2013, were still at the bottom in 2018. After all, Alabama seemingly has many challenges: Not a single adult dental benefit in Medicaid and little support for expansion of the program, large rural swaths throughout the state, and an outlook on aging that losing your teeth is just like death and diabetes — something everybody is going to face.

Thanks to the efforts of state public health officials and motivated faculty members, students, and alumni at the University of Alabama at Birmingham (UAB) School of Dentistry, the state climbed nearly 20 places in the 2018 list and is setting the stage at the local level for further improvements by changing access, attitudes, and assumptions among the people of the state.

"The impetus for us to take action was the previous *A State of Decay* report," said Conan Davis, DMD, the former state dental director who is now Assistant Dean for Community Collaborations and Public Health, Associate Professor in the Department of General Dental Sciences, and Division Head for Behavioral and Population Sciences at UAB. "We were all alarmed."

Working with many stakeholders and partners — including UAB School of Dentistry, some 17 federally qualified health centers (FQHCs) from across the state, the DentaQuest Foundation, the Alabama Dental Association, and Alabama Senior Services — the Alabama Department of Public Health created a new State Oral Health Plan (SOHP) with SMART objectives for older adults and has committed to goals in five key areas:

- Increase access to oral health care
- Professional education and integration
- Improve health literacy
- Capture better data and surveillance capabilities
- Focus on prevention of oral disease

The Cotton State is already putting their plan into action. Using grant-funded portable dental equipment, UAB dental professor Lillian Mitchell, DDS, MA, has launched outreach programs to provide cleanings where the people are – which in some cases means in their homes for those who are bedbound – and a curriculum to educate older adults on the oral-systemic links.

The Alabama Department of Public Health created a new State Oral Health Plan (SOHP) with SMART objectives for older adults and has committed to goals in five key areas.

The Alabama State Commissioner for Senior Services funds additional trips for Mitchell and dental students to provide care at rural senior centers across the state to provide oral health education, dental screenings (including the BSS for older adults), and dental cleanings using the portable equipment.

"It's not just how to brush your teeth – that's the least of my concerns, honestly," said Mitchell, who is Director of Geriatric Dentistry at the school. "I want these older people to understand the oral–systemic links. They're getting the message, and that's really what has prompted people to call us for repeat appointments. They say, 'I want to continue this and to take care of myself.'"

These kinds of efforts have been life-changing for some students who have never seen such poverty and living conditions, Mitchell added. Senior UAB dental students rotate through FQHCs, and all students pitch in with alumni to help in the School's annual Day of Dentistry where some 500 people receive free care.

The program is continuing to expand throughout the state, including more of its most rural and vulnerable areas. "We never know where we are going to end up," Mitchell adds. The same might be said of the state of Alabama – with dedication like this, who knows how much further they will climb in the next volume of *A State of Decay*.

Moving Mississippi Forward By Promoting a 'Culture of Health'

The link between oral and overall health is a new concept for many people. For those living in Mississippi, the complex mix of diabetes, respiratory and cardiovascular disease, cancer, and oral disease is a daily reality, one that public health advocates there are working together to defeat.

In the 2 years since returning to her home state as Director of the Office of Oral Health, Angela Filzen, DDS, has come to realize the necessity of integrating her efforts with other parts of the Mississippi state government infrastructure. The people of this state have too many problems not to address them together. While Mississippi has been stuck near the bottom of the ladder in all of the *A State of Decay* reports, Dr. Filzen is building an infrastructure to change that reality. More importantly, she is working to move Mississippi forward on several health fronts.

The variables scored in the state rankings for *A State of Decay* are important in this broader effort, Dr. Filzen knows. Sometimes, though, more basic services and problems must be addressed. Talking with communities about water fluoridation is fine, but relating the benefit of fluoridated water in reducing cavities in communities with few or no dentists is equally important. In a state where people expect to lose their teeth as they age, reducing the percentage of older adults with severe tooth loss below its current 55% is a long-term project. The culture among some in Mississippi of not going to the dentist – exacerbated by access issues and poverty — is difficult to overcome.

To begin chipping away at these challenges, Mississippi has developed a State Oral Health Plan that calls for establishing a "culture of health that includes oral health." Goals and objectives in this plan are guiding the efforts of state officials and stakeholders through 2021. Grant funding is being sought to conduct an older adult Basic Screening Survey. Fact sheets have been developed on key issues impacting oral health and the link to systemic health. A community water fluoridation toolkit is being created by the Office of Oral Health to educate leaders and residents about the importance of this public health intervention.

