



# Oral Health in North Dakota

Opportunities and Need to Promote Oral Health Equity

North Dakota Health & Human Services  
Oral Health Program

NORTH  
**Dakota**  
Be Legendary.

Health & Human Services

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UND SMHS: University of North Dakota School of Medicine & Health Sciences

NDSU: North Dakota State University

ND HHS: North Dakota Health & Human Services

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# THIS BOOKLET DESCRIBES THE CURRENT OPPORTUNITIES TO ADDRESS AND PROMOTE GOOD ORAL HEALTH IN NORTH DAKOTA

Research and funding agencies stress the importance of using data to guide, develop, and implement effective and targeted activities to promote health equity. The data presented in this resource can aid decision makers, program developers, health professionals, dental teams, state agencies, and others when responding to the needs of North Dakota communities.

## USING THIS BOOKLET

Countless providers, dental teams, local public health units, clinicians, agencies, and programs in the state are doing amazing work to ensure a healthy North Dakota. However, there are still many opportunities to address the burden of poor oral health for the individual, the community, providers, and the State. This booklet presents data, by topic, to demonstrate opportunities to implement targeted interventions, improving not only health of the mouth, but overall health!

Tables, figures, infographics, and information from this booklet can and should be shared with community partners, implementors, and decision makers. The booklet can be shared in its entirety, but it has also been developed so that topic and population-specific infographics can be disseminated independently. All data, unless explicitly stated otherwise, are specific to North Dakota. Because this resource utilizes data from multiple secondary data sources, the terms utilized throughout will match the terms utilized by the source. For example, the terms Indigenous, American Indian, and Alaska Native will be used intentionally and to match the terms of the data source.

This booklet combines data from dozens of local, state, and national organizations. For this guide, all percentages have been rounded to the nearest whole number. More specific, current, and un-rounded data can be accessed through the [North Dakota Oral Health Surveillance](#) page. Original data files and/or sources of reported data can be found in the References or the Data Sources of this booklet. For more information, contact a member of the state Oral Health Program team listed online at [hhs.nd.gov/oral-health-program-about-us](https://hhs.nd.gov/oral-health-program-about-us).

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## INTRODUCTION

Health of the mouth is directly related to overall health. Oral diseases like tooth decay (cavities) and periodontal (gum) disease affect North Dakotans of all backgrounds. They are also associated with many serious health problems like Type II diabetes, heart disease, lung disease, stroke, dementia, low birth weight, and pre-term birth. Oral health is also linked to mental health.

Promoting good habits (brushing teeth twice a day and flossing) and supporting oral health are essential components of advancing the overall health and well-being of all North Dakotans.

In addition to these associations, poor oral health and chronic illnesses share common risk factors, which include recreational tobacco use, age, sex, weight, diet, alcohol use, stress, and trauma.

### DATA LIMITATIONS

North Dakota has the fifth smallest population in the United States at 774,948. A small, relatively homogeneous population poses a challenge to ethically collecting and reporting data for marginalized, minority populations including (but not limited to) persons who are Indigenous, Black, Hispanic, refugee, unsheltered, LGBTQ2S+ and/or Asian. This booklet largely under-reports the burden of oral disease for populations who historically encounter numerous barriers to accessing equitable health care and prevention resources.

### DEFINING ORAL HEALTH



“ Oral health is a key indicator of overall health, well-being and quality of life. It encompasses a range of diseases and conditions that include dental caries, periodontal (gum) disease, tooth loss, oral cancer, oro-dental trauma, noma [gangrene of the face], and birth defects such as cleft lip and palate.

WORLD HEALTH ORGANIZATION

“ Oral health is multi-faceted and includes the ability to speak, smile, smell, taste, touch, chew, swallow, and convey a range of emotions through facial expressions with confidence and without pain, discomfort, and disease of the craniofacial complex (head, face, and oral cavity).

WORLD DENTAL FEDERATION (FDI)

Several partners, programs, organizations, and associations in the state of North Dakota have developed, led, or participated in programs, volunteer opportunities, coalitions, and grassroots efforts to address the growing inequities in dental care access and overall population oral health. However, the burden of disease related to poor oral health and dental hygiene is still apparent in North Dakota, with some subpopulations experiencing greater inequities and barriers to resources and care than others.



