

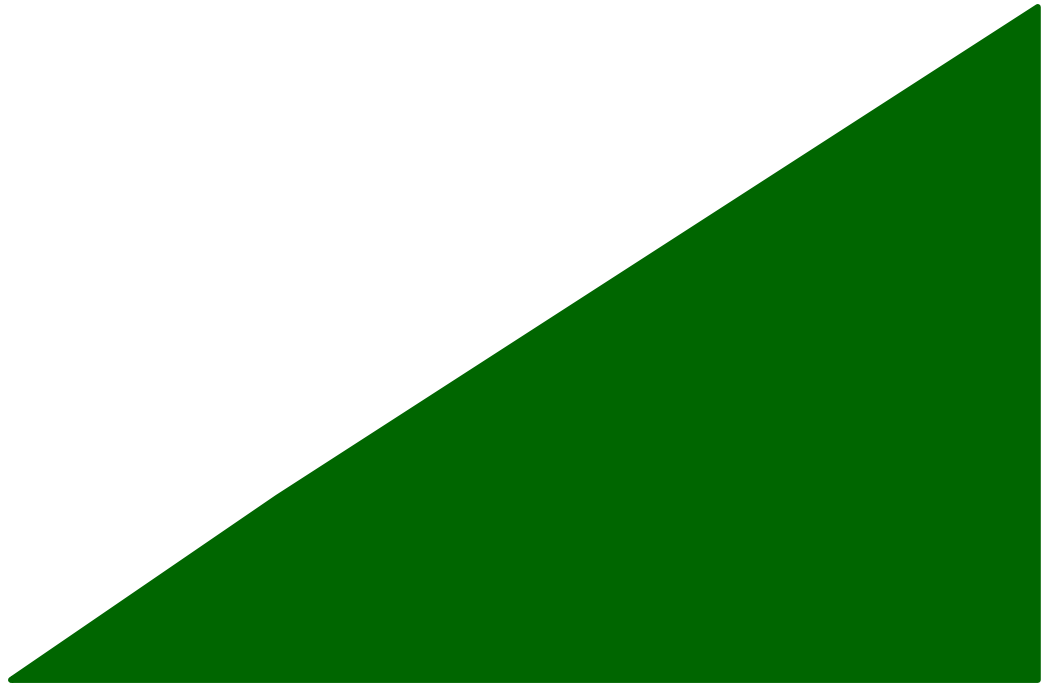
2020

**MONTANA**



**ORAL HEALTH**

**THE STATE OF THE STATE'S ORAL HEALTH**



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## Executive Summary

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### Prevalence of disease among Montana children:

- Sixty-two percent of Montana children experienced dental decay by the time they reach 3<sup>rd</sup> grade in 2017 and one in seven had untreated decay during 2017.
- The prevalence of tooth decay among American Indian children was significantly higher than white children; 84.0% compared to 57.4%.

### Prevalence of disease among Montana adults:

- One in seven elderly (14%) adults (age +65 years) reported they had lost all natural teeth to decay or gum disease in 2018.
- Montana incidence of oral cancers were 11.5 per 100,000 citizens from 2014-2016 which was similar to the national incidence of 11.7 during the same time period.<sup>1</sup>
- Adults with diabetes in Montana experienced more complete tooth loss than those without diabetes; 15% and 6%, respectively.

### Risk and preventive factors:

- Low-income and less educated Montanans utilized dental care less and had a greater burden of oral diseases in 2017.
- Only 34% of Montana residents resided in communities with optimally fluoridated water compared to 74% among the U.S. population during 2014.<sup>2</sup>
- In 2017, Montana third grade children had a higher prevalence of dental sealants than the general U.S. third grade population; MT 48%, U.S 42%.

### Provisions for Dental Services

- In 2019, Montana had 79% of counties designated as dental health professional shortage areas.

## Introduction

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Oral health is important to overall health of Montana citizens. Oral health diseases and conditions affecting Montanans include:

- Tooth decay
- Periodontal (gum) disease
- Oral and pharyngeal cancers
- Cleft lip and palate

Tooth decay is a communicable disease which may become chronic following infection with decay-causing bacteria. Transmission can occur through kissing, sharing of utensils, and other exchanges of saliva. Caregivers with high rates of decay increase the risk of infecting a child with decay-causing bacteria.<sup>3</sup> Following infection multiple factors such as genetics, exposure to fermentable carbohydrates (sugars), lack of fluoride and adequate oral hygiene increase risk for decay.

Periodontal disease is a bacterial infection of the supporting structures of teeth, including the gingiva and surrounding bone. Left untreated, the infection may cause tooth loss and the inflammatory response may influence other health problems, such as heart disease and diabetes. Periodontal disease is the leading cause of tooth loss.<sup>4</sup>

This document was prepared by the Montana Department of Public Health and Human Services Oral Health Program. The content intends to provide an overview of oral diseases and risk factors among Montana residents. Topics discussed in the report reflect most recent data related to prevalence and incidence of disease, preventive interventions and provisions for dental care in Montana.

### Montana Oral Health Program

PO Box 4210  
Helena, MT 59620-4210  
(406) 444-2660



Additional oral health resources can be found on the Oral Health Program website:

<https://dphhs.mt.gov/ecsd/oralhealth>

## Montana

Montana is one of the most rural states in the U.S. with a population density of approximately 6.8 people per square mile. The State covers over 145,500 square miles of land. Of the 56 counties, 45 are classified as frontier and 10 counties rural. Only one county is categorized as urban with just over the 50 people per square mile threshold. Provisions for dental services for such a vast geographic area offer unique challenges.

In 2018 just over 1 million people resided in Montana. The majority of Montana citizens are white, non-Hispanic. The median household income from 2013 to 2017 was \$50,801, compared to the national median of \$57,652.<sup>5</sup>

Montana has 7 American Indian reservations (Figure 1). American Indians are the largest minority group in Montana consisting of over 6% of the State's population (Table 1).

**Table 1. Population Data, Montana and U.S. Estimates, 2018**

	MT	U.S.
	%	%
<b>Age in years</b>		
Under 5	5.9	6.2
Over 65	17.2	14.9
<b>Gender</b>		
Male	50.3	49.2
Female	49.7	50.8
<b>Race/Ethnicity</b>		
White	89.2	77.1
American Indian and Alaska Native	6.6	1.2
Black or African American	0.6	12.6
Asian	0.8	5.6
Hispanic or Latino	3.6	17.6

**Figure 1. Montana American Indian Reservations**



# Prevalence of Oral Diseases

## Tooth Decay

Good dental health is an essential component of physical, social and mental development. Although tooth decay is nearly 100% preventable, decay remains the most common chronic disease among U.S. children. Left untreated, dental decay has an impact on nutrition, speech and may pose serious health problems.

The prevalence of tooth decay among Montana children has changed very little over the last decade and remained higher than the U.S. rate of 52% (Figure 2, Appendix Figure 21).<sup>6</sup> American Indian and low-income children had a significantly higher prevalence of tooth decay in 2017-2018 Montana oral health surveillance (Figures 3).<sup>7</sup> When stratified by participation in the National School Lunch Program, significant differences in decay experience and untreated decay emerged. Schools with higher participation in the program had higher experiences of decay and untreated decay (Figure 4).

Figure 2. Prevalence of Decay Experience and Untreated Decay in Third Grade Children, Montana

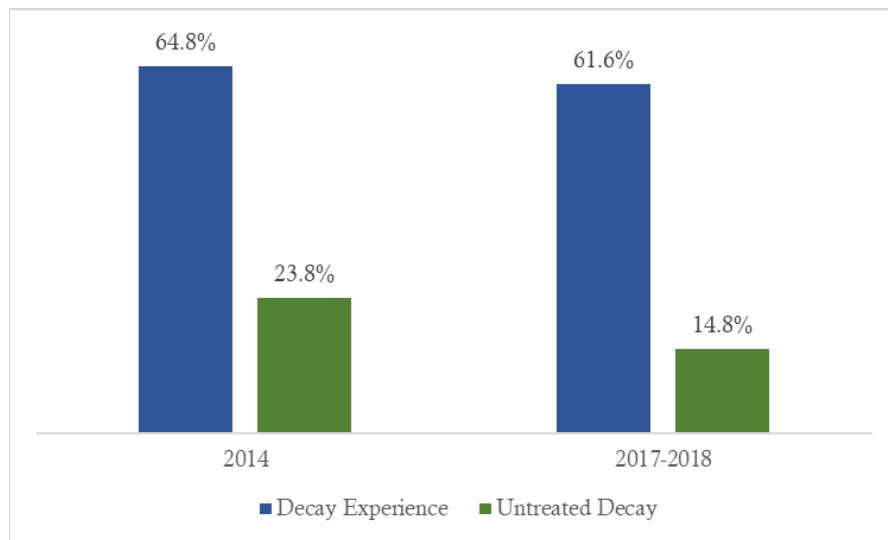
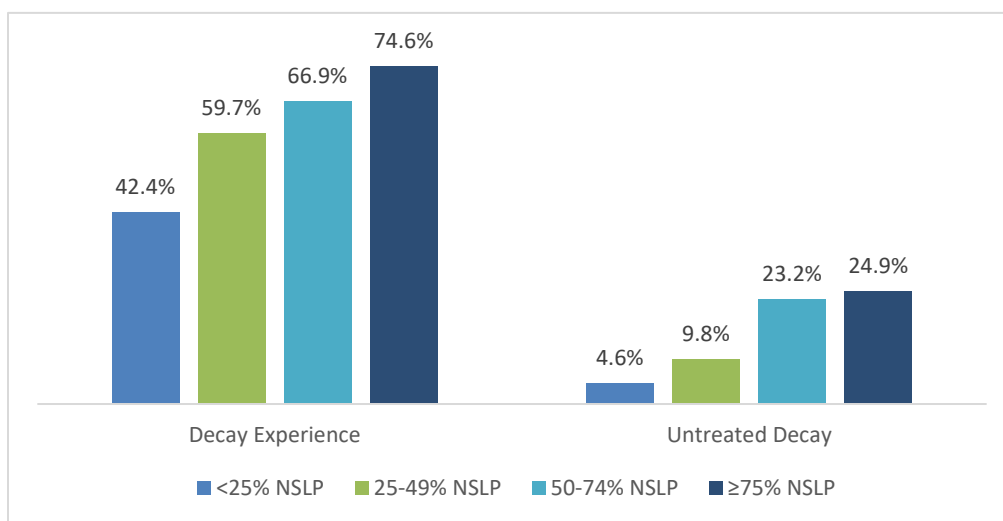