It is truly a team effort. Dr. Filzen has drawn in key community health centers staff — senior management, pharmacists, behavioral therapists, dietitians, and nutritionists — to work with the state oral health team to change the culture of health in Mississippi.

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Dr. Filzen regularly networks with dental educators, provider organizations, and other oral health stakeholders in the Magnolia State. Through strategic planning sessions, workshops, and conference calls, participants are laying the groundwork for progress. It is truly a team effort. Dr. Filzen has drawn in key community health centers staff — senior management, pharmacists, behavioral therapists, dietitians, and nutritionists — to work with the state oral health team to change the culture of health in Mississippi. They are developing a broader agenda that addresses oral health across the lifespan to make sure the needs of older adults are addressed.

To impact the problems that start with oral and systemic health challenges — and take Mississippi up the rankings in the next *A State of Decay* report — Dr. Filzen and her team have much work to do. With the groundwork completed thus far, this report applauds their efforts to make the most of a challenging situation.

Recommendations

Oral Health America has developed a set of policy recommendations and actions based on the issues highlighted in *A State of Decay*. The purpose of these recommendations is to assist advocates to stimulate change by increasing awareness of the needs of seniors among state and federal decision-makers. The recommendations are available online as a guide, which can be downloaded at astateofdecay.org and tailored to fit states' specific needs. Among these online tools are key messages and talking points on how to communicate a state's score to policymakers and other stakeholders. Oral Health America is committed to working with state partners to use this report and the online tools to improve the oral health of older adults across the United States.

Based on the variables analyzed in this report, the following are Oral Health America's high-level policy recommendations.

ACTION

REINSTATE, ESTABLISH, OR MAINTAIN AN EXTENSIVE ADULT MEDICAID DENTAL BENEFIT

Background: *More than 7 million older adults rely on the Medicaid program for their health insurance, and oral health benefits.[6] Unfortunately, not all states offer extensive Medicaid dental coverage for adults — including older adults. Dental coverage is an optional benefit under Medicaid and each state determines the extent of coverage. Funding for the dental benefit is also subject to cuts or elimination by state lawmakers each year during budget negotiations. Low-income older adults have few or no other coverage options. If Medicaid does not provide the dental benefit these low-income older adults need, they are left at risk of tooth decay, other serious medical problems,[7] and unaffordable out-of-pocket expenses.[8]*

Coverage: A Key to Access and Health. Almost 50% of older adults cite cost as the primary reason they do not visit the dentist, and this percentage skyrockets to 69% of low-income adults.[9] Providing coverage reduces this barrier to getting care, and realizing improved oral health. Older adults with a dental benefit are 2.5 times more likely to visit the dentist on a regular basis.[10] The results of the state analysis in this volume of *A State of Decay* shows better oral health is associated with higher levels of recent visits to the dentist.

Costly, Ineffective Alternatives. Without Medicaid dental coverage, older adults are left to seek care in hospital emergency departments, where care is typically limited to pain relief or a meager supply of antibiotics for infection. While ineffective, the average cost of an emergency department dental visit is $749. For older adults, the cost of dental care in the emergency department is twice that of younger groups, and the dental needs often remain unresolved.[11] Studies show that emergency department–related dental visits significantly increase when states eliminate Medicaid dental coverage.[12]

Comprehensive Medicaid dental coverage saves states money. With a comprehensive dental benefit, those who receive oral health coverage through Medicaid for health coverage will experience fewer oral health–related emergency visits,[12] reduce medical costs of chronic diseases and other health issues,[13] and thus reduce healthcare costs within the Medicaid program.