## CHILDREN AND YOUTH

One of every two kindergartners have experienced tooth decay.

Children living in rural areas experience higher rates of decay.

More than two times as many kindergartners who are Indigenous have rampant decay compared to their peers.

Youth who use tobacco or alcohol are at greater risk for gum disease, oral cancer, and other oral health problems; more than one in three high school students currently use some form of tobacco.



## ADULTS

More than half of adults who are Indigenous (51%) reported no dental visit in the past five or more years.

Nearly one in three adults who are not Indigenous (31%) reported no dental visit in the past five or more years.

Women who had their teeth cleaned during their most recent pregnancy: White, 53%; Hispanic, 28%; American Indian, 26%; other races, 25%.

Among those ages 65 or older, 35% reported no dental visit in the past five or more years.



## DENTAL WORKFORCE

Roughly 38% of dentists report accepting any and all Medicaid patients.

Based on the state population, only 44% of the need for dental providers is being met.

There are 69 dental care health practitioner shortage areas (HPSAs) designated in the state.

Population of Dental Care HPSA's is 153,291.

North Dakota has 52 dentists per 100,000 people compared to 61 for the U.S. overall.

## GLOBAL HEALTH COVID-19 PANDEMIC: 2020

An important consideration is that data presented in this guide likely under-estimate inequities and the growing need for both preventive and treatment-based dental services following the global health pandemic (COVID-19). The COVID-19 pandemic resulted in delayed care, followed by an influx in demand and growing workforce shortages. This impact will likely be evident in future access, utilization, and oral health outcome data.

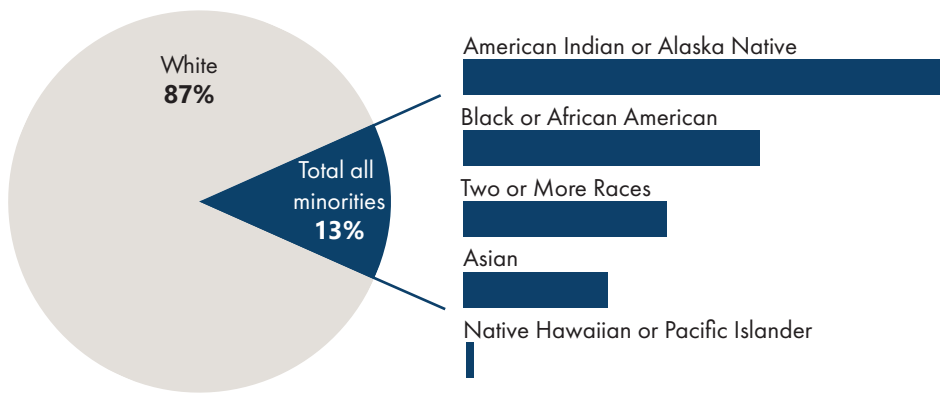


PHOTO BY ANZLEY HARMON, ND TOURISM

**774,948**  
residents in North Dakota

**15%** growth since **2010**

**4<sup>TH</sup>**  
fastest growing population between **2010 & 2020**



Per capita income ranked 13th in the U.S. at **\$65,315**

**1 IN 10** live in poverty

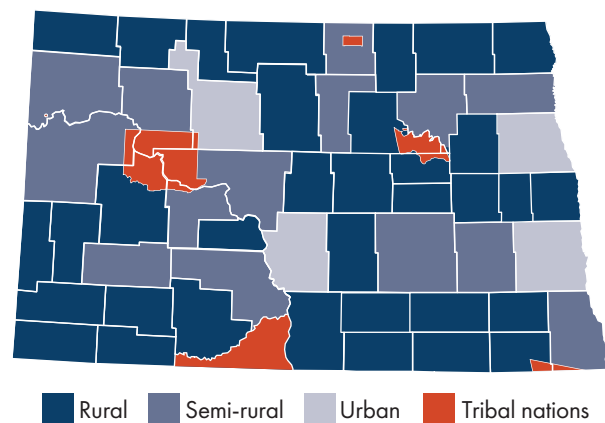
**18%** are enrolled in Medicaid

**1 IN 10** children under age 17 live in poverty

**1 IN 3** people have a Bachelor's degree or higher

**1 IN 12** older adults live in poverty

**50%** of the state population lives in nonmetro (rural and semi-rural) areas



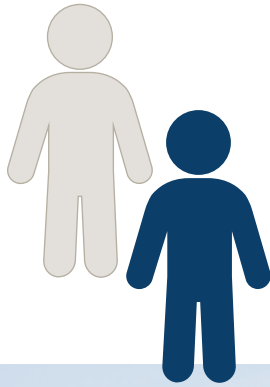
## CHILDREN

Data indicate a need to increase dental visits for children, especially those under age five, and a need to educate parents and childcare providers on how to prevent tooth decay.