Figure 3. Prevalence of decay experience and untreated decay in third grade children by national school lunch program (NSLP) participation, Montana 2017-18

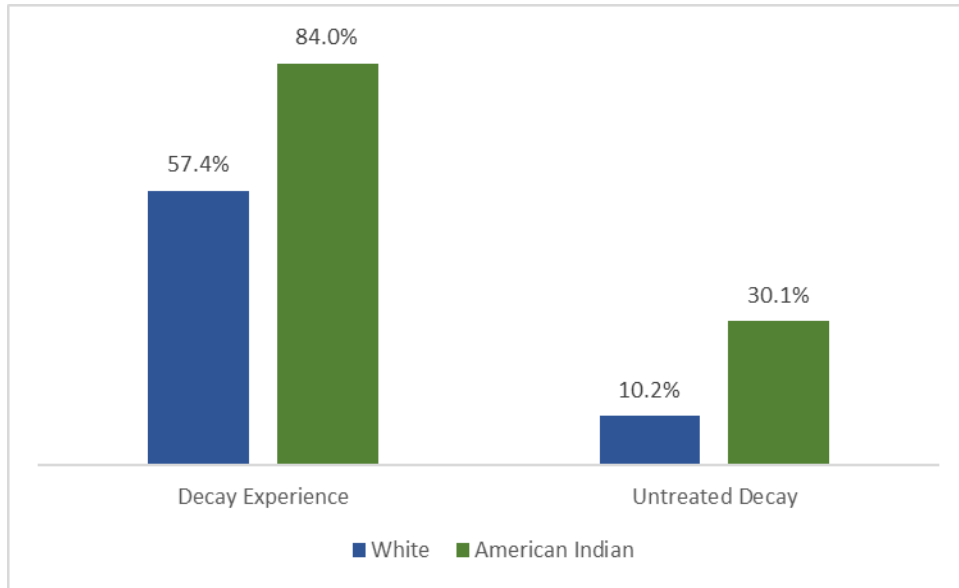




## American Indian/Alaskan Native Populations

American Indian children in Montana experienced a higher prevalence of dental decay when compared to other Montana children (Figure 3).

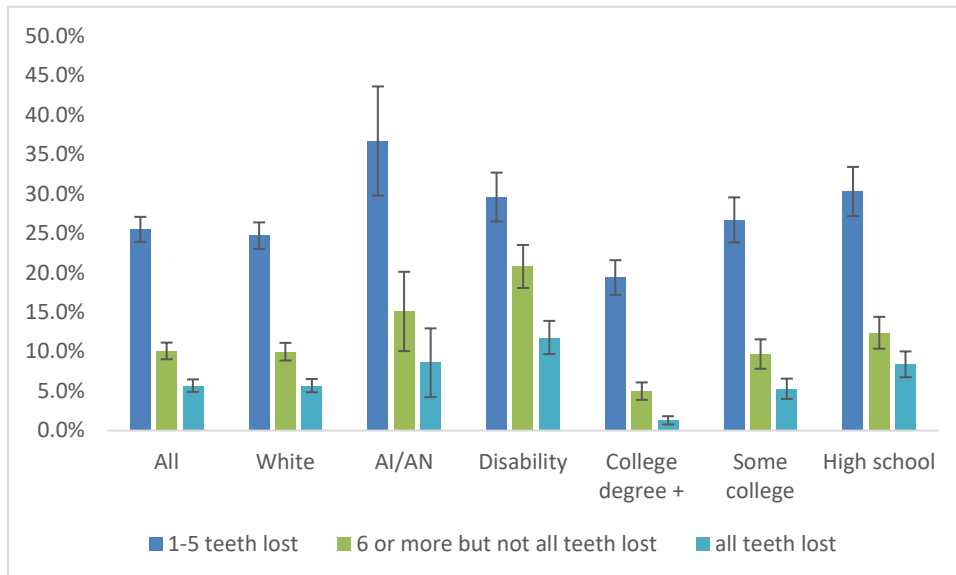
Figure 4. Prevalence of Decay Experience and Untreated Decay by Race, Montana 2017-2018

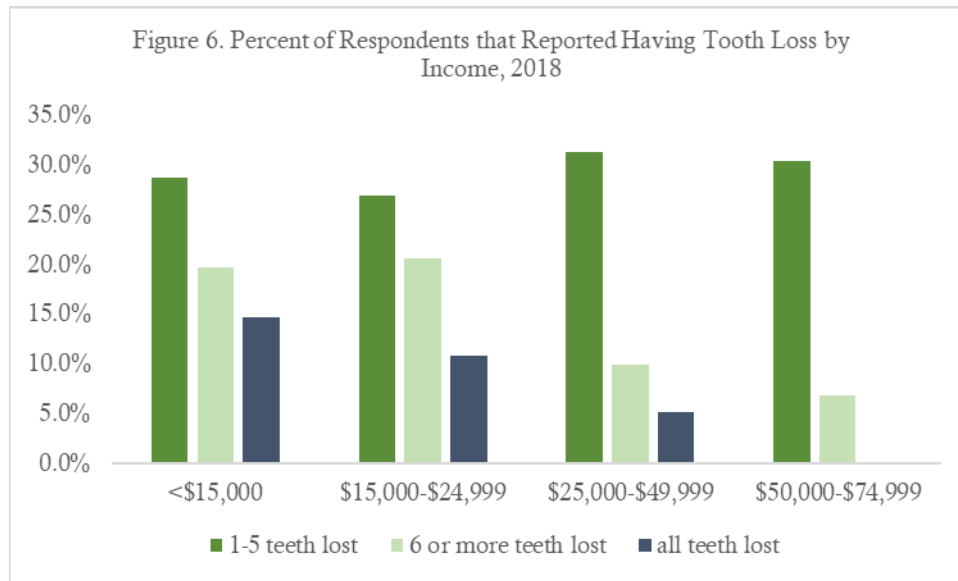


## Tooth Loss

Tooth loss is an important indicator of oral health and access to dental care among adults. Periodontal disease is the most common cause of tooth loss.<sup>8</sup> In 2018, 25.5% (95% confidence interval 23.9-27.1) of Montana adults reported having had lost between 1 and five teeth and 5.7% (4.9-6.5) had lost all teeth. Among adults over age 65 years, 14.1% (11.9-16.4) reported no remaining natural teeth.<sup>9</sup> Race, education level and income were associated with tooth loss among Montana adults (Figures 5 and 6).

Figure 5. Percent of Respondents that Reported Tooth Loss by Race, Disability, and Education Level, Montana, 2018





## Diabetes

In recent years, rising chronic disease morbidity and mortality have emerged as threats to population health. Research has demonstrated the interrelationship between diabetes and periodontal disease and may lead to tooth loss. Reported rates of tooth loss among individuals with diabetes were higher than individuals without diabetes. In 2018 among Montana adults over the age of 18 years with diabetes, 15.5% (15.0-21.9) reported they had lost all of their natural teeth to decay or periodontal disease.

Lower utilization of dental care may be a contributing factor in tooth loss among individuals with diabetes. In 2016, two-thirds (66.1%, 61.0-71.2) reported a dental visit in the last year. Utilization decreased in 2018 to 60.4% (55.1-65.8), although differences between the two years were not statistically significant. Utilization estimates among individuals with diabetes were lower than all adult respondents (Appendix Table 7).