ACTION

INTEGRATE COMPREHENSIVE DENTAL COVERAGE IN MEDICARE

Background: *Currently, 55 million Americans access healthcare services through Medicare; however, Medicare does not cover routine or preventive dental services.*

Consumers Want Coverage. Despite cost concerns, 93% of older adults claim dental coverage is a top priority compared with other non-covered services such as long-term care, vision, and hearing.[14]

Oral Health Impacts Overall Health. Individuals with chronic conditions who regularly received recommended dental care, cleanings, or periodontal treatment saved an average of $1,307 on their medical claims compared with those with chronic conditions who did not receive recommended dental care or received no dental care at all.[15]

Quality of Life. Older adults believe teeth impact more than health. Poor oral health affects your image and how you feel about yourself.[14]

ACTION

SUSTAIN OR EXPAND COMMUNITY WATER FLUORIDATION

Background: *Community water fluoridation is the controlled adjustment of fluoride in a public water supply to optimal concentration. It is beneficial across the lifespan, helping prevent tooth decay among all members of the community.*

Prevention First. Community water fluoridation is the most simple, equitable, cost-effective way for millions of Americans to protect their teeth and receive preventive oral health care.[16]

Cost-Effective. For most cities, every $1 invested in water fluoridation saves $38 in dental treatment costs.[17]

Publicly Recognized. The Centers for Disease Control and Prevention named the "fluoridation of drinking water" as one of "10 great public health achievements" of the 20th century.[4,16]

ACTION

INCLUDE SPECIFIC OBJECTIVES FOR OLDER ADULTS IN ALL STATE ORAL HEALTH PLANS

Background: *Adopting a SOHP with specific language to improve the oral health of older adults illustrates a states' strategic prioritization of older adults in their communities.*

Strategy to Improve Health. A SOHP is key to establishing a vision for improving the oral health and well-being of the citizens of a state and its local communities, developing policies, and targeting actions.[18]

Population Health Approach. A SOHP enables a state to design a comprehensive, integrated approach to meeting the oral health needs of the state's population through oral health promotion and disease prevention and control.[18]

ACTION

CONDUCT BASIC SCREENING SURVEYS OF OLDER ADULTS IN ALL STATES

Background: *The BSS is a tool to help monitor the oral health conditions of state residents and should include older adults. The Association of State of Territorial Dental Directors has developed a Basic Screening Survey to provide a common tool for oral health surveillance.*

Data-Driven Decisions. Data from a public health surveillance system can be used to measure the burden of a disease, identify populations at high risk, and identify new or emerging health concerns. This allows states to make informed decisions, backed by BSS data, regarding the oral health of their older adults.[19]

Data Comparisons. By collecting data in a consistent manner, states can compare their data with data collected by other organizations, agencies, or states.[19]

Oral Health America is committed to working with state partners to use this report and the online tools to improve the oral health of older adults across the United States.

Appendix

FIGURE A1. MEDICAID COVERAGE OF COMMON ORAL HEALTH SERVICES, BY STATE

	Tooth Extractions	Limited Oral Evaluation, Problem Focused	Adult Prophylaxis	Comprehensive Exam	Amalgam Restorations	Composite Restorations
Current Dental Terminology Code	D71407250	D0140	D1110	D0150	D2140 2161	D2330 2394
Alaska	●	●	●	●	●	●
California	●	●	●	●	●	●
Colorado	●	●	●	●	●	●
District of Columbia	●	●	●	●	●	●
Iowa	●	●	●	●	●	●
Montana	●	●	●	●	●	●
Nebraska	●	●	●	●	●	●
North Dakota	●	●	●	●	●	●
Wisconsin	●	●	●	●	●	●
Arkansas	●	●	●	N/A	●	●
Indiana	●	●	●	●	●	●
New Jersey	●	●	●	●	●	●
New York	●	●	●	●	●	●
Ohio	●	●	●	●	●	●
Oregon	●	●	●	●	●	●
Connecticut	●	●	●	●	●	●
Idaho	●	●	●	●	●	●
North Carolina	●	●	●	●	●	●
Pennsylvania	●	N/A	●	●	●	●
South Dakota	●	●	●	●	●	●
Vermont	●	●	●	●	●	●
Washington	●	●	●	●	●	●
Minnesota	●	●	●	●		●
New Mexico	●	●	●	●	●	●
Maine	●	●	●		●	●
Missouri	●	●	●	●	●	●
Rhode Island	●	●	●	●	●	
Kentucky	●	●	●	●	●	●
Massachusetts	●	●	●	●	●	●
Michigan	●	●	●	●	●	●
Wyoming	●	●	●	●	●	●
Illinois	●	●		●	●	●
Nevada	●	●	●		●	●
South Carolina	●		●	●	●	●
Florida	●	●	●	●		
Oklahoma	●	●		●		
Louisiana			●	●		
Virginia	●	●		●		
West Virginia	●	●				
Delaware			●			
Georgia	●	●				
Hawaii	●	●				
Mississippi	●	●	N/A			
New Hampshire	●	●				
Utah	●	●				
Alabama						
Arizona						
Kansas			N/A			
Maryland						
Tennessee						
Texas						
Total number of states (%) covering procedure	**42 (82%)**	**40 (78%)**	**35 (69%)**	**34 (67%)**	**32 (63%)**	**32 (63%)**