Tooth decay is the most common childhood disease.

**1 IN 2**

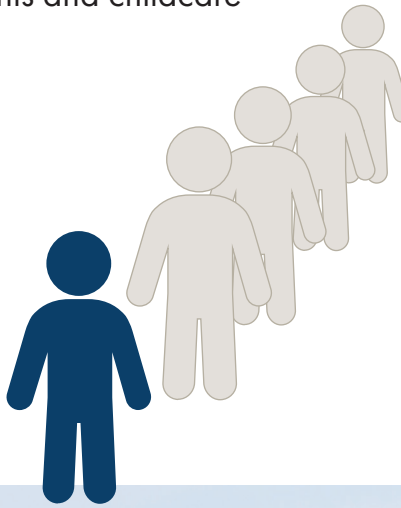
kindergartners have experienced tooth decay



Tooth decay is preventable.

**1 IN 5**

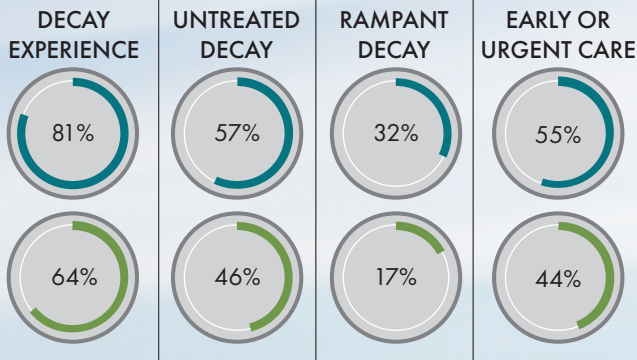
children in Head Start did not receive needed dental treatment.



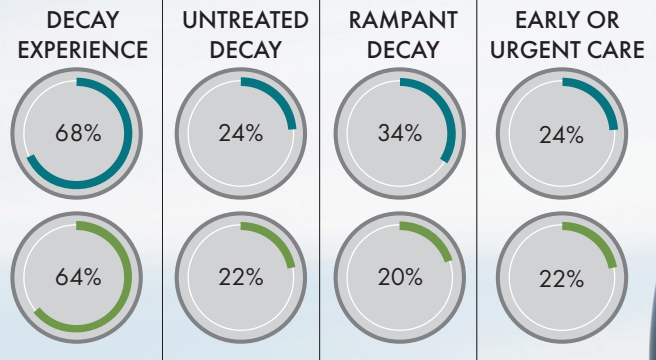
### NEED FOR DENTAL TREATMENT

The number of children in Head Start, kindergarten, and third grade who need dental treatment would fill 115 school buses. Younger children throughout the state, along with those living in rural areas, have unmet oral health needs. Children living in rural areas of North Dakota continue to experience higher rates of decay and need for dental treatment.

#### KINDERGARTENERS



#### THIRD GRADERS



■ Rural ■ Urban

# ADOLESCENTS | OVERVIEW OF ORAL HEALTH

Dental decay is at its highest rate during adolescence. One way to prevent cavities and other oral health problems is to have regular dental checkups.

Youth who use tobacco or alcohol are at greater risk for gum disease, oral cancer, and other oral health problems.