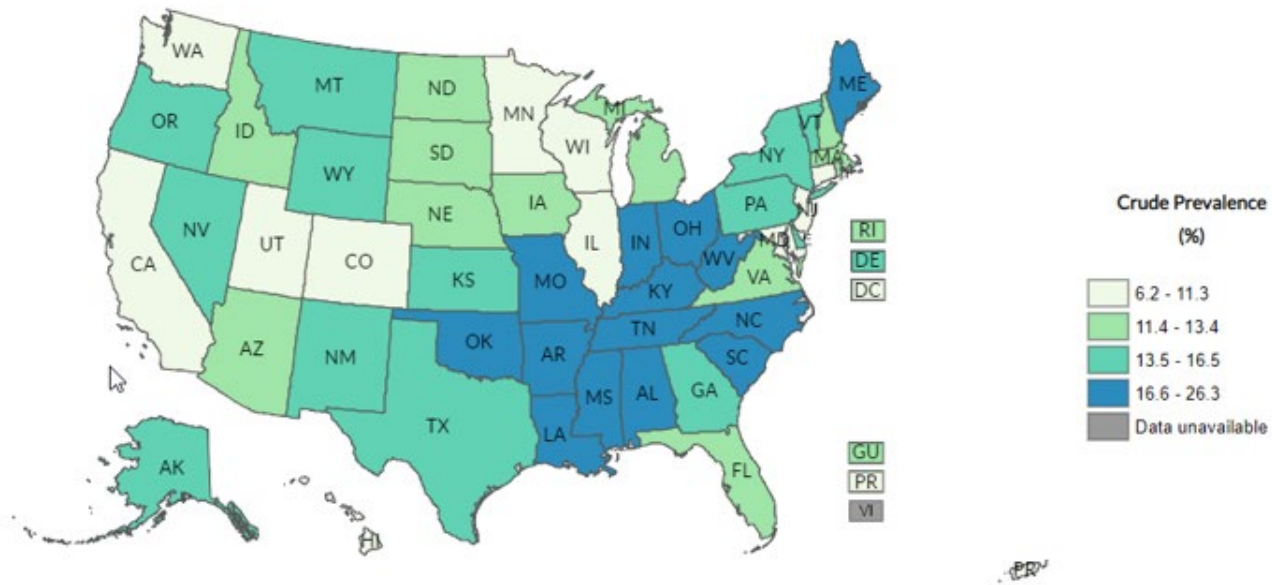
## Geriatric Populations

According to the Administration on Aging by 2050 there will be over 48 million older adults in the U.S., with the 60+ year old the fastest growing segment of the population.<sup>10</sup> The U.S. Census Bureau estimates that over 30% of the Montana population will be over the age of 60 by 2030.<sup>11</sup> Unlike previous generations, Baby Boomers will more likely retain natural teeth.<sup>12</sup> Medicare does not provide coverage for most dental care, including preventive dental care. The CDC estimates that over 70% of older Americans do not have dental insurance and dental care will increasingly be paid out-of-pocket in elderly populations.<sup>11</sup>

Older Montanans have unique challenges in maintaining oral health. Risk for tooth decay may be increased due to decreased saliva production (xerostomia) which may be related to age, disease processes or medications for chronic disease. Older adults are also at risk for periodontal disease related to smoking, aging and chronic diseases. Tooth loss has been identified as one aspect of overall *Healthy Aging Data* from the Center for Disease Control and Prevention (CDC), which monitors the percent of aged adults who have experienced tooth loss.

In 2018, just over one in five (22.8%, CI 20.4-25.1) adults over the age of 65 years in Montana reported they had not visited a dental clinic in the past year. One in seven, 14.1% (11.9-16.4), reported they had lost all their natural teeth in 2018 which was higher than 2016 estimates. Figure 7 outlines 2016 estimates of respondents aged 65+ years that reported loss of all their natural teeth (MT 13.5%; 11.5-15.5) throughout the U.S.

Figure 7. Adults aged 65+ who have lost all their natural teeth due to tooth decay or gum disease, 2018



Data Source: Center for Disease Control and Prevention

## Oral Cancer

It is estimated that in 2019 in the U.S. 10,860 deaths were attributed to oral cavity and pharynx cancers, 1.8% of all cancer deaths in the U.S. Oral cancers are often diagnosed at later stages which contribute to high mortality.<sup>13</sup>

In 2016 mouth and throat (oropharyngeal) cancers accounted for 2.6% of all cancers diagnosed in Montana.<sup>14</sup> From 2014 to 2016, 30.5% of oropharyngeal cancers in Montana were diagnosed at the earliest stage. The Healthy People 2020 goal for early diagnosis (OH-6) is 35.8%.

Risks associated with the development of oral cancers include tobacco use, excessive alcohol consumption and high-risk sexual behaviors. Regular dental exams offer an opportunity for providers to identify cancers of the mouth and throat early. Additional information on tobacco utilization in Montana is detailed in Appendix Table 8.

## HPV

Human papillomavirus (HPV) is the most common sexually transmitted infection in the U.S. and can infect the tissues of the mouth and throat. HPV infections are often undiagnosed and generally do not cause disease, although a small portion of infections may cause oropharyngeal cancers. It is estimated that approximately 1% of the population is at risk for HPV related cancers.<sup>15</sup> A 2014 study identified 72% of invasive oropharyngeal squamous cell carcinomas were positive for HPV.<sup>16</sup> As emerging science continues to explore the relationship between HPV and the development of oral cancers, HPV immunizations may be an important public health intervention to prevent oral cancer. HPV vaccination rates among adolescents in Montana are in Appendix Table 8.<sup>17</sup>

## Risk and Protective Factors

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### Fluoride

Fluoride had an impact on decreasing the prevalence of dental cavities in the U.S. population since it became available in community water systems and toothpastes in the early 18th century. Exposure to systemic and topical fluoride inhibits the demineralization of tooth surfaces and reduces the effect of bacteria in the mouth, thereby reducing the risk for dental decay.

#### Community Water System Fluoridation

Centers for Disease Control and Prevention data estimates 33.7% of Montanans were exposed to fluoridated water through community water systems, compared to 74.4% among the U.S. population (Appendix Table 6) in 2014. Adjustment of the level of fluoride in community water systems is endorsed by Centers for Disease Control and Prevention, American Dental Association, American Public Health Association and numerous other stakeholders in dental health promotion.

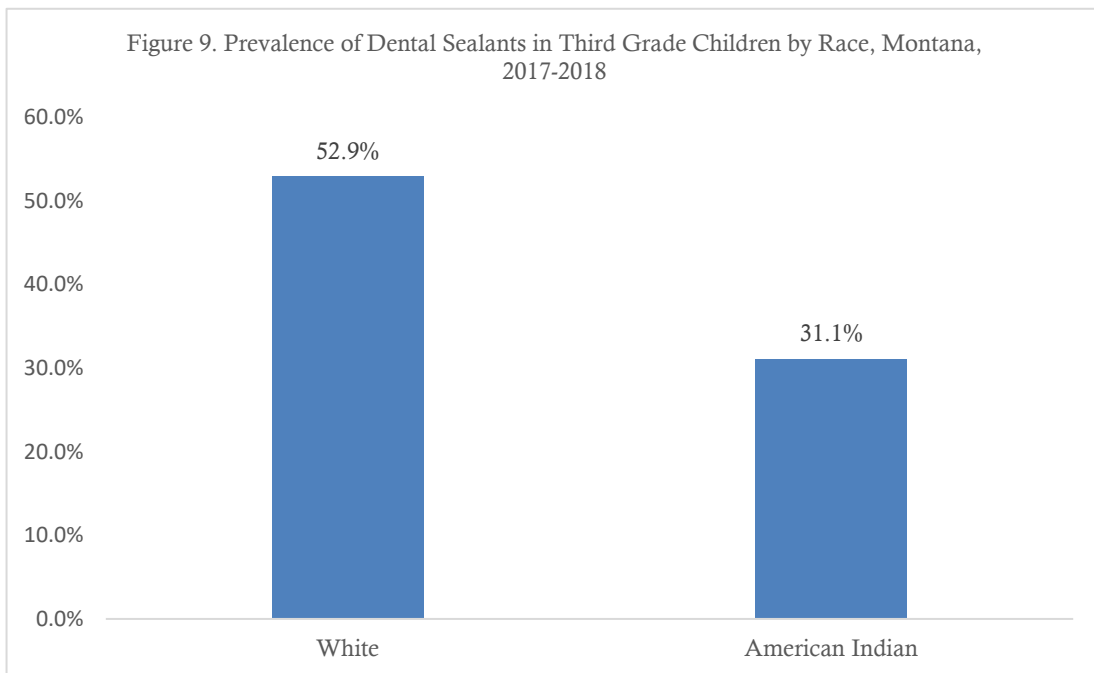
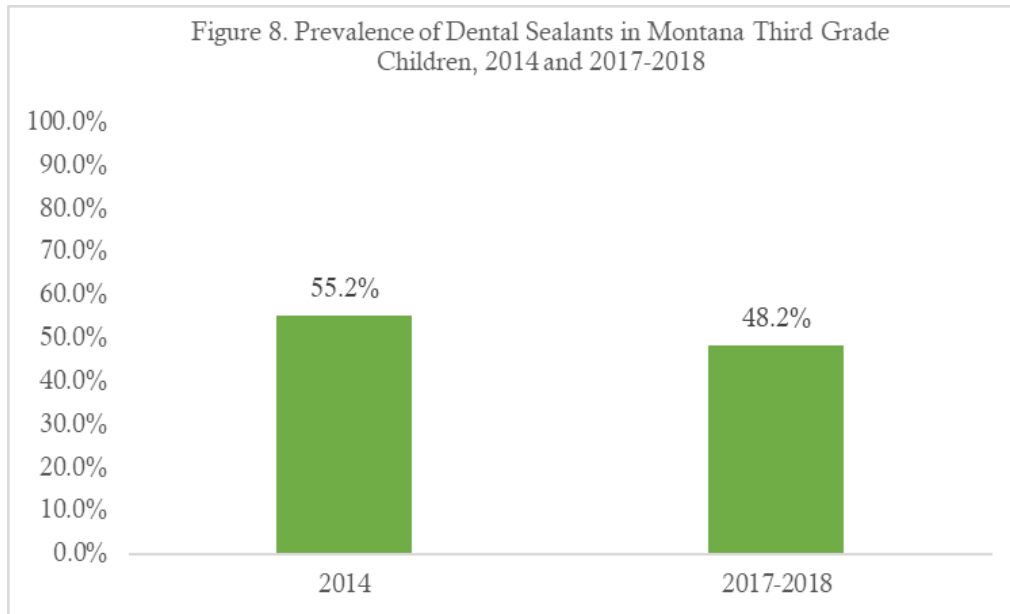
Community water fluoridation was named as one of the top ten public health achievements in the 20<sup>th</sup> Century for its impact in reducing dental decay rates and opportunity for prevention. Economic analysis of the cost savings related to community water fluoridation indicated that for every dollar spent on fluoridation \$16 to \$38 is saved in dental care and related expenses.<sup>18</sup>