As shown visually in this figure, the patchwork coverage of common Medicaid oral health services leaves many low-income Americans in the lurch. Consider the logic of the most and least commonly covered Medicaid dental services (extractions and fluoride varnish, respectively) as shown in this figure, or the coverage of endodontic treatments but not crowns. Core messages about the link between oral and systemic health need to be delivered to decisionmakers and legislators, and these can increase the awareness of how dollars spent on oral health can help people control their medical conditions.

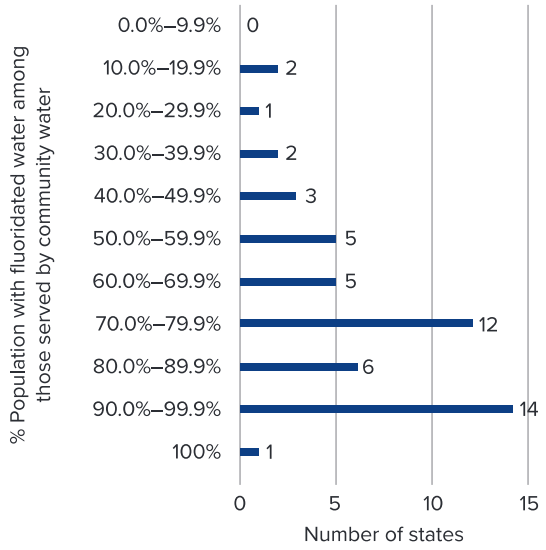
See the Recommendations section on pages 18–19 for ideas on what oral health advocates can do now to advocate for extensive Medicaid adult dental coverage and addition of an oral health benefit at the national level through the Medicare program.

Periodic Oral Evaluation	Dentures	Endodontic Treatment	Periodontal Maintenance	Scaling and Root Planing	Crowns	Fluoride Varnish	Total number of services covered
D0120	D5110 5212	D3220 3999	D4910	D4341 4342	D2930 2954	D1206	
●	●	●	●	●	●	●	13
●	●	●	●	●	●	●	13
●	●	●	●	●	●	●	13
●	●	●	●	●	●	●	13
●	●	●	●	●	●	●	13
●	●	●	●	●	●	●	13
●	●	●	●	●	●	●	13
●	●	●	●	●	●	●	13
●	●	●	●	●	●	●	13
●	●	●	●	●	●	●	12
●	●	●	●	●	●		12
●	●	●	●	●	●		12
●	●	●	●	●	●		12
●	●	●	●	●	●		12
●	●	●	●	●		●	12
●	●	●	N/R	N/A	●	●	11
●	●	●	●	●			11
●	●	●	●	●			11
●	●	●	●	●	●		11
●	●		●	●	●		11
●		●	●	●		●	11
●	●		●	●		●	11
●	●	●	●			●	10
●	●	●		●			10
	●	●		●	●		9
		●	●		●		9
●	●	●			●		9
●			N/A	●			8
●	●		N/A				8
●	●		N/A	N/A			8
●	●						8
	●				●		7
	●				●		7
●			N/A	N/A			6
	●		N/A				5
●			N/A				4
	●						3
							3
			●				3
●							2
							2
							2
			N/A				2
							2
			N/A				2
	N/A				N/A		0
							0
			N/A				0
							0
							0
							0
31 (61%)	**31 (61%)**	**24 (47%)**	**23 (45%)**	**23 (45%)**	**21 (41%)**	**14 (27%)**	

Data source: MSDA 2015 National Profile of State Medicaid and CHIP Dental Programs. http://www.msdanationalprofile.com/. The MSDA National Profile of State Medicaid and CHIP Dental Programs reports dental benefits by population as collected from each state Medicaid dental program annually. The Medicaid dental services listed in this report were selected, as they represent the most commonly used dental services by the target population.

