The State of the State's Oral Health

Montana Oral Health Program

A report on the oral health of Montanans, 2017

MONTANA DPHHS
Healthy People. Healthy Communities.
Department of Public Health & Human Services

Table of Contents

Executive Summary 1
Introduction 2
Montana 3
Prevalence of Oral Diseases 4
- Tooth Decay 4
- Tooth Loss 6
- Oral Cancer 9

Risk and Protective Factors 10
- Fluoride 10
- Preventive Care and Dental Sealants 11

Provision of Dental Services 13
- Dental Workforce 13
- Utilization and Access in Dental Care 16
- Economic Impact 18
- Community-based Dental Clinics 19
- Dental-related Emergency Department Encounters 21

Conclusions 21
Recommendations 21
Methodology 22
Definitions 23

List of Figures

Figure 1 Montana American Indian Reservations

Figure 2 Prevalence of decay experience, untreated decay and urgent need in the primary and permanent teeth of third grade children, Montana 2006 and 2014

Figure 3 Prevalence of decay experience and untreated decay in third grade children by race, Montana 2014

Figure 4 Prevalence of decay experience and untreated decay in third grade children by national school lunch program (NSLP) participation, Montana 2014

Figure 5 Percent of respondents that reported having tooth loss by race, disability and education level, 2014

Figure 6 Percent of respondents that reported having tooth loss by income, 2014

Figure 7 Percent of respondents age 65+ years that reported losing five or fewer teeth due to decay or gum disease, 2012 and 2014

Figure 8 Percent of respondents age 65+ years having lost all natural teeth due to decay or gum disease, U.S., 2012

Figure 9 Prevalence of dental sealants in Montana third grade children, 2006 and 2014

Figure 10 Prevalence of dental sealants in Montana third grade children by race, 2014

Figure 11 Percent of Medicaid-enrolled children age 1-20 years that received preventive dental care and age 6-9 years that received dental sealants, 2012-2015

Figure 12 Ratio of licensed resident dentists per 5,000 county residents, 2015

Figure 13 Montana dental professional shortage areas, 2014

Figure 14 Montana health planning regions

Figure 15 Utilization of dental care within the past year among Montana adults by income, 2014

Figure 16 Utilization of dental care within the past year among Montana adults by race, education level and disability, 2014

Figure 17 Consumer out-of-pocket health care expenditures, U.S. Bureau of Labor and Statistics, 2008

Figure 18 Montana Health Resources Services and Administration (HRSA) grantee dental clinics, 2015

Figure 19 Number of dental services and dental users at HRSA grantee dental clinics, Montana, 2007-2014

Figure 20 Number and type of dental procedures at HRSA grantee dental clinics, Montana, 2014

Figure 21 Percent of third grade students with decay experience, U.S.

List of Tables

Table 1 Population data, Montana and U.S. estimates, 2014

Table 2 Percent of adult respondents with a dental visit in the past year, past 5 years and more than 5 years by health planning region, Montana 2014

Table 3 Prevalence of oral disease: Montana adults, 2004-2014

Table 4 Prevalence of oral disease: Montana children, 2004-2014

Table 5 Prevalence of oral disease: Montana American Indian children, 2004-2014

Table 6 Risk and protective factors: Fluoride and Medicaid utilization, Montana 2004-2014

Table 7 Risk and protective factors: Adult and FQHC utilization, Montana 2003-2014

Table 8 Risk and protective factors: Tobacco utilization and HPV vaccines, Montana 2004-2014

Table 9 Provisions for dental services: Workforce, Montana 2004-2014

Executive Summary

Prevalence of disease among Montana children:

- Sixty-five percent of Montana children experienced dental decay by the time they reach 3rd grade in 2014 and nearly one in four had untreated decay during 2014.
- The prevalence of tooth decay among American Indian children was significantly higher than white children.

Prevalence of disease among Montana adults:

- One in six elderly (17%) adults (age +65 years) reported they had lost all natural teeth to decay or gum disease in 2014.
- Montana incidence of oral cancers were 11.8 per 100,000 citizens from 2008-2012 which was similar to the national incidence of 11.3 during the same time period.[1]
- 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 2014.
- Only 34% of Montana residents resided in communities with optimally fluoridated water compared to 74% among the U.S. population during 2014.[2]
- In 2014, Montana third grade children had a higher prevalence of dental sealants than the general U.S. third grade population; MT 55%, U.S 32%.

Provisions for Dental Services

- In 2014, Montana had 76 dental health professional shortage areas.
- Over 40% of dental care expenditures were paid out-of-pocket, compared to 17% of out-of-pocket total healthcare expenditures.[3]

Introduction

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.[4] 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.[5]

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.

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

http://www.dphhs.mt.gov/publichealth/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 2015 just over 1 million people resided in Montana. The majority of Montana citizens are white, non-Hispanic. The median household income from 2011 to 2015 was $47,169, compared to the national median of $53,482.[6]

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).

Figure 1. Montana American Indian Reservations

Table 1. Population Data, Montana and U.S. Estimates, 2015

	MT	U.S.
	%	%
Age in years		
Under 5	6.0	6.2
Over 65	17.2	14.9
Gender		
Male	50.3	49.2
Female	49.7	50.8
Race/Ethnicity		
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

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 not changed over the last decade and remained higher than the U.S. rate of 52% (Figure 2, Appendix Figure 21).[7] American Indian and low-income children had a significantly higher prevalence of tooth decay in 2014 Montana oral health surveillance (Figures 3 & 4).[8]

Healthy People 2020

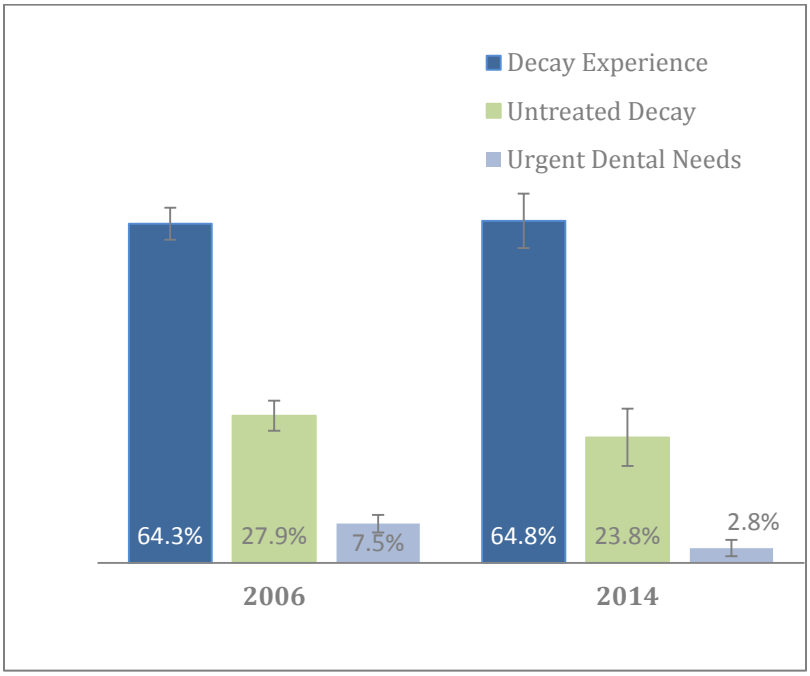
OH-1 Reduce the proportion of children and adolescents who have dental caries experience in their primary and permanent teeth.

OH-2 Reduce the proportion of children and adolescents with untreated decay.

OH-3 Reduce the proportion of adults with untreated dental decay.