#### Topical Fluoride

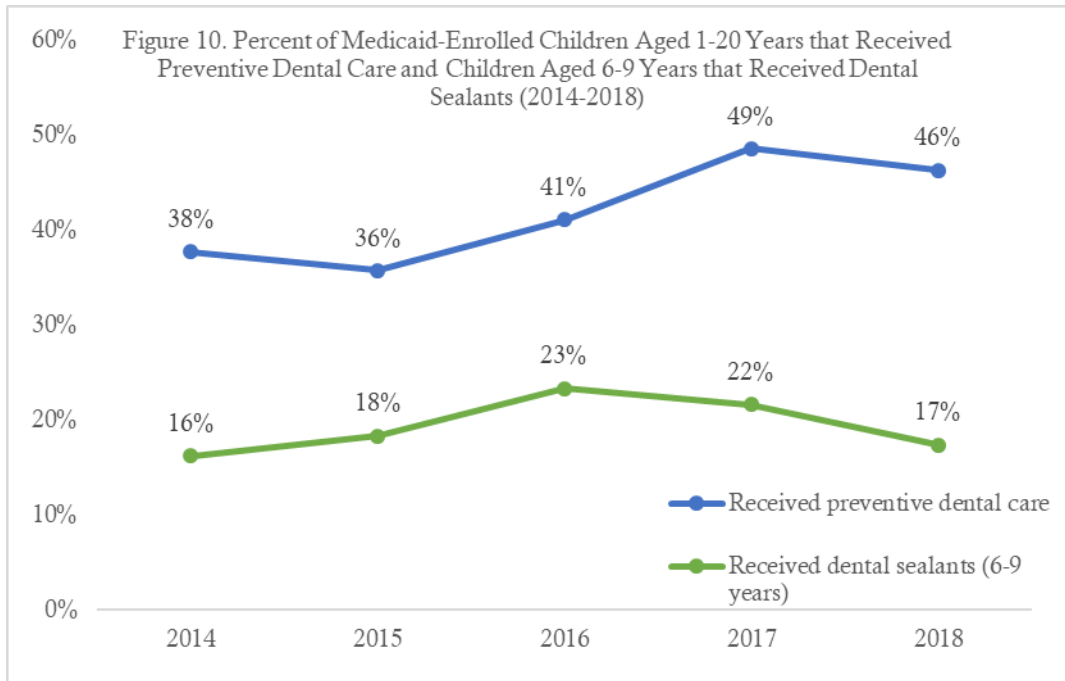
Montana citizens are exposed to fluoride in toothpaste, during professional dental visits and school-based fluoride programs. Topical fluoride applications may be liquid, gel or varnish formulations. Community water and prescription fluoride tablets/drops offer topical benefits but are ingested to increase the uptake of fluoride during tooth development in children.

## Preventive Care and Dental Sealants

Dental sealants are a plastic coating applied in the grooves on the biting surface of back teeth, an evidence-based approach in preventing tooth decay.<sup>19</sup> The prevalence of dental sealants among Montana children in third grade decreased from 2014 to 2017, although the decrease was not statistically significant (Figure 8). Prevalence of dental sealants among American Indian children was lower than white children during the 2017-2018 school year (Figure 9).



Less than half of Medicaid-enrolled children received preventive dental care and only one in six children aged 6 to 9 years received dental sealants in 2018 (Figure 11).



## Provision of Dental Services

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### Dental Workforce

Three dental provider-types are licensed by the Montana Department of Labor and Industry (DLI): dentists, dental hygienists and denturists.

#### Dentists

Dentists provide restorative treatment for pathological dental diseases, dental decay and periodontal disease and provide preventive dental care. Montana does not currently have a school to educate dentists. A limited number of Montana dental professionals are supported through loan repayment programs at both the state and federal level based on service areas and populations served.

A report of the DLI in 2017 identified 11 counties without a residing licensed dentist. Thirty-eight of Montana's 56 counties had lower population-to-dentist ratios than the overall state ratio and 54 percent of Montana's dentists resided in the six most populated counties.<sup>20</sup> In 2017 there were 653 dentists licensed by the Board of Dentistry with a Montana address. Figure 12 illustrates the distribution of dentist providers based on Montana county population estimates.<sup>33</sup>

Dental assistants provide auxiliary services under direct supervision of a licensed dentist. In Montana dental assistants are not a licensed provider. Two dental assisting programs currently train students in the State and in recent years proprietary training programs have been established in local communities. The projected job outlook for the dental assisting profession is expected to increase 25% by 2022.<sup>21</sup>

#### Dental Hygienists

In 2020 there were 739 licensed resident dental hygienists (Appendix Table 9).<sup>33</sup>

One dental hygiene educational program at Montana State University-Great Falls accepts 16 dental hygiene students per academic year. The program began in 2004; however, prior to the Great Falls program there was not a dental hygiene educational setting in Montana for more than a decade.

Dental hygienists provide preventive dental care, collect assessment data, and perform non-surgical periodontal treatment under general supervision of a dentist and primarily work in private dental offices and clinics. The profession is projected to have a 33% increase in employment by 2022. Average job growth for all occupations is 11% during the same time period.<sup>28</sup> Dental hygienists in Montana provide direct preventive dental care in public health settings through a Limited Access Permit (LAP) obtained through the Montana Board of Dentistry. During 2015, 47 dental hygienists held the LAP endorsement.<sup>26</sup>