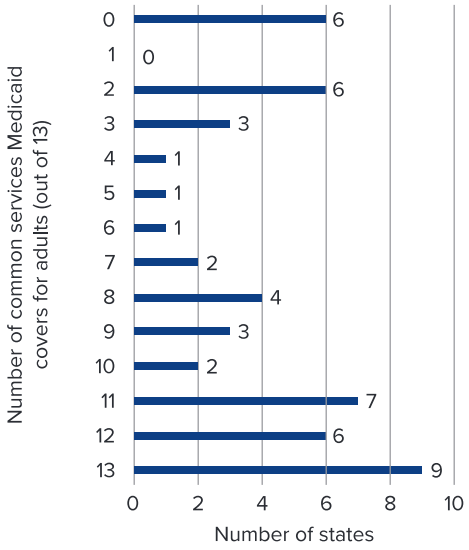
Abbreviations used: N/A = not available, N/R = no report.

FIGURE A2. NUMBER OF STATES WITH COMMUNITY WATER FLUORIDATION, BY PERCENTAGES OF COVERED RESIDENTS



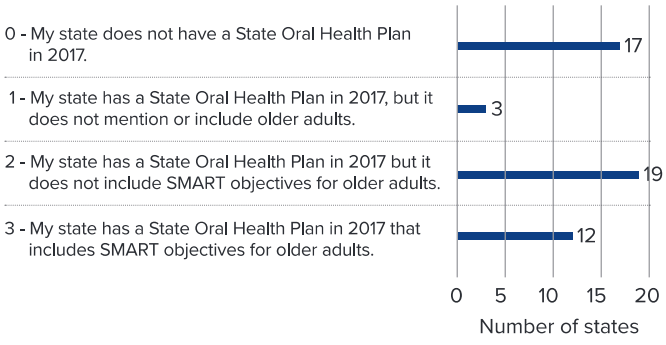
Data source: Water system data reported by states to the CDC Water Fluoridation Reporting System as of December 31, 2014, and the U.S. Census Bureau state population estimates for July 2014. Revised July 2016.[4]

FIGURE A3. NUMBER OF 13 COMMON ORAL HEALTH BENEFITS COVERED BY STATES' MEDICAID SYSTEMS



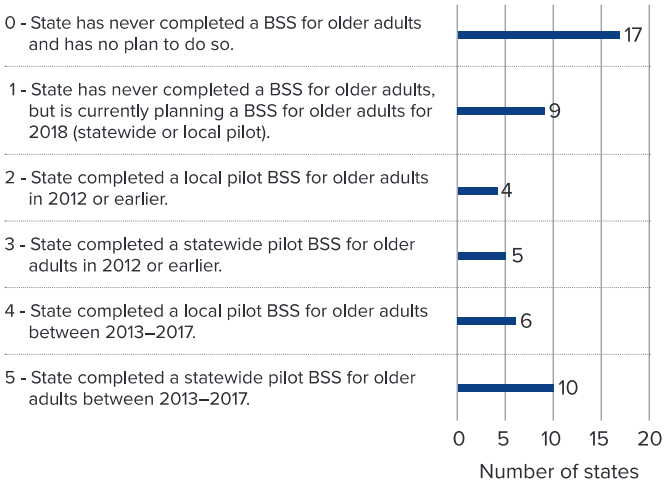
Data source: MSDA 2015 National Profile of State Medicaid and CHIP Dental Programs. http://www.msdanationalprofile.com/. The MSDA National Profile of State Medicaid and CHIP Dental Programs reports dental benefits by population as collected from each state Medicaid dental program annually. The Medicaid dental services listed in this report were selected, as they represent the most commonly used dental services by the target population.

FIGURE A4. DEVELOPMENT OF A STATE ORAL HEALTH PLAN FOR OLDER ADULTS



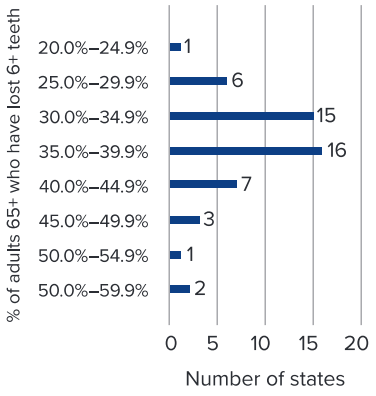
Data source: Oral Health America survey of state dental directors, October and November 2017.