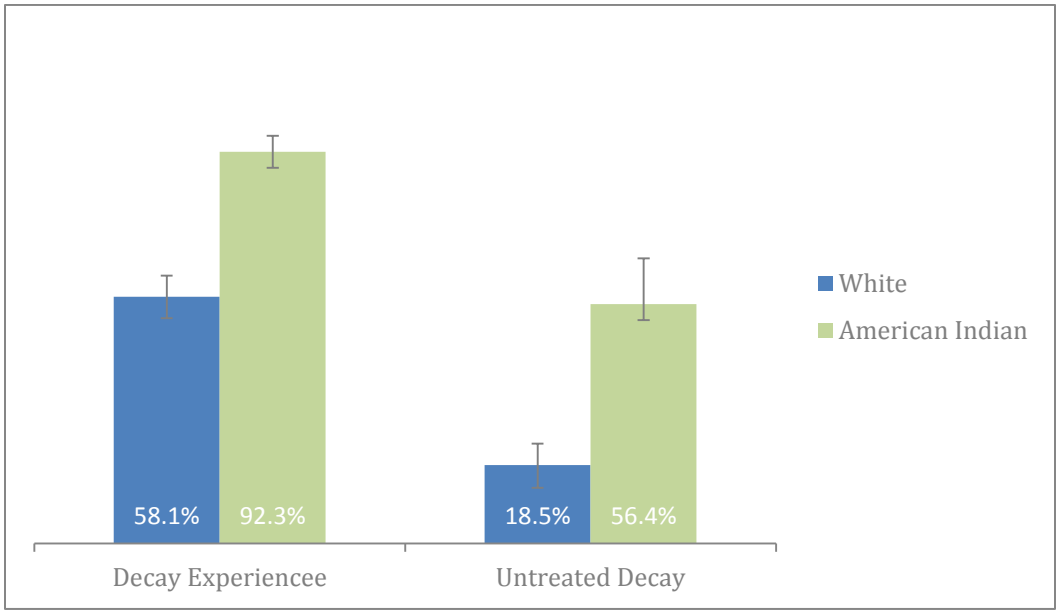
OH-7 Increase the proportion of children, adolescents, and adults who used the oral health care system in the past year.

Figure 2. Prevalence of Decay Experience, Untreated Decay and Urgent Need in Primary and Permanent Teeth of Third Grade Children, Montana 2006 and 2014.



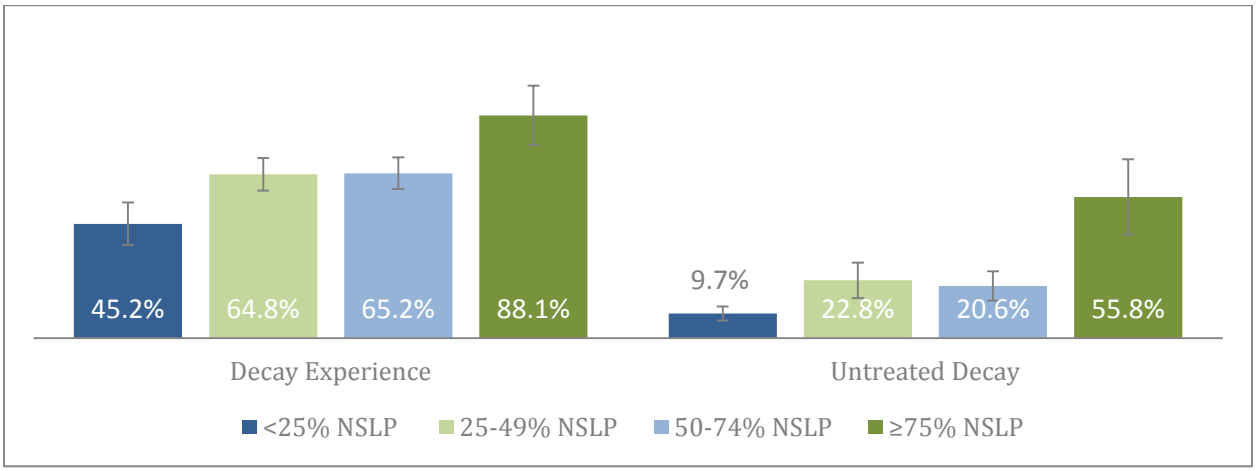
*Error bars represent 95% confidence intervals
Data Source: Montana Basic Screening Survey, 2006 and 2014.

Figure 3. Prevalence of Decay Experience and Untreated Decay in Third Grade Children by Race, Montana 2014.



Data Source: Montana Basic Screening Survey, 2014.

Figure 4. Prevalence of Decay Experience and Untreated Decay in Third Grade Children by National School Lunch Program (NSLP) Participation, Montana 2014.



Data Source: Montana Basic Screening Survey, 2014.

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). Indian Health Service dental surveillance conducted in 2010 on 2-5 year old children indicated that in the Billings Service Area:

- 69% had decay experience
- 43% had untreated decay
- 7% had urgent need for dental care[9]

Tooth Loss

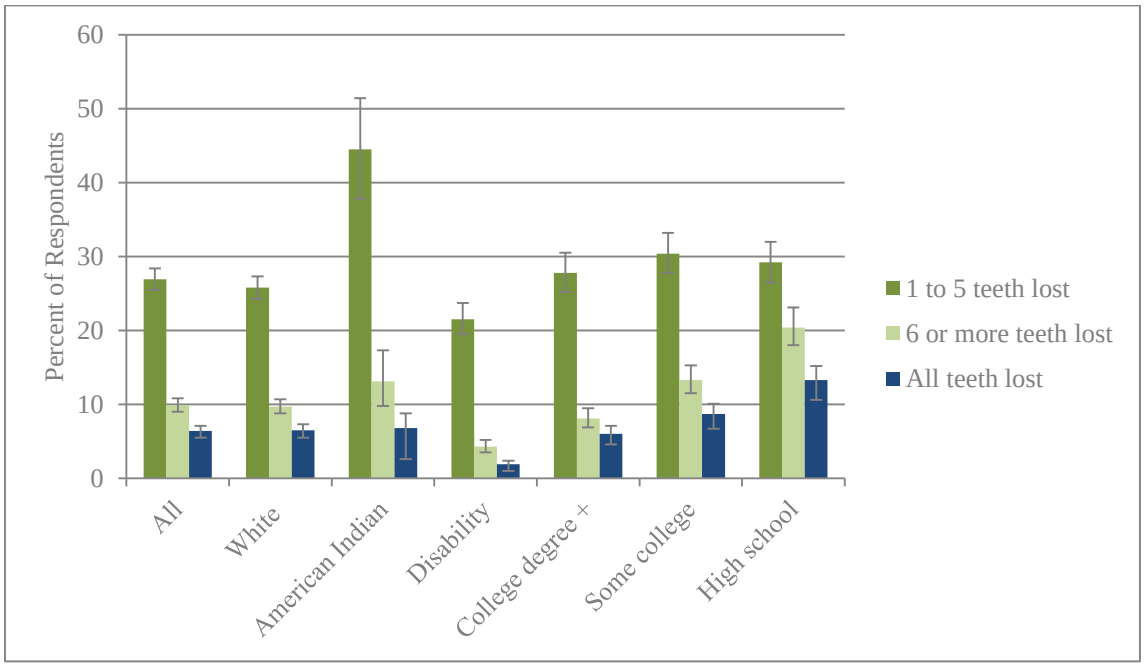
Tooth loss is an important indicator of oral health and access to dental care among adults. Periodontal disease is the most common cause of tooth loss.[10] In 2014, 43.1% (95% confidence interval 41.5-44.7) of Montana adults reported having had at least one tooth lost and 6.4% (5.7-7.1) had all teeth lost. Among adults over age 65 years, 16.7% (14.7-18.9) reported no remaining natural teeth.[11] Race, education level and income were associated with tooth loss among Montana adults (Figures 5 and 6).[12]

Healthy People 2020

OH-4 Reduce the proportion of adults who have ever had a permanent tooth extracted because of dental caries or periodontal disease.