#### Denturists

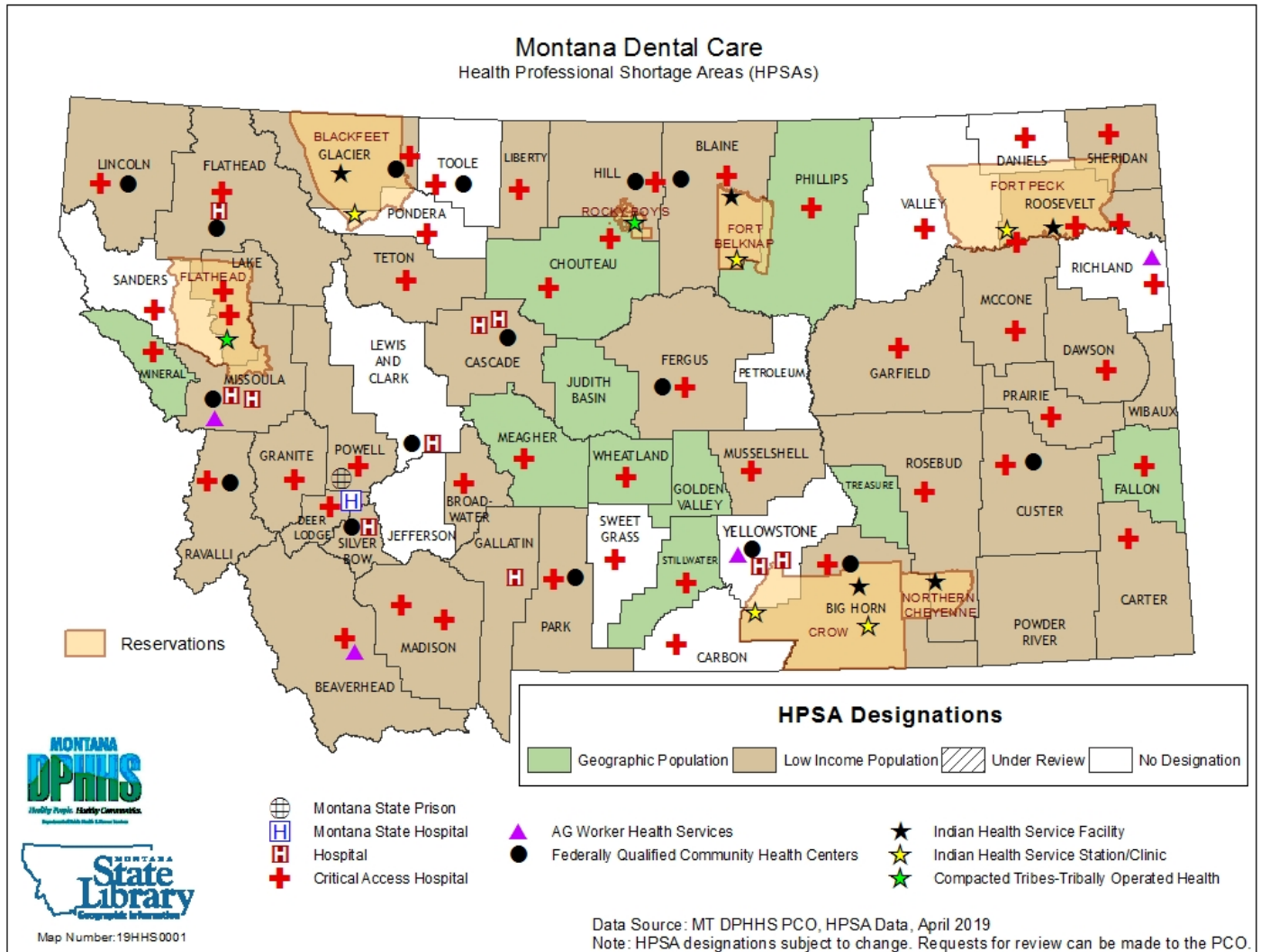
Montana denturists assess and treat people missing some or all of their natural teeth. Denturist services include removable dental prosthesis, such as dentures, partial dentures and other devices to restore and maintain natural function and appearance of teeth. Six states in the U.S. offer regulated dentistry, including Montana.<sup>22</sup> Seventeen denturists were licensed by the Montana Board of Dentistry in 2017.

Montana Statutes and Rules for the Montana Board of Dentistry can be found at [http://b.bsd.dli.mt.gov/license/bsd\\_boards/den\\_board/board\\_page.asp](http://b.bsd.dli.mt.gov/license/bsd_boards/den_board/board_page.asp).

## Dental Health Professional Shortage Areas

Health Resources and Services Administration (HRSA) Bureau of Health Professions develops criteria in determining the need for dental providers in geographic locations, population groups and facilities. Figure 13 outlines the 86 locations in Montana designated as dental professional shortage areas in 2019.<sup>23</sup>

Figure 11. Montana Dental Health Professional Shortage Areas, 2019





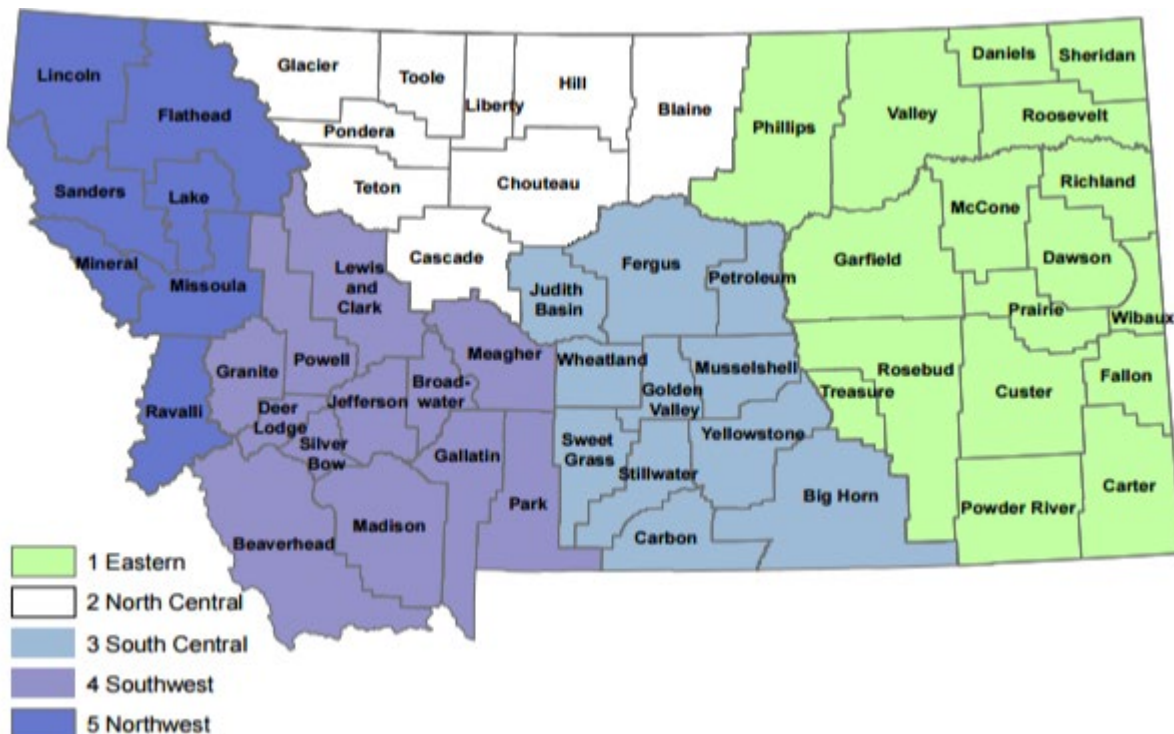
## Utilization and Access to Dental Care

According to 2018 Behavioral Risk Factor Surveillance System (BRFSS) data 65.8% (64.0-67.6) of Montanans over 18 years of age visited a dentist, dental hygienist or dental clinic within the past year. Utilization has increased slightly over the last decade. Montanans located in the Northwest region reported utilizing dental care more often during 2018 (Table 2).<sup>12</sup> Figure 14 provides a map of the health planning regions in Montana.

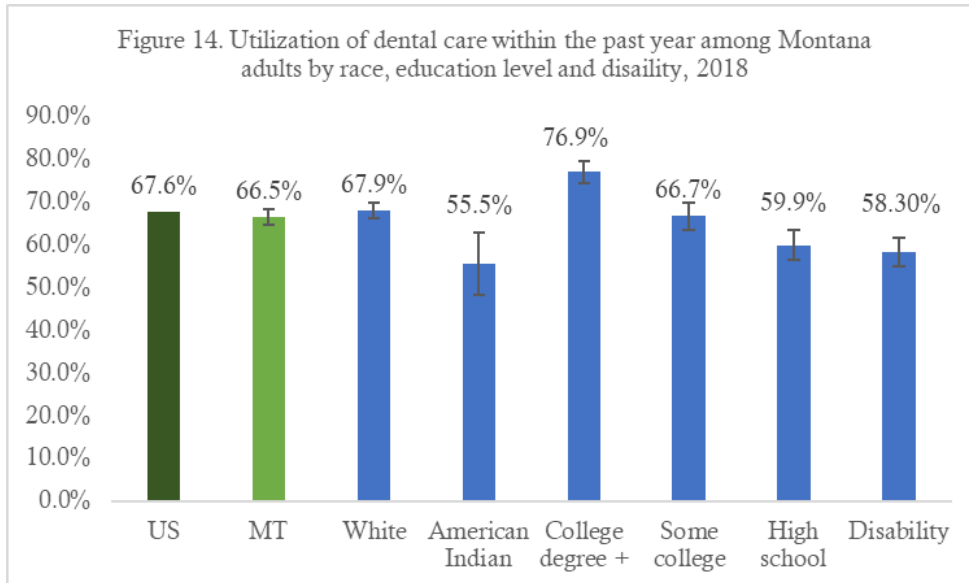
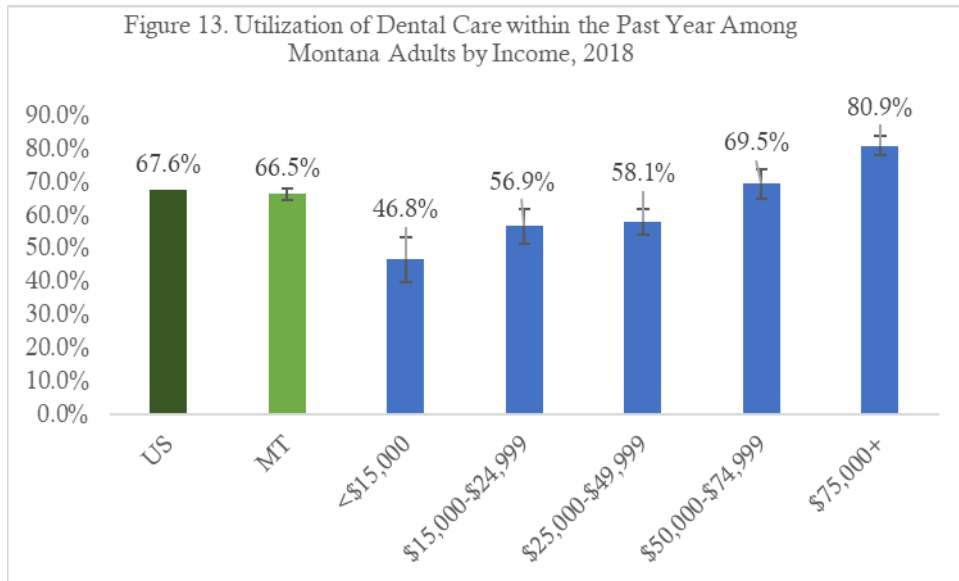
Table 2. Percent of Adult Respondents with a Dental Visit in the Past Year, Past Five Years or More by Health Planning Region, Montana, 2018.