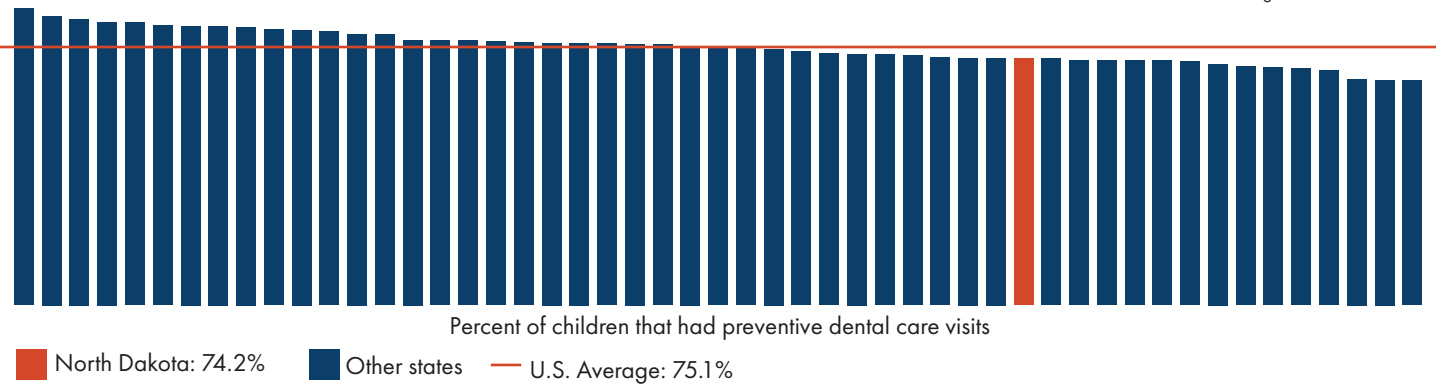
More than  
**1 IN 10**  
middle school students  
currently use  
some form of tobacco

More than  
**1 IN 3**  
high school students  
currently use some  
form of tobacco

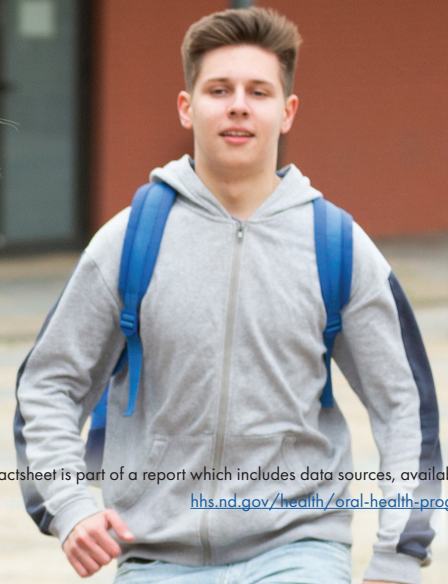
Nearly  
**1 IN 3**  
high school students  
drink alcohol

During the past 12-months, more than **1 IN 4 CHILDREN\*** went with  
**NO PREVENTIVE DENTAL CARE VISIT**

\* ages 1-17



Roughly  
**1 IN 4**  
middle and high school students had NO  
dental visit in the past 12 months

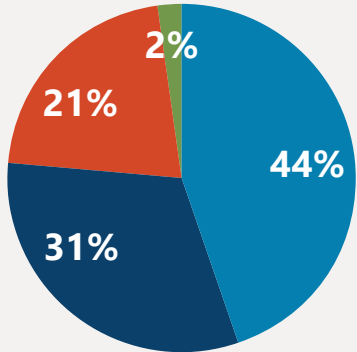




Preventive dental visits are a proven way to help prevent oral disease. However, many adults go without regular dental cleanings. Untreated tooth decay may lead to tooth loss or other related health problems. Factors that increase the likelihood of tooth decay include a person’s level of education, income level, membership in specific racial or ethnic groups, smoking status, and presence of other chronic diseases.

ADULT DENTAL VISIT

ADULTS WITH A DENTAL VISIT IN THE PAST YEAR



- College graduate
- High school graduate
- Some college or technical school
- Some high school

**1 IN 3**

adults had NO dental cleaning in the past year

**51%**

Indigenous adults have NOT seen a dentist in FIVE or more years compared to

**31%** who are non-Indigenous

The age group consistently reporting the largest percentage of people with NO dental visit in the last year are those between the ages of 25 and 34 years old



ADULTS WITH DIABETES

**35%**

of adults with diabetes have lost one or more teeth due to tooth decay or gum disease compared to **26%** of those without diabetes

Adults in the U.S. with diabetes, liver disease, or rheumatoid arthritis are more than