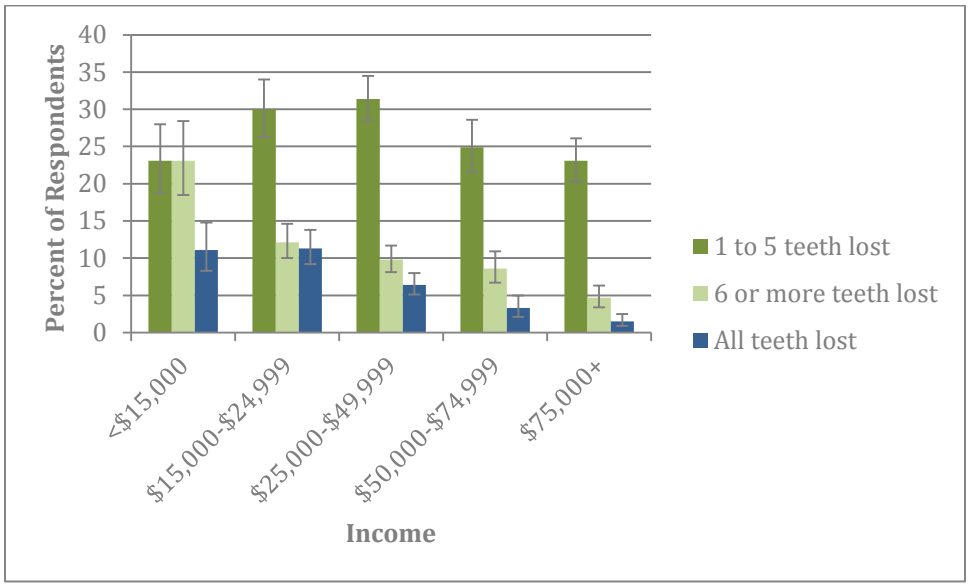
D-9 Increase the proportion of persons with diagnosed diabetes who have at least an annual dental examination.

Figure 5. Percent of Respondents that Reported Having Tooth Loss by Race, Disability and Education Level, Montana, 2014.



Data Source: Montana Behavioral and Risk Surveillance Survey

Figure 6. Percent of Respondents that Reported Having Tooth Loss by Income, 2014.



Data Source: Montana Behavioral and Risk Surveillance Survey

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 2012 among Montana adults over the age of 18 years with diabetes, 18.2% (15.0-21.9) reported they had lost all of their natural teeth to decay or periodontal disease. Estimates in 2014 improved slightly to 15.0% (11.7-18.4), although the difference was not statistically significant.

Lower utilization of dental care may be a contributing factor in tooth loss among individuals with diabetes. In 2012, just over half (53.8%, 49.4-58.2) reported a dental visit in the last year. Utilization increased slightly in 2014 to 56.0% (51.0-60.9), 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

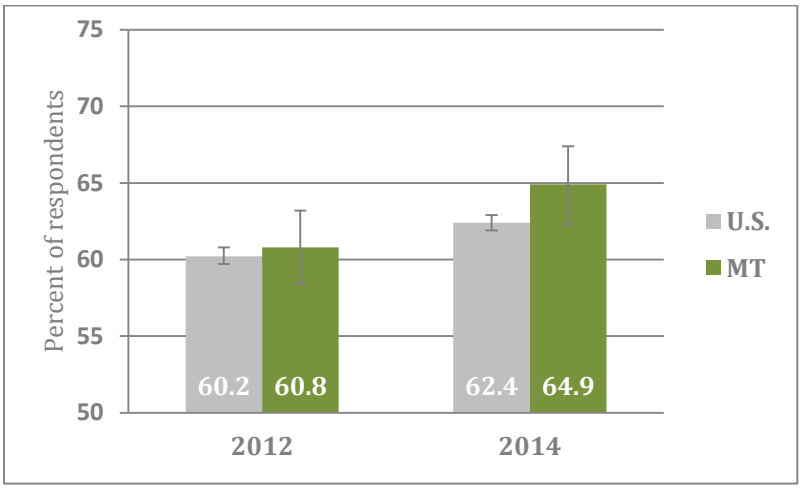
According to the Administration on Aging by 2050 there will be over 48 million older adults in the U.S., with the 60+ year old the fastest growing segment of the population.[13] The U.S. Census Bureau estimates that over 30% of the Montana population will be over the age of 60 by 2030.[14] Unlike previous generations, Baby Boomers will more likely retain natural teeth.[15] 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.[11]

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. Reported rates of tooth retention among elderly in U.S. and Montana increased between 2012 and 2014, although Montana's increase

was not statistically significant (Figure 7).[12]

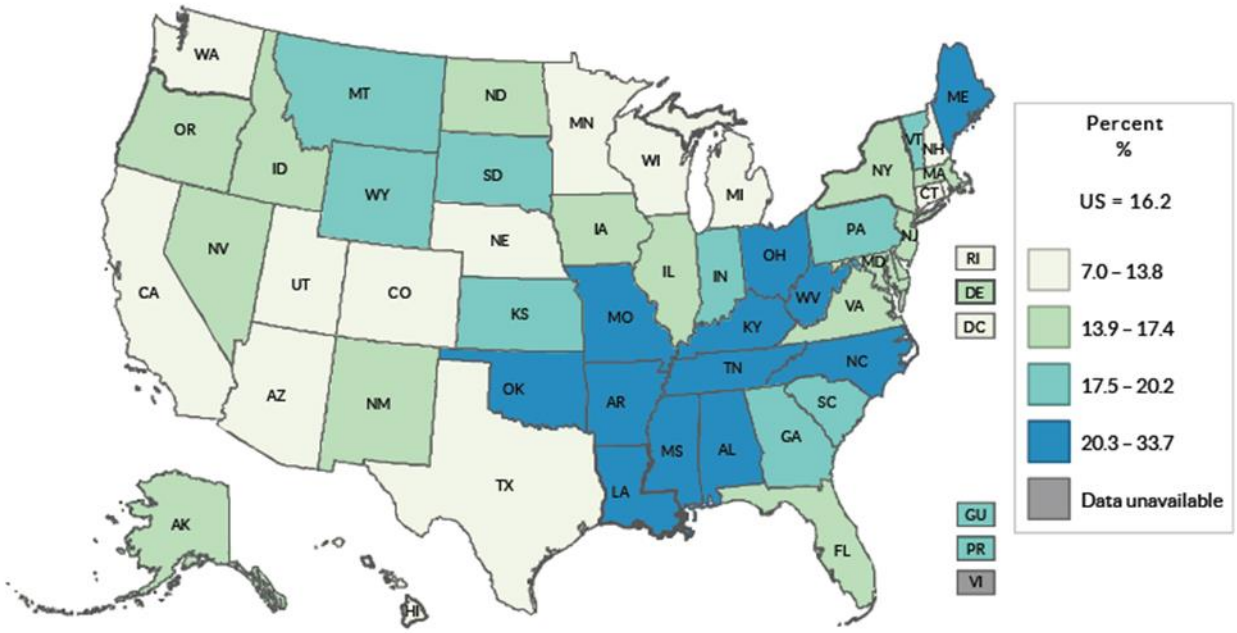
In 2014, over one-third (36.5%, CI 34.0-39.1) of adults over the age of 65 years in Montana reported they had not visited a dental clinic in the past year. One in six, 16.7% (14.7-18.9), reported they had lost all of their natural teeth, which was lower than 2012 estimates. Figure 8 outlines 2012 estimates of respondents aged 65+ years that reported loss of all natural teeth (MT 18.1%; 16.2-20.0) throughout the U.S.

Figure 7. Percent of Respondents Age 65+ Years who Reported Losing Five or Less Teeth Due to Decay or Gum Disease, 2012 and 2014.



Data Source: Montana Behavioral and Risk Surveillance Survey

Figure 8. Percent of Montanans Age 65+ Years Having Lost All Natural Teeth Due to Decay or Gum Disease, 2012.



Data Source: Centers for Disease Control and Prevention

Oral Cancer

It is estimated that in the U.S. 8,390 deaths were attributed to oral cavity and pharynx cancers, 1.4% of all cancer deaths in the U.S. Oral cancers are often diagnosed at later stages which contribute to high mortality.[16]

In 2012 mouth and throat (oropharyngeal) cancers accounted for 2.6% of all cancers diagnosed in Montana.[17] From 2010 to 2014, 33.5% of oropharyngeal cancers in Montana were diagnosed at the earliest stage. The Healthy People 2020 goal for early diagnosis (OH-6) is 35.8%. The incidence of mortalities related to oral cancers increased over the last decade (Appendix Table 3).

Healthy People 2020

OH-6 Increase the proportion of oral and pharyngeal cancers detected at the earliest stage.