Health Planning Region	Dental visit in past year	Dental visit 5 or more years ago
Eastern	61.6 (57.3-65.9)	15.2 (12.0-18.3)
North Central	62.1 (58.0-66.1)	14.7 (11.7-17.7)
South Central	64.7 (60.7-68.8)	11.4 (8.9-13.9)
Southwest	67.3 (63.5-71.2)	11.3 (8.7-14.0)
Northwest	67.7 (64.1-71.3)	11.5 (9.1-13.9)

Figure 12. Montana Health Planning Regions



For Montana residents making less than \$15,000 annually, 23.4% (17.8-29.0) reported that they had not visited a dentist in 5 or more years compared to 4.5% (2.9-6.0) making over \$75,000.<sup>9</sup> Less than half of low-income adults reported seeing a dentist in the last year (figure 13). Montana adults with at least a college degree had the highest reported utilization of dental care within the past year (76.9%) compared to 60% of adults with a high school degree (figure 14).



## Early Periodic Screening, Diagnostic and Treatment (EPSDT)

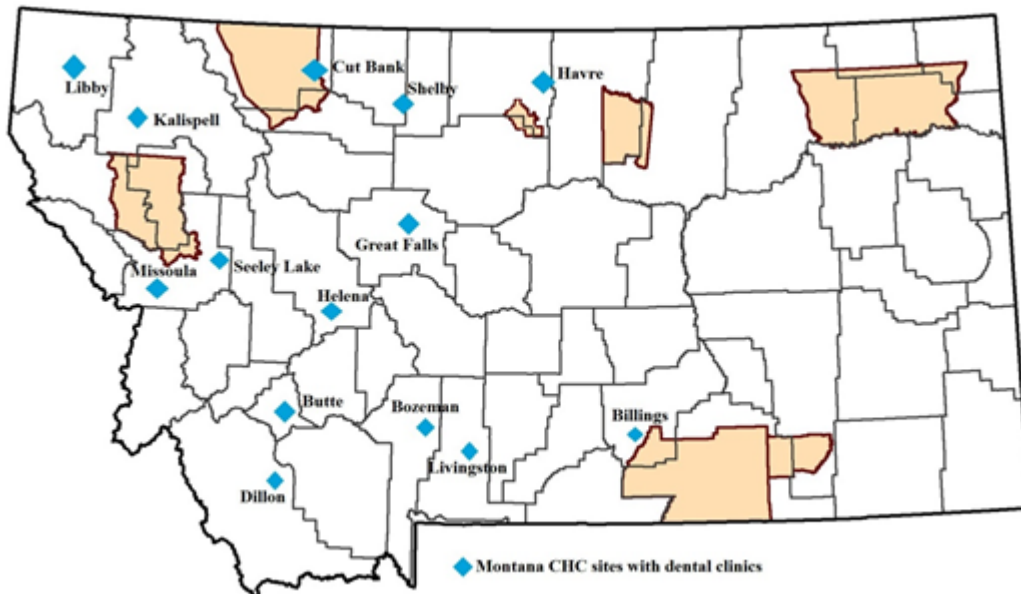
Early Periodic Screening, Diagnostic and Treatment (EPSDT) services provide comprehensive and preventive health care, including dental care.<sup>24</sup> Data from Center for Medicare and Medicaid (CMS) EPSDT Form CMS-416 on children 1 to 20 years of age is in Appendix Table 6.

The Montana Medicaid Program offers enhanced reimbursement for preventive dental care to children under the age of 6 years. Access to Baby and Child Dentistry Medicaid-enrolled dentists receive advanced education in pediatric dentistry for oral evaluations, risk assessment, nutritional counseling, oral hygiene instruction and fluoride varnish applications. During 2015, 184 Montana dentists were enrolled as trained providers. Medicaid claim data from 2014 indicated, even with incentivized reimbursement, only a small proportion of Medicaid eligible children under the age of 18 months receive dental care (6.7%).<sup>25</sup>

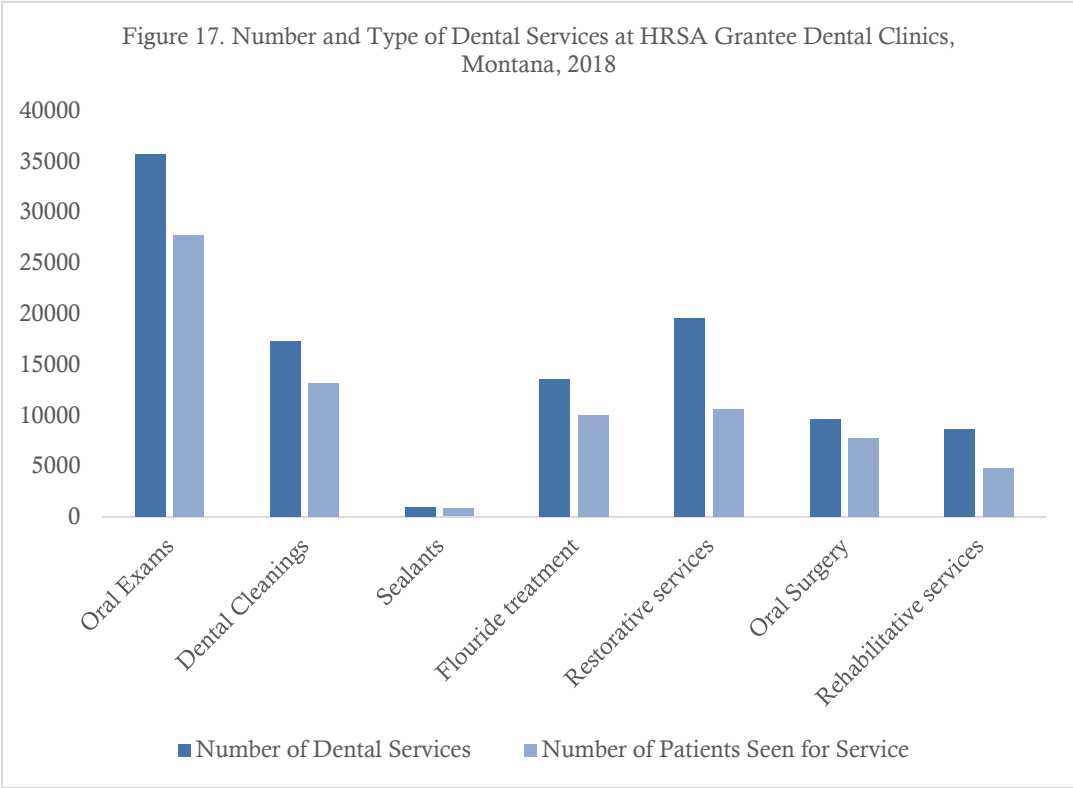
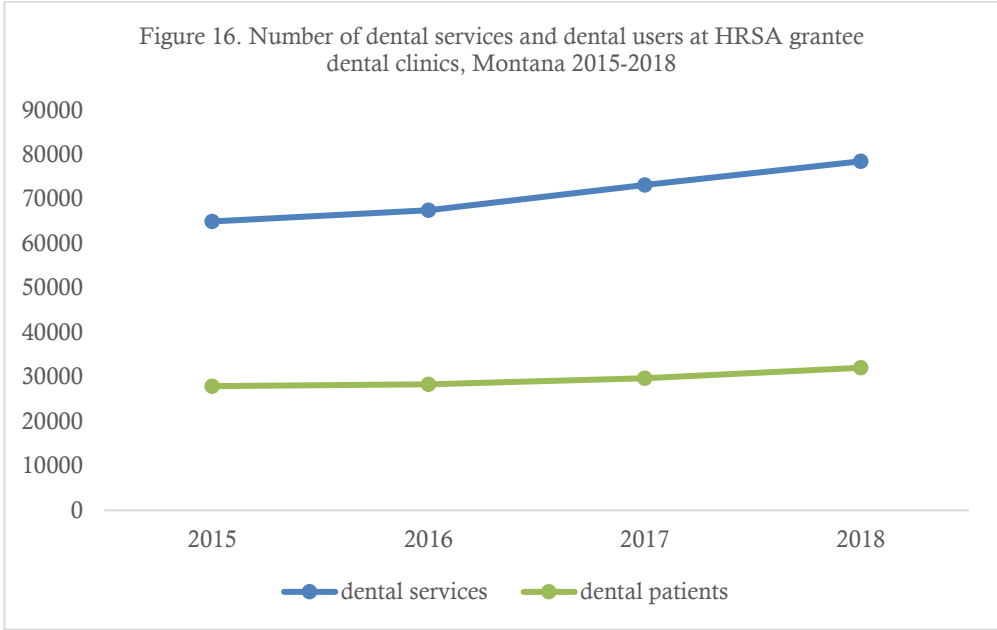
## Community-based Dental Clinics

Montana Community Health Centers (CHC) play a key role in access to dental care. The U.S. Department of Health and Human Services, Health Resources and Services Administration (HRSA) through Uniform Data System (UDS) collected data from 14 grantees and satellite dental clinics in Montana (Figure 18). HRSA funded dental clinics provided services to 32,076 Montanans during 2018.