**TWICE AS LIKELY**

to have an urgent dental treatment need



Over twice as many adults with diabetes have

**LOST SIX OR MORE TEETH**

due to tooth decay or gum disease compared to those without diabetes

With diabetes

**27%**

Without diabetes

**12%**

Long term care residents experience

## MORE UNMET NEEDS FOR DENTAL CARE

compared to other persons their age

ORAL HEALTH DISEASES ARE ASSOCIATED WITH MANY OTHER SERIOUS HEALTH PROBLEMS



Tooth Loss



Mouth Cancer



Bad Breath



Heart Disease



Diabetes



Stroke/  
Dementia



Respiratory Infections



Gum Disease

Long term care residents experience

## HIGH RATES OF TOTAL TOOTH LOSS

Almost **1 IN 4** Long-term care residents have untreated tooth decay

Long term care residents with total tooth loss

**32%**

Adults in the state with total tooth loss

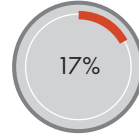
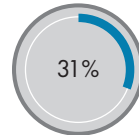
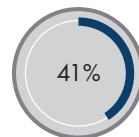
**13%**



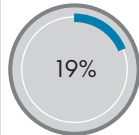
## GREATER RISK OF DENTAL PROBLEMS

### INSURANCE STATUS

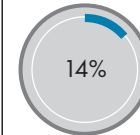
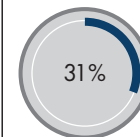
TOTAL LOSS OF NATURAL TEETH



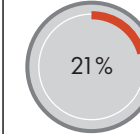
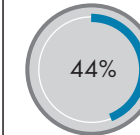
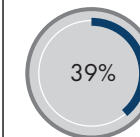
UNTREATED DECAY



SEVERE GUM DISEASE

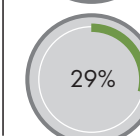
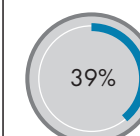
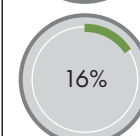
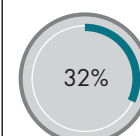
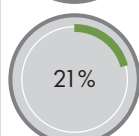
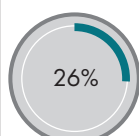
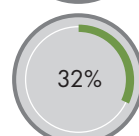
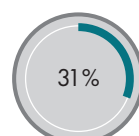


EARLY OR URGENT CARE



■ Medicaid ■ Medicare/No Insurance ■ Private/Third party

### RURAL VS. URBAN



■ Rural ■ Urban

# OVERVIEW OF ORAL HEALTH | PREGNANT PERSONS

Some pregnant persons experience significant barriers to receiving dental care. During pregnancy, individuals may be more prone to gum disease and cavities.



## DENTAL HYGIENE DURING PREGNANCY

Regular dental cleanings can reduce gum disease and cavities.

### INSURANCE

**27%**

lack dental insurance

### AFFORDABILITY

**15%**

cannot afford to go to the dentist or dental clinic

### MEDICAID PROVIDERS

**7%**

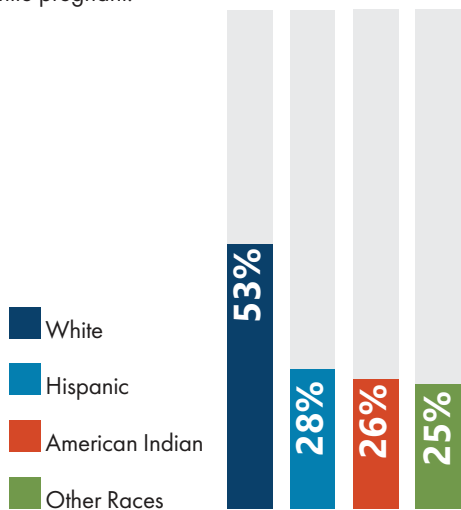
cannot find a dentist accepting Medicaid patients

With a few exceptions, people who are older, have higher levels of education, and have higher income, are more likely to have their