OH-14.2 Increase the proportion of adults who received an oral and pharyngeal cancer screening from a dentist or dental hygienist in the past year.

OH-15 (Developmental) Increase the number of States and the District of Columbia that have a system for recording and referring infants and children with cleft lips and cleft palates to craniofacial anomaly rehabilitative teams.

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 noted in Appendix Table 8.

HPV

Human papillomavirus (HPV) is the most common sexually transmitted disease in the U.S. and can infect the tissues of the mouth and throat. HPV infections are often undiagnosed and 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.[18] A 2014 study identified 72% of invasive oropharyngeal squamous cell carcinomas were positive for HPV.[19] 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.[20]

Risk and Protective Factors

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.

Healthy People 2020

OH-12 Increase the proportion of children and adolescents who have received dental sealants on their molar teeth.

OH-13 Increase the proportion of the U.S. population serviced by community water systems with optimally fluoridated water.

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 20th 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.[21]

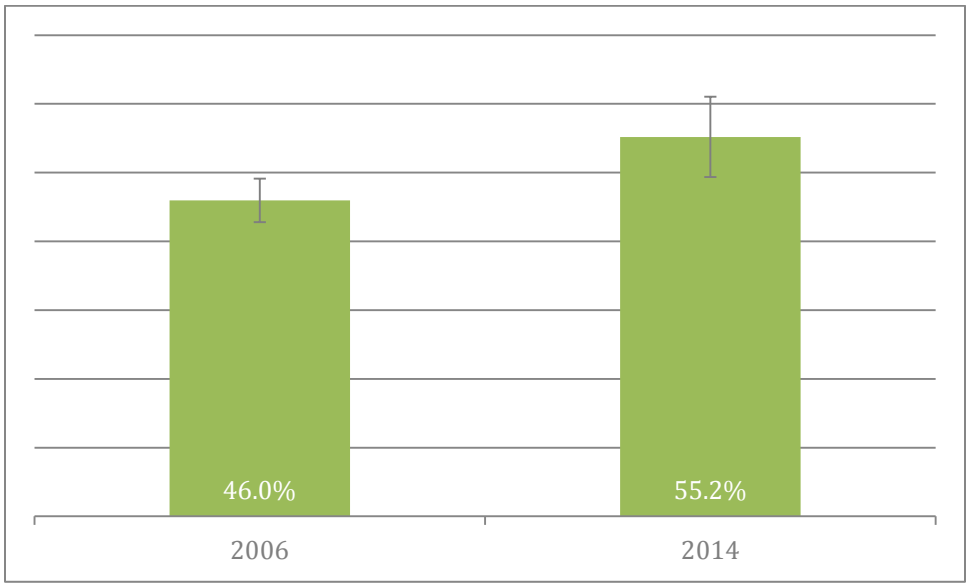
Topical Fluoride

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

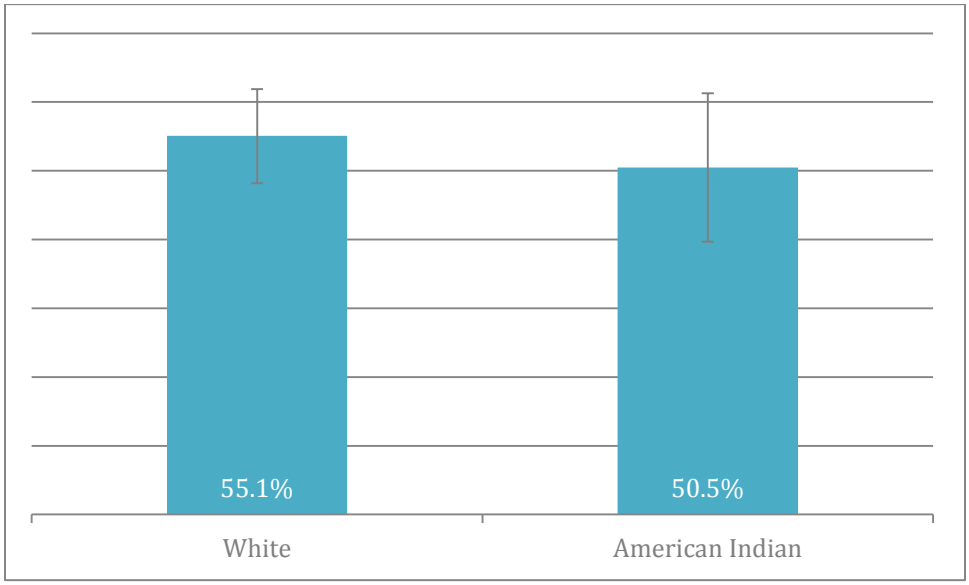
Dental sealants are a plastic coating applied in the grooves on the biting surface of back teeth, an evidence-based approach in preventing tooth decay.[22] The prevalence of dental sealants among Montana children in third grade increased from 2006 to 2014, although the increase was not statistically significant (Figure 9). Prevalence of dental sealants among American Indian children was not significantly different than white children during 2014 (Figure 10).

Figure 9. Prevalence of Dental Sealants in Montana Third Grade Children, 2006 and 2014.



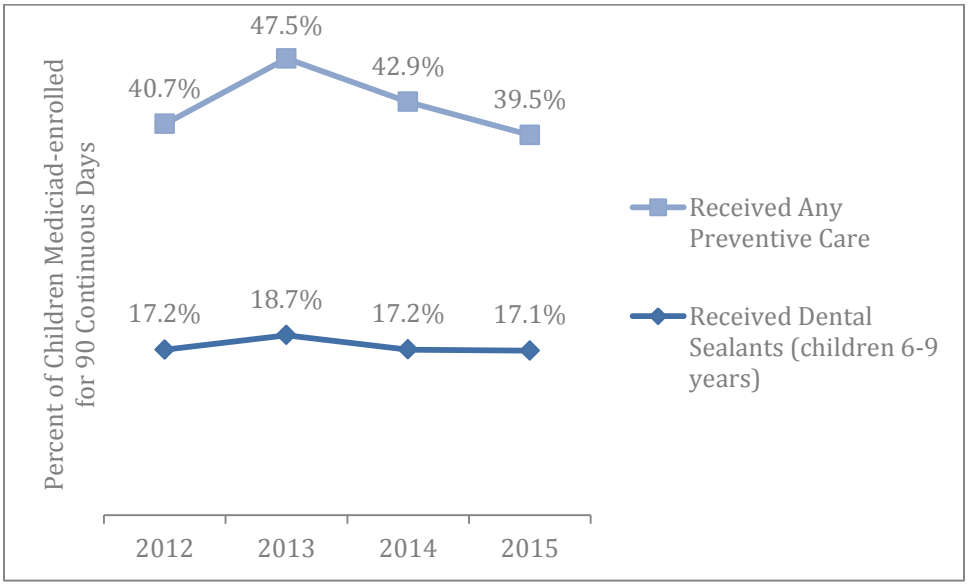
Data Source: Montana Basic Screening Survey, 2006 and 2014.

Figure 10. Prevalence of Dental Sealants in Third Grade Children by Race, Montana, 2014.



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 each year from 2012 through 2015 (Figure 11).

Figure11. Percent of Medicaid-Enrolled Children Age 1-20 Years that Received Preventive Dental Care and Children Age 6-9 Years that Received Dental Sealants, 2012-2015.