FIGURE A5. BASIC SCREENING SURVEY



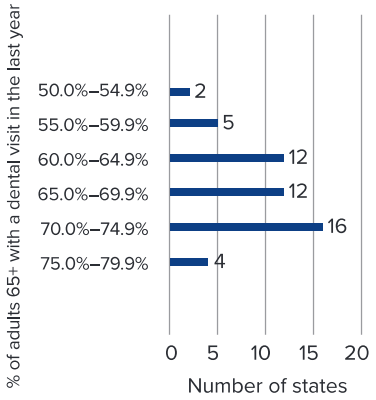
Data source: Oral Health America survey of state dental directors, October and November 2017.

FIGURE A6. OLDER ADULTS WITH SEVERE TOOTH LOSS



Data source: 2016 BRFSS. Secondary analysis of publicly available data sets downloaded from https://www.cdc.gov/brfss/annual_data/annual_2016.html on November 13, 2017.

FIGURE A7. OLDER ADULTS VISITING DENTIST WITHIN PAST YEAR



Data source: 2016 BRFSS. Secondary analysis of publicly available data sets downloaded from https://www.cdc.gov/brfss/annual_data/annual_2016.html on November 13, 2017.

TABLE A1. REGRESSION ANALYSIS OF NATIONAL DATA: DISTRIBUTION OF VARIABLES

EDUCATION	Percent
Less than high school	8.86
High school graduate	27.41
Some college	26.49
College graduate	36.89
Don't know	0.35

SEX	Percent
Male	44.23
Female	55.77

ANNUAL HOUSEHOLD INCOME	Percent
Less than $10,000	2.79
Between $10,000 and $15,000	4.53
Between $15,000 and $20,000	6.40
Between $20,000 and $25,000	8.37
Between $25,000 and $35,000	10.43
Between $35,000 and $50,000	13.52
Between $50,000 and $75,000	13.52
More than $75,000	20.80
Don't know/refused	19.64

RACE	Percent
White only, non-Hispanic	81.92
Black only, non-Hispanic	7.38
Other race only, non-Hispanic	2.58
Multiracial, non-Hispanic	1.22
Hispanic	5.18
Don't know	1.72

METROPOLITAN STATUS	Percent
In center city or MSA	19.11
In county of MSA, outside city	11.32
In suburb county of MSA	6.53
Not in MSA	10.66
Don't know	52.38

Abbreviation used: MSA, metropolitan statistical area.

MARITAL STATUS	Percent
Married	57.77
Divorced	13.54
Widowed	22.01
Separated	1.29
Never married	3.96
Part of unmarried couple	1.03
Don't know	0.40

AGE CATEGORY (YEARS OF AGE)	Percent
65–69	37.88
70–74	26.40
75–79	17.48
80+	18.24

MISSING 6 OR MORE TEETH	Percent
No	67.05
Yes	32.95

VISITED DENTIST OR DENTAL CLINIC IN THE PAST YEAR	Percent
No	30.38
Yes	69.62

Data source: 2016 BRFSS. Secondary analysis of publicly available data sets downloaded from https://www.cdc.gov/brfss/annual_data/annual_2016.html on November 13, 2017.

KEY HIGHLIGHTS

IOWA *Big jump to number 3 ranking came from a new emphasis on oral care of older adults — see page 14 for details on the State Spotlights.*

CALIFORNIA *Rebounding from years of recession, renewed attention on oral health propelled a rise into Top 10 — see page 15.*

ALABAMA *A low ranking in the last volume got the attention of state officials, led to creation of a plan and commitment to goals in five key areas — see page 16.*

MISSISSIPPI *The rankings don't tell the whole story, as exemplified by efforts to overcome ingrained challenges through the creation of a "culture of health" — see page 17.*