Figure 15. Montana HRSA Grantee Dental Clinics, 2015



Dental services provided at CHC sites increased by over 20% from 2015 to 2018 services (Figure 19). In 2018 dental restorations (fillings) accounted for nearly 20,000 of CHC dental services on 10,629 patients. Oral surgery procedures, which include tooth extractions, were completed on 7,717 patients (Figure 20). During 2018 Montana CHC dental clinics were staffed by 41 dentists and 29 dental hygienists.<sup>26</sup>



## Dental-related Emergency Department Encounters

Lack of dental coverage for adults result in an increased burden on the medical care system related to emergent dental needs. In 2018, 8% of emergency room encounters were related to dental diagnosis. Montanans aged 18-39 years visited the emergency department for a dental need more often than any other age group. The cost of ED encounters related to dental conditions in 2018 was over \$50 million with the average cost of \$2,583 per encounter.<sup>27</sup> Furthermore, dental problems are rarely treated in hospital emergency department settings and may reoccur as patients are usually provided only palliative care.

## Conclusions

This is the updated burden of disease report to provide insight into the oral health of the State based on the most current available data. Disparities and surveillance needs have been identified for future public health activities. The prevalence of decay experience among Montana children is higher than the national estimates, especially among low-income and American Indian children. Disparities are compounded by the vast geographic nature of the state and distribution of dental providers, with fewer providers serving in non-core, frontier communities and areas with high-risk populations. Data also indicate low-income residents experienced barriers in accessing dental care related to perception of need and cost.

Absence of data on the oral health of preschool-aged children, adults and the elderly, especially institutionalized adults and pregnant women were noted. Despite these limitations, the state has policies that facilitate preventive strategies throughout the lifespan and data needs will be incorporated in future surveillance planning. This burden report provides current data on the oral health status of Montana citizens. It is intended to provide information for decision making, policy development and implementation of preventive strategies to improve oral health and surveillance among vulnerable populations.

## Recommendations

Focusing on prevention and disparities, future programming should include:

- Preventing the transmission of decay-causing bacteria from caregivers to children especially in populations with a high prevalence of disease through oral health education and integration of oral health into primary care settings, especially among high-risk populations and during pregnancy.
- Increase integration of oral health education and preventive care in early childhood intervention programming such as WIC, Head Start and other maternal and child programs.
- Provide comprehensive oral health education programs in school settings throughout Montana.
- Increase funding for dental education and loan repayment programs to increase the number of providers in the State willing to serve low-income populations and geographic locations of high-need.
- Foster policies that allow dental providers to deliver services in community-based settings to increase utilization of dental care.
- Increase communications related to benefits of community water fluoridation and topical fluoride.

## Data Sources

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*The State of the States Oral Health, 2019* was compiled using guidance from the Association of State and Territorial Dental Directors (ASTDD). State findings are compared to national data when available to evaluate the oral health of Montana citizens. Comparisons to relevant national objectives were included when data were available.

Basic Screening Survey (BSS) data were collected based on ASTDD guidelines during the 2014-2005 and 2017-2018 school years. Compliance with randomized sampling and data collection allow for the comparison of data to National Oral Health Surveillance Survey (NOHSS) data.

The Behavioral Risk Factor Surveillance System (BRFSS) offered insight to the dental needs of Montana adults by examining utilization and risk factors associated with oral health. The phone survey data was collected on the adult population 18 years of age or older living in a household. The sampling of BRFSS data allows for comparison to national data and offer insight to the population at large. The Office of Epidemiology and Scientific Support maintains and distributes BRFSS data. <http://brfss.mt.gov/>

The Youth Risk Behavior Survey (YRBS) provided data for high school students in Montana. Data collected was utilized to examine risk factors associated with oral health diseases in Montana adolescents. The sampling of YRBS data allows for comparison to national data and offer insight to the population at large. <http://www.cdc.gov/healthyouth/data/index.htm>

Data on cleft lip, cleft palate, and other craniofacial defects were provided by Montana DPHHS, Children's Special Health Services (CSHS). The CSHS program offers support services for the care of children with special health care needs. Data reflects children that utilize CSHS programming through the Children's Health Referral Information System (CHRIS).

The Montana Office of Vital Statistics maintains a permanent public record of birth, death, and fetal deaths. Data on the incidence mortalities related to malignant neoplasms of the lip, oral cavity, and pharynx for this report was based on death certificates. <http://dphhs.mt.gov/publichealth/Epidemiology/OESS-VS>

The Montana Department of Labor and Industry maintains dental provider licensee data through the Montana Board of Dentistry administrative records.

Data on dental services were obtained from the Centers for Medicare and Medicaid website, [Medicaid.gov](http://www.Medicaid.gov). Montana Medicaid provides data on Early and Periodic Screening, Diagnostic, and Treatment (EPSDT) benefits via the Form CMS-416 to assess the effectiveness of EPSDT. <http://data.medicaid.gov/>

Community Health Center dental clinic data was obtained from the Health Resource and Services Administration Uniform Data System (UDS). UDS data were collected from health center programs which include grantee and look-alike clinics. The UDS tracks information to review the operation and performance of grantees. <http://data.hrsa.gov/tools/data-reporting>

The Montana Hospital Discharge Data System (MHDDS) receives annual de-identified hospital discharge data sets through a Memorandum of Agreement with the Montana Hospital Association. Most hospitals in Montana participate in voluntary reporting from their Uniform Billing forms, version 2004. The MHDDS receives information on more than 90% of inpatient admissions in Montana. <http://dphhs.mt.gov/publichealth/Epidemiology/OESS-MHDDS>

## Definitions

Untreated decay: Describes dental cavities or tooth decay that has not received appropriate treatment.

Decay experience: Refers to having untreated decay or a dental filling, crown, or other type of restorative dental material. Also includes teeth that were extracted because of tooth decay.

Dental sealants: Describes plastic-like coatings applied to the chewing surfaces of back teeth. The applied sealant resin bonds into the grooves of teeth to form a protective physical barrier.

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Figure 21. Percentage of Students with Decay Experience, Latest Data Reported to CDC