Data Source: Centers for Medicare and Medicaid, Form CMS-416 data

Provision of Dental Services

Dental Workforce

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

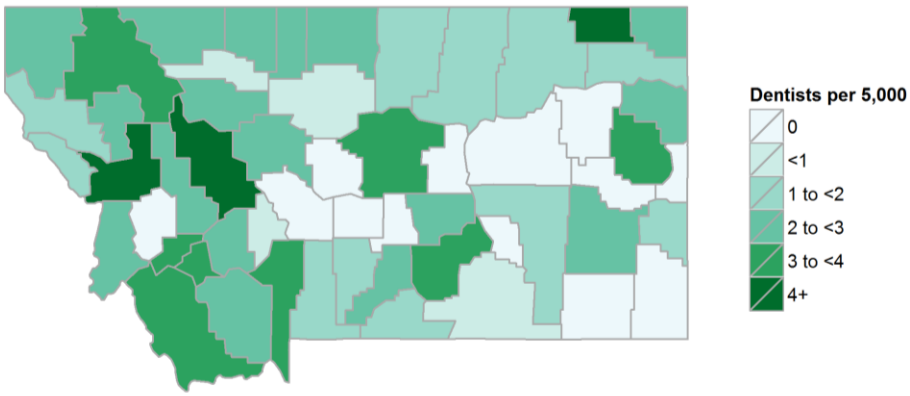
Dentists

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 2013 identified 14 counties without a residing licensed dentist. Forty-one of Montana's 56 counties had fewer dentists than the state average and 80 percent of Montana's dentists resided in 9 counties.[23] In 2015 there were 649 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.[33]

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.[24]

Figure 12. Ratio of Licensed Resident Dentists Per 5,000 County Residents, 2015.



Source: Montana Department of Labor and Industry

Dental Hygienists

In 2015 there were 672 licensed resident dental hygienists (Appendix Table 9).[33]

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.[28] 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.[26]

Denturists

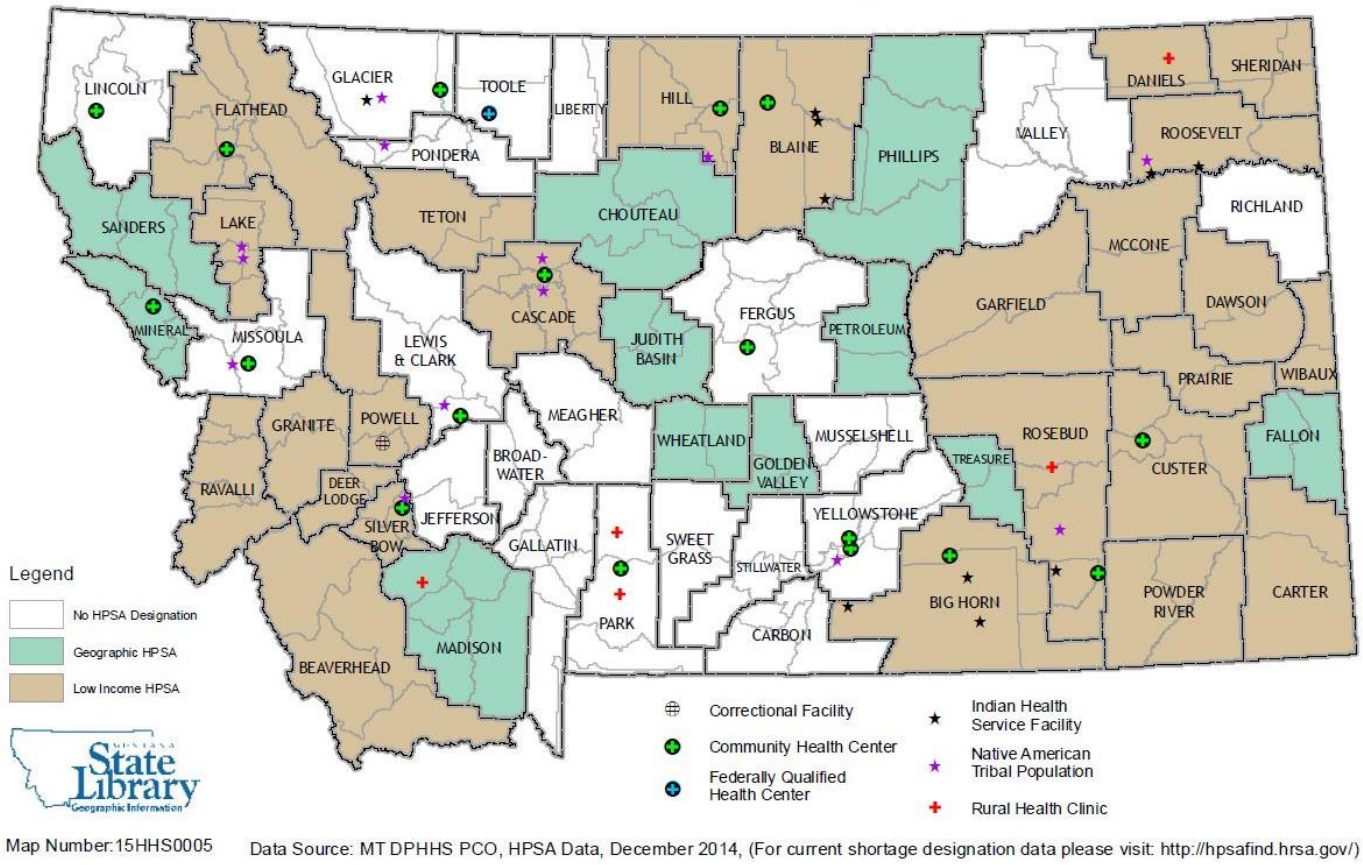
Montana denturists assess and treat people missing some or all of their natural teeth. Denturist services include removable dental prosthesis, such as dentures, partial dentures and other devices to restore and maintain natural function and appearance of teeth. Six states in the U.S. offer regulated denturity, including Montana.[25] Twenty-two denturists were licensed by the Montana Board of Dentistry in 2014.

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.

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 76 locations in Montana designated as dental professional shortage areas in 2014.[26]

Figure 13. Dental Health Professional Shortage Areas (HPSA), 2014.



Utilization and Access to Dental Care

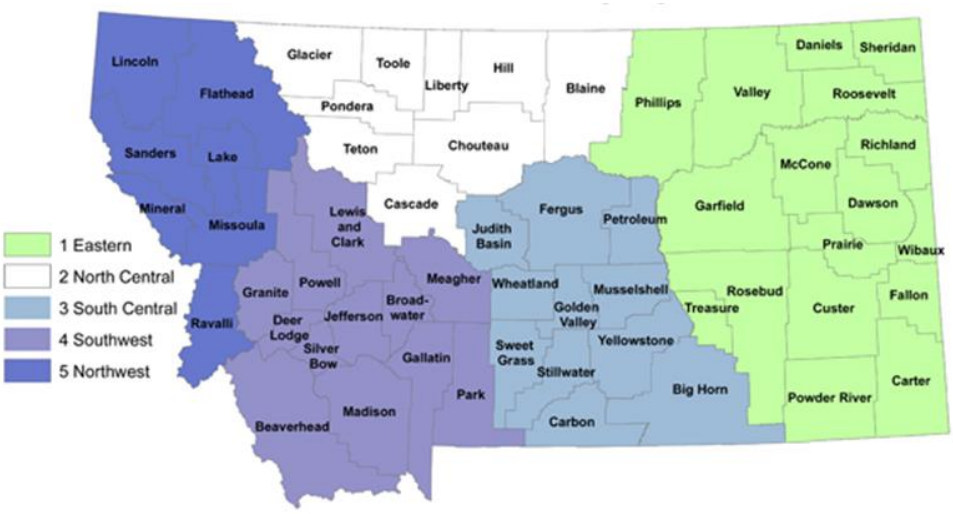
According to 2014 Behavioral Risk Factor Surveillance System (BRFSS) data 62.6% (60.9-64.2) of Montanans over 18 years of age visited a dentist, dental hygienist or dental clinic within the past year. Utilization has not significantly changed over the last decade. Montanans located in the Southwest region reported utilizing dental care more often during 2014 (Table 2).[12] 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 5 years, More than 5 years by Health Planning Region, Montana 2014.

Health Planning Region	Dental visit in past year	Dental visit 5 or more years ago
Eastern	57.4 (53.1-61.6)*	12.6 (10.0-15.8)
North Central	59.7 (55.7-63.5)	13.8 (11.3-16.8)
South Central	63.3 (59.5-66.9)	12.9 (10.5-15.7)
Southwest	68.1 (64.7-71.3)	11.3 (9.3-13.8)
Northwest	61.5 (57.9-65.0)	13.9 (11.6-16.6)

*95% Confidence Intervals
Data Source: Montana BRFSS

Figure 14. Montana Health Planning Regions



For Montana residents making less than $15,000 annually, 20.4% (16.3-25.1) reported that they had not visited a dentist in 5 or more years compared to 6.3% (4.5-8.6) making over $75,000. Less than half of low-income adults reported seeing a dentist in the last year (Figure 15).[12] Figure 16 outlines dental care utilization stratified by race, education and disability during 2014.