TABLE A2. *Z*-SCORES FOR STATE VARIABLES AND OVERALL STATE *Z*-SCORE

STATES*	CWF	Severe tooth loss, reversed#	Medicaid services	Dental visit	SOHP score	BSS score	State average
Alabama	0.26	–1.19	–1.65	–0.94	1.25	0.97	–0.22
Alaska	–1.02	0.78	1.12	0.06	–1.27	–1.05	–0.23
Arizona	–0.65	0.57	–1.65	0.14	–0.43	–0.04	–0.34
Arkansas	–0.10	–1.31	0.91	–1.77	–1.27	0.47	–0.51
California	–0.39	1.25	1.12	0.67	1.25	–0.55	0.56
Colorado	0.06	1.58	1.12	0.75	1.25	0.47	0.87
Connecticut	0.74	0.87	0.69	1.41	1.25	0.47	0.91
Delaware	0.63	–0.28	–1.23	0.55	–1.27	–1.05	–0.44
District of Columbia	1.19	0.48	1.12	0.93	–1.27	–0.55	0.32
Florida	0.22	–0.03	–0.59	0.29	–1.27	1.48	0.02
Georgia	1.03	–1.11	–1.23	–0.92	0.41	0.97	–0.14
Hawaii	–2.66	1.70	–1.23	1.79	–1.27	–0.55	–0.37
Idaho	–1.78	0.66	0.69	–0.38	0.41	–1.05	–0.24
Illinois	1.13	–0.11	–0.16	–0.44	0.41	–0.04	0.13
Indiana	0.96	–0.44	0.91	–0.85	0.41	–1.05	–0.01
Iowa	0.88	0.18	1.12	0.59	1.25	1.48	0.92
Kansas	–0.40	0.78	–1.65	0.28	1.25	–0.04	0.04
Kentucky	1.19	–1.95	0.05	–1.32	–0.43	0.47	–0.33
Louisiana	–1.24	–1.16	–1.01	–1.86	0.41	0.97	–0.65
Maine	0.29	–0.01	0.27	0.12	–1.27	–1.05	–0.28
Maryland	1.04	0.28	–1.65	0.59	–1.27	–1.05	–0.34
Massachusetts	–0.10	0.02	0.05	0.72	–1.27	0.47	–0.02
Michigan	0.83	0.21	0.05	0.99	0.41	1.48	0.66
Minnesota	1.14	1.22	0.48	1.52	0.41	1.48	1.04
Mississippi	–0.55	–2.61	–1.23	–2.23	0.41	–0.55	–1.13
Missouri	0.18	–0.89	0.27	–0.69	1.25	–0.04	0.01
Montana	–1.70	0.40	1.12	0.15	–1.27	–0.55	–0.31
Nebraska	–0.04	0.83	1.12	0.39	–1.27	–0.55	0.08
Nevada	0.05	0.46	–0.16	–0.48	–1.27	–0.55	–0.32
New Hampshire	–1.13	0.70	–1.23	1.23	0.41	0.97	0.16
New Jersey	–2.53	0.32	0.91	0.66	–1.27	–1.05	–0.49
New Mexico	0.19	–0.05	0.48	–0.51	0.41	–1.05	–0.09
New York	–0.05	0.19	0.91	0.37	1.25	–1.05	0.27
North Carolina	0.66	–0.94	0.69	–0.58	0.41	1.48	0.29
North Dakota	1.05	–0.08	1.12	–0.28	1.25	1.48	0.76
Ohio	0.88	–0.39	0.91	–0.11	–1.27	–1.05	–0.17
Oklahoma	–0.44	–0.90	–0.80	–1.47	0.41	–0.55	–0.62
Oregon	–2.18	1.01	0.91	0.60	0.41	0.97	0.29
Pennsylvania	–0.79	–0.56	0.69	–0.13	0.41	–1.05	–0.24
Rhode Island	0.52	0.56	0.27	1.29	0.41	1.48	0.76
South Carolina	0.92	–0.70	–0.37	–1.06	0.41	–1.05	–0.31
South Dakota	0.92	–0.27	0.69	–0.25	1.25	–1.05	0.22
Tennessee	0.68	–1.30	–1.65	–1.61	0.41	–1.05	–0.75
Texas	0.28	0.61	–1.65	–0.60	–1.27	–0.55	–0.53
Utah	–0.91	1.46	–1.23	0.99	–0.43	–1.05	–0.19
Vermont	–0.71	–0.02	0.69	0.70	1.25	0.97	0.48
Virginia	1.02	–0.16	–1.01	0.58	0.41	1.48	0.39
Washington	–0.38	1.23	0.69	0.71	–1.27	–1.05	–0.01
West Virginia	0.78	–2.96	–1.01	–2.28	1.25	1.48	–0.46
Wisconsin	0.71	0.87	1.12	1.50	0.41	1.48	1.02
Wyoming	–0.68	0.18	0.05	0.19	–1.27	–1.05	–0.43

Abbreviations used: CWF, community water fluoridation; SOHP, State Oral Health Plan; BSS, Basic Screening Survey. See page 5 for definitions of all variables.