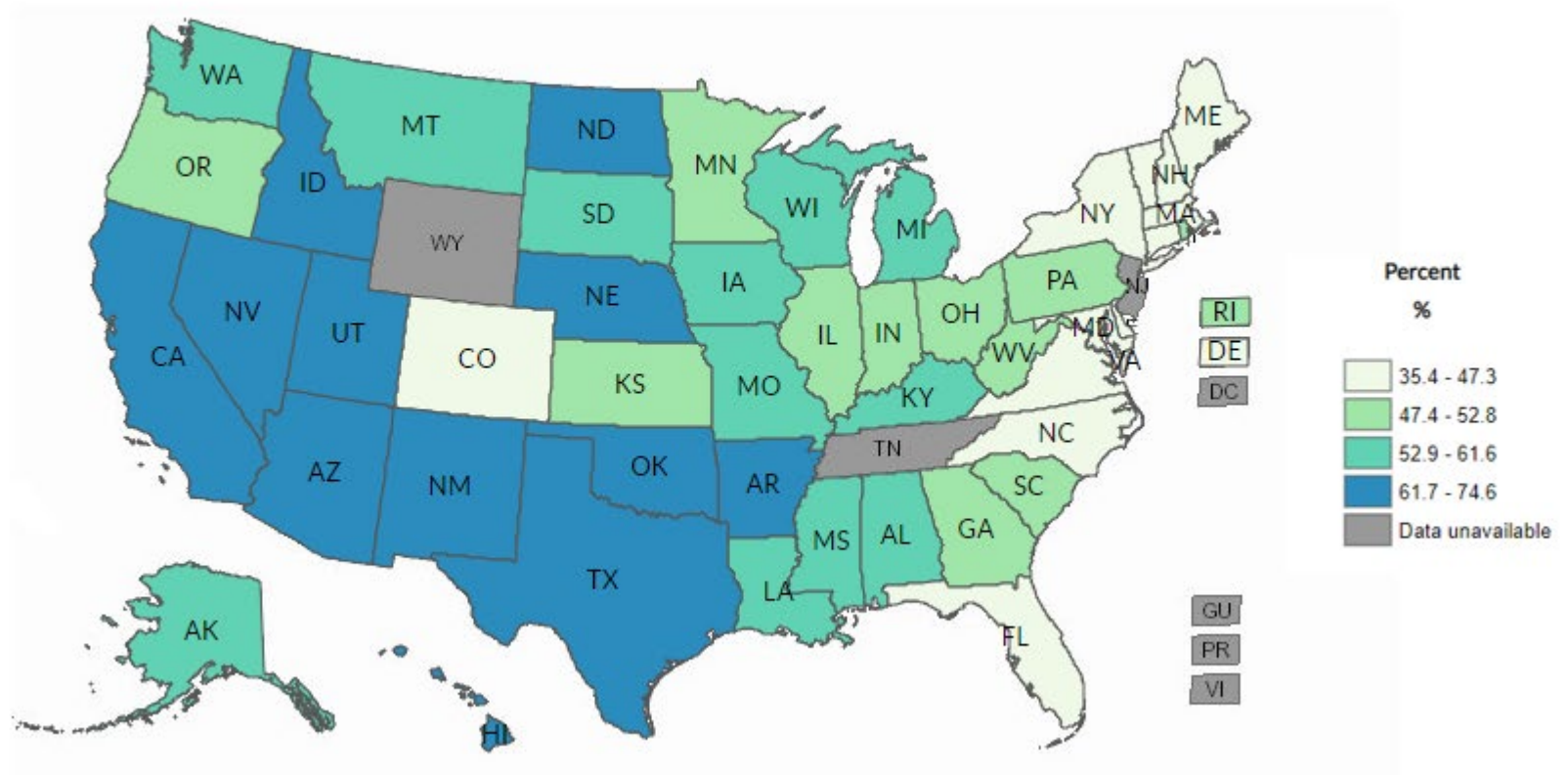


Table 3. Prevalence of Oral Disease: Montana Adults, 2008-2018.

\*Starting in 2011 BRFSS estimates can no longer be directly compared to estimates from previous years due to changes in sampling methodology.

Prevalence of Disease												
Adults												
Description of Indicator	Data Source	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Adults aged ≥ 18 with no tooth loss	BRFSS	55.9%		55.7%		57.2%		56.9%		55.3%		58.7%
Adults aged ≥ 18 with 1 to 5 teeth lost		28.2%		28.9%		26.1%		26.9%		28.6%		25.5%
Adults aged ≥ 18 with 6 or more teeth lost		9.9%		9.9%		10.6%		9.9%		10.6%		10.1%
Adults aged ≥ 18 with all teeth lost		5.9%		5.5%		6.1%		6.4%		5.6%		5.7%
Adults 65+ with all teeth extracted		18.7%		17.6%		18.1%		16.7%		13.5%		14.1%
Adults with diabetes ≥18 years with all teeth lost						18.2%		15.0%		12.1%		15.5%
Adults with diabetes 55+ years with all teeth lost						22.3%		19.2%		13.8%		19.0%
Frequency of death, malignant neoplasms of lip, oral cavity, and pharynx		MVS <sup>28</sup>	24	21	25	28	26	30	40	22	32	44
Age-adjusted Incidence of oropharyngeal cancers per 100,000	MCTR <sup>16</sup>				11.3			11.5				
Oropharyngeal cancers diagnosed at local (early) stage					34.6%			30.5%				

Table 4. Prevalence of Oral Disease: Montana Children, 2007-2017

Prevalence of Disease												
Children												
Description of Indicator	Data Source	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
3 <sup>rd</sup> Graders with untreated decay	MOHP								23.8%			14.8%
3 <sup>rd</sup> Graders with caries experience									64.8%			61.6%
3 <sup>rd</sup> graders with sealant on permanent molar									55.2%			48.2%
3 <sup>rd</sup> graders with urgent dental needs									2.8%			2.0%
Children with excellent or very good oral health	NSCH	74.5%				72.9%					75.8%	
Children with a preventive dental visit		-				76.6%					81.3%	
Number of newborns with cleft lip or palate	CHRIS <sup>23</sup>			57	63	43	44	48	48	37	35	28

Table 5. Prevalence of Oral Disease: Montana American Indian Children, 2004-2014

Prevalence of Disease												
American Indian Children												
Description of Indicator	Data Source	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Billings Service Area aged 2-5 years with untreated decay	IHS <sup>8</sup>							42.5%				
Billings Service Area aged 2-5 years with caries experience								68.7%				
Billings Service Area aged 6-9 years with untreated decay	IHS <sup>29</sup>									48.3%		
Billings Service Area aged 6-9 years with caries experience										86.3%		
Billings Service Area aged 6-9 years with dental sealant											36.1%	

Table 6. Risk and Protective Factors: Fluoride and Medicaid Utilization, Montana 2007-2017

Risk and Protective Factors												
Description of Indicator	Data Source	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Population with optimally fluoridated water systems	CDC <sup>24</sup>		30.0%		29.6%		32.0%		33.7%			
Medicaid-eligibles receiving fluoride varnish application	MMP							22.4%				
Medicaid-eligibles receiving any dental services	CMS						45.9%		50.6%	42.5%	43.2%	53.3%
Medicaid-eligibles receiving preventive dental services						35.6%	40.7%	47.5%	42.9%	35.8%	41.0%	48.4%
Medicaid-eligibles receiving dental treatment services						21.2%	23.6%	27.6%	23.5%	19.6%	42.2%	49.3%

Table 7. Risk and Protective Factors: Adults and FQHC Utilization, Montana 2008-2018

Risk and Protective Factors												
Description of Indicator	Data Source	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Adults who visited dentist or dental clinic	BRFSS											
Within the past year		64.6%		59.6%	61.4%	61.0%	62.9%	62.6%		65.6%		65.8%
Within the past 2 years		12.2%		13.4%	12.0%	12.4%	10.9%	12.3%		11.6%		12.4%
Within the past 5 years		10.2%		12.4%	12.5%	12.4%	13.7%	12.0%		9.7%		8.8%
5 or more years ago		12.7%		14.0%	13.5%	13.9%	12.1%	13.0%		12.6%		11.7%
FQHC patients with dental visit	UDS	23.6%	26.5%	28.8%	25.0%	26.8%	26.6%	25.8%	26.9%	26.7%	27.6%	29.1%
Adults with diabetes aged 18-64 years with a dental visit within the past year	BRFSS						56.3%	56.0%		51.3%		51.5%
Adults with diabetes age 55+ years with a dental visit within the past year						52.9%				73.4%		69.1%
Adults with diabetes with dental visit within past 2 years					67.7%	66.9%	65.1%			74.0%		73.0%

\*Starting in 2011 BRFSS estimates can no longer be directly compared to estimates from previous years due to changes in sampling methodology.

Table 8. Risk and Protective Factors: Tobacco Utilization and HPV Vaccines, Montana 2008-2018

Risk and Protective Factors												
Description of Indicator	Data Source	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Adults who currently smoke cigarettes	BRFSS				22.1%	19.7%	19.0%	19.9%	18.4%	18.1%	16.7%	17.4%
Adults who currently use smokeless tobacco					7.1%	8.0%	8.0%	7.6%	8.1%	7.6%	7.7%	6.5%
Adults who currently use an electronic vapor product										3.9%	3.8%	4.3%
Adolescents who currently smoke cigarettes	YRBS <sup>31</sup>		18.7%		16.5%		15.2%		13.1%		12.1%	
Adolescents who currently use smokeless tobacco			14.6%		13.5%		13.4%		12.3%		9.8%	
Adolescents who currently use an electronic vapor product									29.5%		22.5%	
Adolescents who currently use any type of tobacco			33.5%		29.6%		28.6%		38.5%		32.7%	
Female adolescents aged 13 - 17 receiving at least one dose of HPV vaccine	NIS <sup>22</sup>	17.8%	35.0%	45.5%	52.9%	55.1%	45.8%	57.2%	46.0%	48.3%	55.9%	
Male Adolescents aged 13-17 receiving at least one dose of HPV vaccine						16.8%	28.3%	33.3%	36.0%	40.6%	43.3%	

Table 9. Provisions for Dental Services: Workforce, Montana 2008-2018

Provisions for Dental Services												
Description of Indicator	Data Source	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Number of licensed dentists with Montana address	CDC <sup>30</sup>	538	551	713	612	620	670	639	649	615	653	648
Number of dentists with at least 1 paid claim	MOHP <sup>31</sup>	334	351	338	361	379	418	536	559	606	610	577
Number of dentists 50+ beneficiaries		67	70	112	143	218	369	376	406	493	512	409
Number of dentists with ≥ \$10,000 in paid Medicaid claims		118	200	82	138	154	231	412	426	482	489	461
Number of dental hygienists with Montana address		523	527	589	604	611	629	672	672	677	739	

<sup>28</sup> Montana Department of Public Health and Human Services, Montana Vital Statistics Annual Report, 2004-2013

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