Figure 15. Utilization of Dental Care within the Past Year among Montana Adults by Income, 2014.

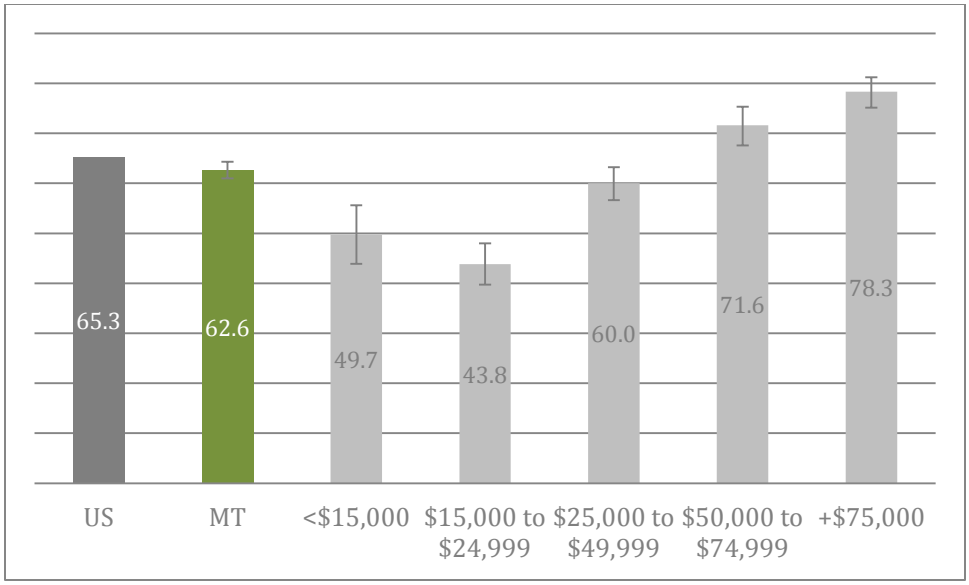
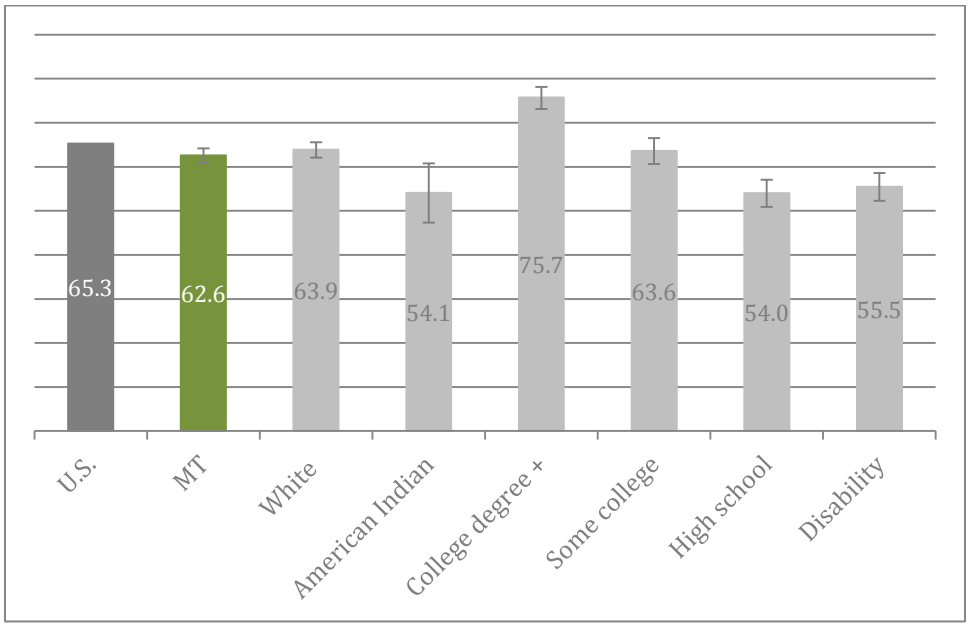


Figure 16. Utilization of Dental Care within the Past Year among Montana Adults by Race, Education Level and Disability, 2014.



Data Source: Montana BRFSS

Economic Impact

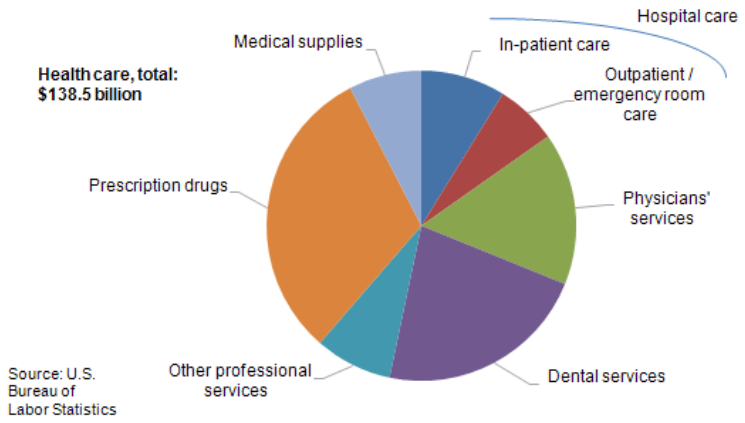
The Affordable Care Act's impact on the utilization and cost of dental care remains undetermined but a lack of information available to consumers regarding dental plans may affect coverage and utilization of dental care. A 2016 analysis of Health Insurance Marketplace data indicated that 22.9% children in Montana were enrolled in a stand-alone dental plan, U.S. rate 13.2%, and among adults 14.6% and 15.1%, respectively.[27]

Nationally, the cost of dental care exceeded many other categories of out-of-pocket healthcare spending. Figure 17 aggregates healthcare expenditures based on the 2008 Consumer Expenditure Survey, in which dental care out-of-pocket expenses totaled $30.7 billion.[28] The Montana BRFSS and National Health Interview Survey (NHIS) data indicated cost is a barrier to dental care utilization in adults 18 to 64 years of age.[10] NHIS data indicated 16% of U.S. adults with teeth 18 to 64 years had an unmet dental need within a one year period.[29]

A 2007 survey of Montana farm and ranch families reported that while the majority of respondents had medical insurance coverage only 42% had dental insurance. Three-quarters of respondents reported having out-of-pocket dental expenses which averaged $873 per year. Out-of-pocket dental related expenses were similar for those with and without insurance and consisted of over one quarter of total out-of-pocket healthcare expenses.[30] This remains consistent with a recent Bureau of Labor Statistics survey which reports that less than half (47%) of U.S. workers have access to dental benefits. This is markedly less than the 72% that have access to medical benefits.[31]

In January 2016, low income adults were enrolled in dental care coverage through either standard Medicaid or Montana Medicaid expansion, called the Health Economic and Livelihood Partnership (HELP). Additional information on Medicaid dental care can be found at: https://dphhs.mt.gov/MontanaHealthcarePrograms/Dental.aspx.