*For this table, raw data (all variables except for State Average) have been converted to *Z*-scores. This creates a distribution in which the mean (average) is 0 and the standard deviation is 1.0 (so two-thirds of the values are between –1.0 and 1.0). The State Average (the average of these *Z*-scores) also has a mean of 0 but has a smaller standard deviation (0.5) due to the positive correlations among many of the *Z*-scores.

#The variable Severe Tooth Loss has been reversed, so that higher numbers are more favorable. All other variables were already scored so that higher values are more favorable.

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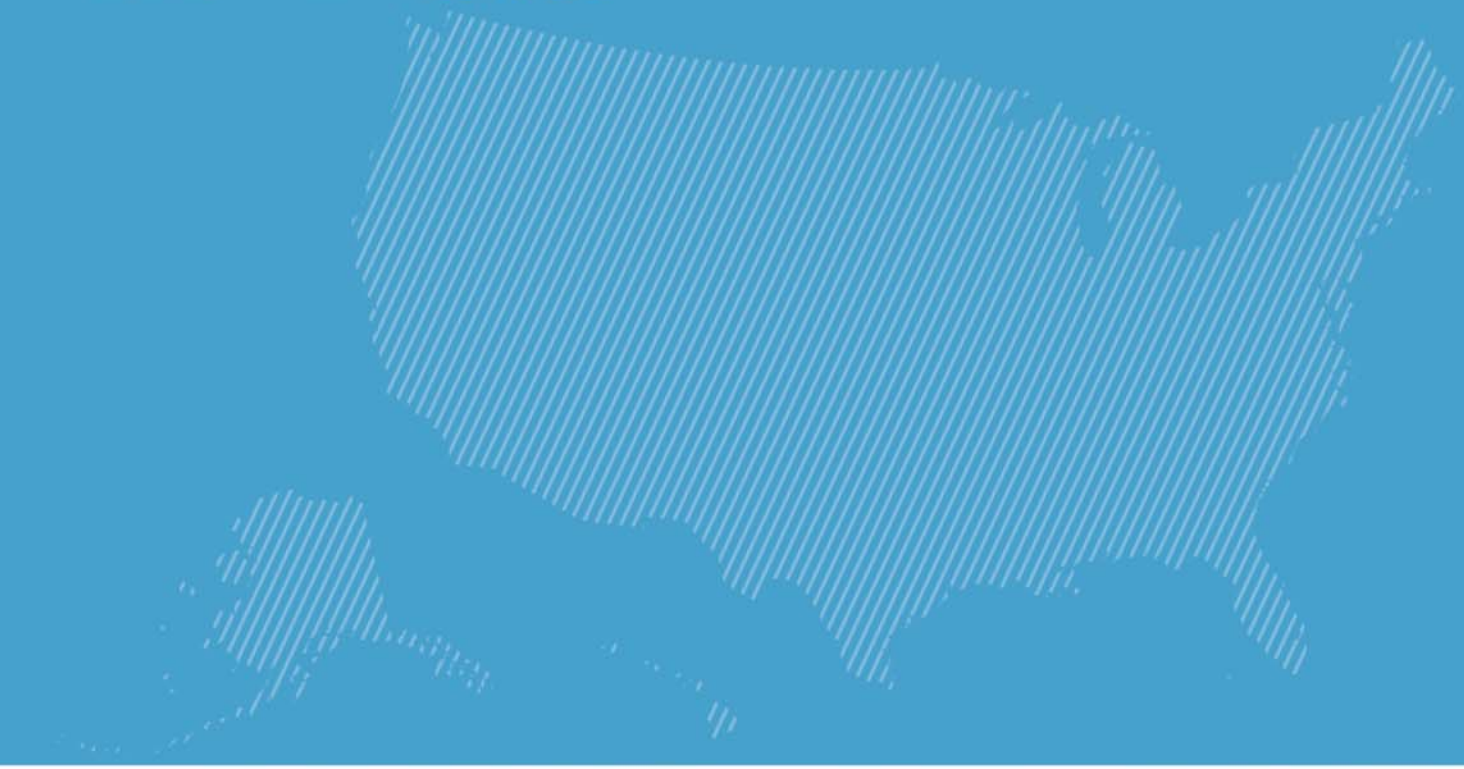

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