Figure 17. Consumer Out-of-Pocket Health Care Expenditures, U.S. Bureau of Labor and Statistics, 2008[38]



Among respondents that did not receive dental care within the past year:

- 25.3% reported they did not need care
- 21.4% reported cost was a deterrent
- 7.0% reported fear was the reason

---MT BRFSS, 2013

Early Periodic Screening, Diagnostic and Treatment (EPSDT)

Early Periodic Screening, Diagnostic and Treatment (EPSDT) services provide comprehensive and preventive health care, including dental care.[32] 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%).[33]

Community-based Dental Clinics

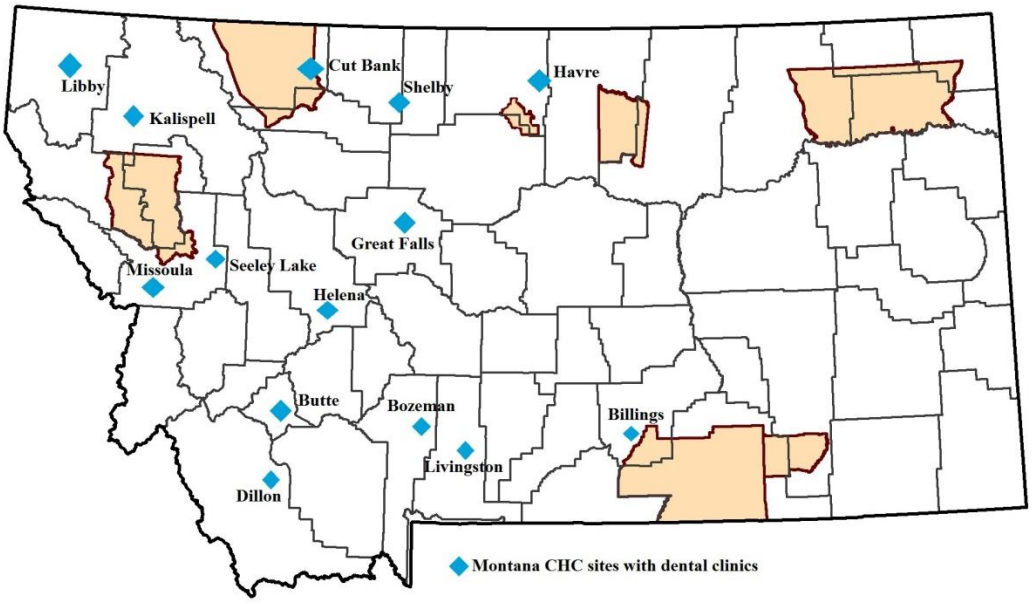
Montana Community Health Centers (CHC) play a key role in access to dental care. The U.S. Department of Health and Human Services, Health Resources and Services Administration (HRSA) through Uniform Data System (UDS) collected data from 14 grantees and satellite dental clinics in Montana (Figure 18). HRSA funded dental clinics provided services to 27,948 Montanans during 2015.

Healthy People 2020

OH-10 Increase the proportion of local health departments and Federally Qualified Health Centers (FQHC) that have an oral health program.

OH-11 Increase the proportion of patients who received dental services at Federally Qualified Health Centers each year

Figure 18. Montana HRSA Grantee Dental Clinics, 2015.



Dental services provided at CHC sites increased by over 35% from 2008 to 2015 services (Figure 19). In 2015 dental restorations (fillings) accounted for nearly 17,000 of CHC dental services on 9,136 patients. Oral surgery procedures, which include tooth extractions, were completed on 8,338 patients (Figure 20). During 2015 Montana CHC dental clinics were staffed by 24 dentists, 14 dental hygienists, and 46 dental assistants.[34]

Figure 19. Number of Dental Services and Dental Users at HRSA Grantee Dental Clinics, Montana, 2007-2015.

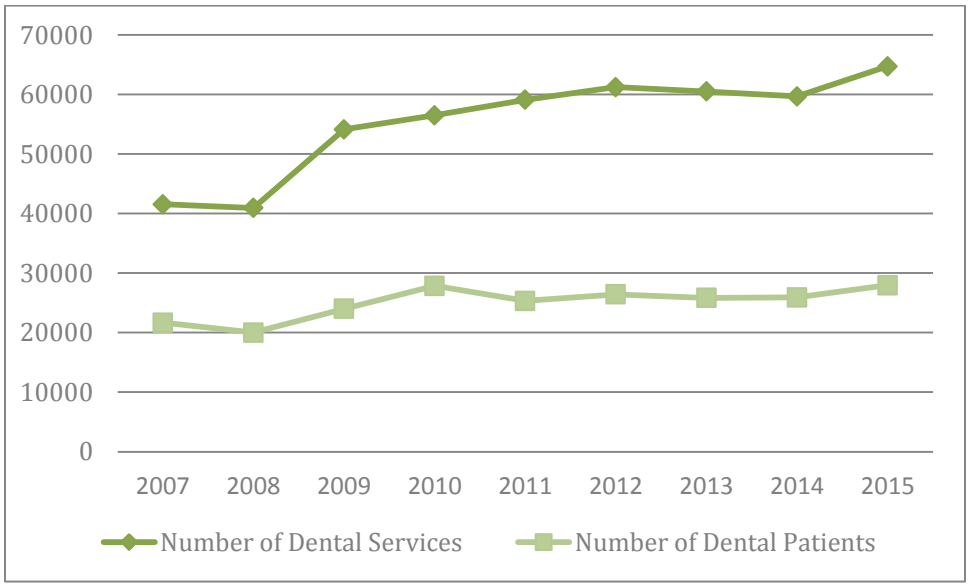
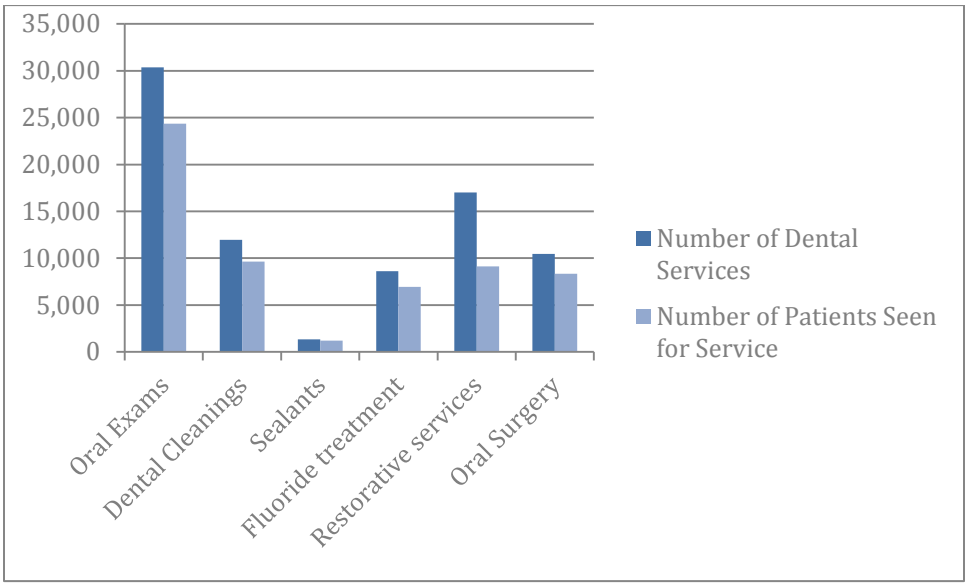


Figure 20. Number and Type of Dental Procedures at HRSA Grantee Dental Clinics, Montana, 2015.



Data Source: Health Resources and Services Administration, Uniform Data System.

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. During 2010-2012 1.0% of emergency room encounters were related to dental diagnosis. Montanans age 18-44 years who visited the emergency department for a dental need was significantly higher than other age groups. Nearly half of the emergency room dental encounters were among Montanans that did not have medical coverage. The cost of ED encounters related to dental conditions was approximately $750,000 per year, $380 per encounter. [35] 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 first burden of disease report to provide insight into the oral health of the State based on 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 was 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.

Methodology

The State of the States Oral Health, 2017 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 2005-2006 and 2014-2015 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/healthyyouth/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 programing 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. 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://www.medicaid.gov/Medicaid-CHIP-Program-Information/By-Topics/Benefits/Early-and-Periodic-Screening-Diagnostic-and-Treatment.html

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://bphc.hrsa.gov/uds/

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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Table 3. Prevalence of Oral Disease: Montana Adults, 2004-2014

Description of Indicator	Data Source	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Prevalence of Oral Diseases												
Adults												
Adults aged≥ 18 with no tooth loss	BRFSS	57.6%		56.7%		55.9%		55.7%	* Break in trend comparison	57.2%		56.9%
Adults aged≥ 18 with 1 to 5 teeth lost		26.5%		27.5%		28.2%		28.9%		26.1%		26.9%
Adults aged≥ 18 with 6 or more teeth lost		9.9%		10.0%		9.9%		9.9%		10.6%		9.9%
Adults aged≥ 18 with all teeth lost		6.1%		5.7%		5.9%		5.5%		6.1%		6.4%
Adults 65+ with all teeth extracted		19.6%		18.2%		18.7%		17.6%		18.1%		16.7%
Diabetes												
Adults with diabetes ≥18 years with all teeth lost	BRFSS									18.2%		15.0%
Adults with diabetes 55+ years with all teeth lost										22.3%		19.2%
Oral Cancers												
Frequency of death, malignant neoplasms of lip, oral cavity, and pharynx	MVS[36]	22	22	25	21	24	21	25	28	26	30	40
Age-adjusted Incidence of oropharyngeal cancers per 100,000	MCTR[16]	11.6										
Oropharyngeal cancers diagnosed at local (early) stage								33.5%				

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

Table 4. Prevalence of Oral Disease: Montana Children, 2004-2014

Description of Indicator	Data Source	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Prevalence of Oral Diseases												
Children												
3rd Graders with untreated decay	MOHP [37]			28.9%								23.8%
3rd Graders with caries experience				64.7%								64.8%
3rd graders with sealant on permanent molar				46.2%								55.2%
3rd graders with early dental needs				21.3%								-
3rd graders with urgent dental needs				7.5%								2.8%
National Survey of Children's Health												
Children with excellent or very good oral health	NSCH[38]				74.5%				72.9%			
Children with a preventive dental visit					-				76.6%			
Cleft lip/palate												
Number of newborns with cleft lip or palate	CHRIS[23]						39	43	20	21	27	35

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

Description of Indicator	Data Source	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Prevalence of Oral Diseases												
American Indian Children												
Billings Service Area aged 2-5 years with untreated decay	IHS[8]							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[39]									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 2004-2014

Description of Indicator	Data Source	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Risk and Protective Factors												
Fluoride												
Population with optimally fluoridated water systems	CDC[24]	29.4%		31.3%		30.0%		29.6%		32.0%		33.7%
Medicaid-eligibles receiving fluoride varnish application	MMP[40]										22.4%	
Medicaid Utilization of Dental Services for Children age <1 to 20 years												
Eligibles receiving any dental services	CMS[41]									45.9%		50.6%
Eligibles receiving preventive dental services	CMS								35.6%	40.7%	47.5%	42.9%
Eligibles receiving dental treatment services	CMS								21.2%	23.6%	27.6%	23.5%

Table 7. Risk and Protective Factors: Adults and FQHC Utilization, Montana 2004-2014

Description of Indicator	Data Source	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Risk and Protective Factors												
Adults who visited dentist or dental clinic												
Within the past year	BRFSS	64.7%		66.9%		64.6%		59.6%	61.4%	61.0%	62.9%	62.6%
Within the past 2 years	BRFSS	14.8%		12.5%		12.2%		13.4%	12.0%	12.4%	10.9%	12.3%
Within the past 5 years	BRFSS	9.9%		9.6%		10.2%		12.4%	12.5%	12.4%	13.7%	12.0%
5 or more years ago	BRFSS	10.4%		10.7%		12.7%		14.0%	13.5%	13.9%	12.1%	13.0%
Adult dental cleanings												
Within past year	BRFSS	60.6%		64.0%	Question no longer asked as part of the BRFSS core questionnaire							
Within the past 2 years	BRFSS	15.9%		12.4%								
Within the past 5 years	BRFSS	11.1%		9.9%								
5 or more years ago	BRFSS	10.6%		12.4%								
Never	BRFSS	1.7%		1.3%								
Federally Qualified Health Centers												
FQHC patients with dental visit	UDS	Reporting began 2007			27.1%	23.6%	26.5%	28.8%	25.0%	26.8%	26.6%	25.8%
Diabetes												
Adults with diabetes aged 18-64 years with a dental visit within the past year	BRFSS										56.3%	56.0%
Adults with diabetes age 55+ years with a dental visit within the past year	BRFSS									52.9%		
Adults with diabetes with dental visit within past 2 years	BRFSS								67.7%	66.9%	65.1%	

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

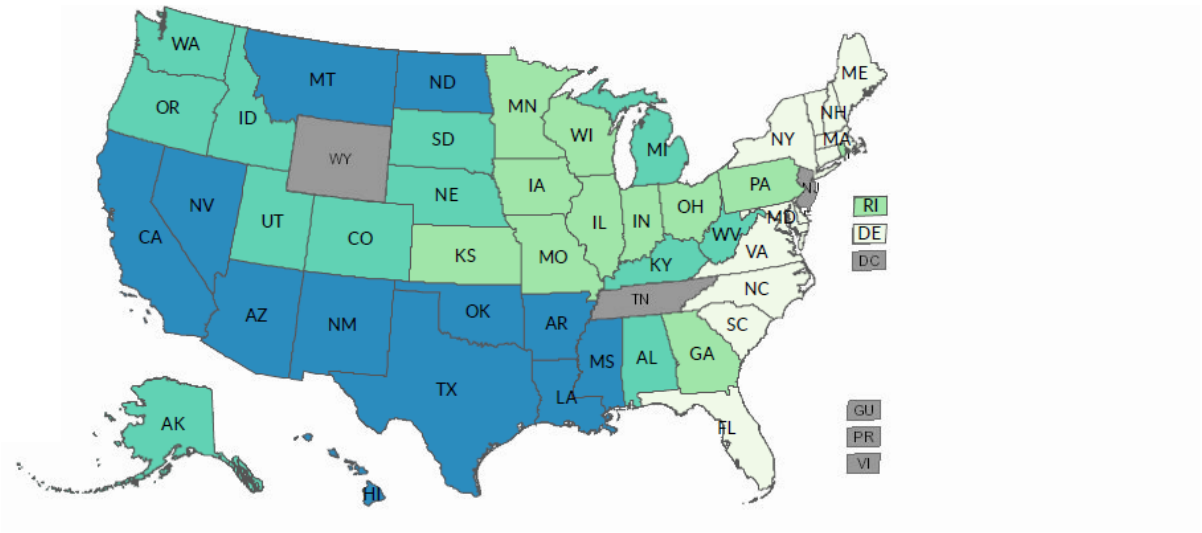
Table 8. Risk and Protective Factors: Tobacco Utilization and HPV Vaccines, Montana 2004-2014

Description of Indicator		Data Source	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Risk and Protective Factors													
Tobacco													
Adults who currently smoke cigarettes		BRFSS								22.1%	19.7%	19.0%	19.9%
Adults who currently use smokeless tobacco		BRFSS								7.1%	8.0%	8.0%	7.6%
Adolescents who currently smoke cigarettes		YRBS[31]		20.1%		20.0%		18.7%		16.5%		15.2%	
Adolescents who currently use smokeless tobacco		YRBS[31]		14.8%		12.6%		14.6%		13.5%		13.4%	
Adolescents who currently use any type of tobacco		YRBS[31]		34.2%		32.0%		33.5%		29.6%		28.6%	
Human Papillomavirus Vaccination rates													
Adolescents aged 13-17 receiving at least one dose	Female	NIS[22]					17.8%	35.0%	45.5%	52.9%	55.1%	45.8%	57.2%
Adolescents aged 13-17 receiving at least one dose	Male	NIS[22]									16.8%	28.3%	33.3%

Table 9. Provisions for Dental Services: Workforce, Montana 2004-2014

Description of Indicator	Data Source	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Provisions for Dental Services												
Workforce												
Number of dentists with Montana address	CDC[42] (2005-2009) MOHP[43] (2010-2013)		523	598	533	538	551	713	612	620	670	649
Number of dentists with at least 1 paid claim				327	332	334	351	338	361	379	418	468
Number of dentists 50+ beneficiaries				76	65	67	70	112	143	218	N/A	Data no longer collected as part of ASTDD annual reporting
Number of dentists with ≥ $10,000 in paid Medicaid claims			120	125	118	118	200	82	138	154	231	
Number of dental hygienists with Montana address			454	549	509	523	527	589	604	611	629	672

Figure 21. Percent of Third Grade Students with Decay Experience, U.S.



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