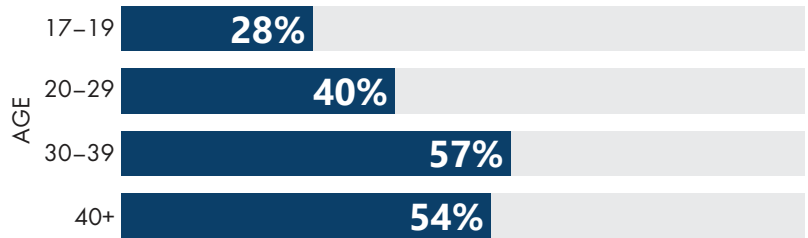
## TEETH CLEANED DURING PREGNANCY

### PERCENT OF PREGNANT PERSONS WITH A PREVENTIVE DENTAL VISIT

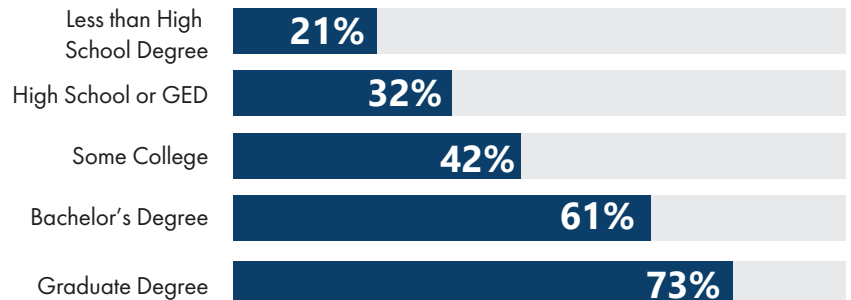
Pregnant persons who are from a minority race or ethnicity are about HALF as likely as their white peers to have visited a dentist for a cleaning while pregnant.



### PERCENT OF PREGNANT PERSONS WHO WILL HAVE THEIR TEETH CLEANED DURING PREGNANCY BY AGE



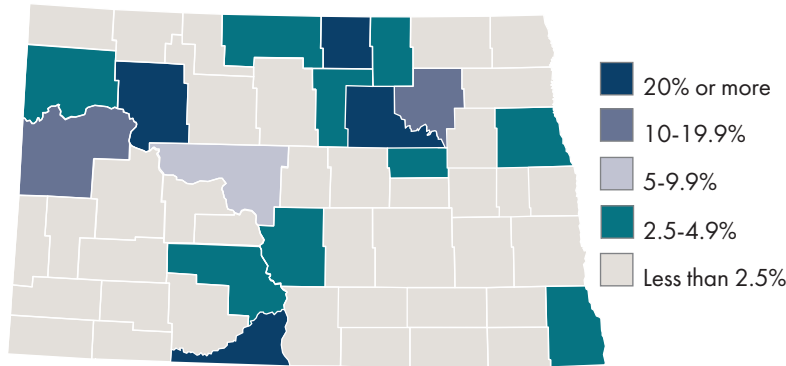
### PERCENT OF PREGNANT PERSONS WHO WILL HAVE THEIR TEETH CLEANED DURING PREGNANCY BY EDUCATION LEVELS



# INDIGENOUS HEALTH | OVERVIEW OF ORAL HEALTH

## ORAL HEALTH INEQUITIES PRESENT A MAJOR CONCERN FOR OVERALL HEALTH AMONG INDIGENOUS POPULATIONS.

PERCENT OF INDIGENOUS POPULATION PER COUNTY



### Tooth pain causes more frequent emergency room visits.

American Indians experience **3X** as many emergency visits for tooth pain compared those who are white.

**44,418**

AIAN people in the state or 5.7% of the population

**6<sup>TH</sup> LARGEST**

American Indian and Alaska Native (AIAN) population in the U.S.

**5** federally recognized Tribes

**1** Tribal community

Poor oral health is associated with other chronic conditions including diabetes, heart disease, respiratory infection, ischemic stroke, Alzheimer's disease, mortality related to pneumonia, and chronic obstructive pulmonary disease (COPD) exacerbations.



### Type 2 Diabetes

Diabetes is the fourth leading cause of death for American Indian and Alaska Native adults.



### Respiratory Disease

Heart disease is the first and second leading cause of death for American Indian and Alaska Native males and females respectively.



### Cardiovascular Disease

Respiratory infections and chronic lower respiratory disease are among the top ten leading causes of death for AIAN adults.

Barriers to receiving care and risk factors for poor oral health are higher for AIAN families



#### BARRIER

#### Living in a rural county

#### RISK FACTOR

Long distances to receive care  
19 out of 53 counties have 0 dentists



#### BARRIER

#### Unmet need for culturally representative care

#### RISK FACTOR

0.3% of dental providers in the U.S. are AIAN



#### BARRIER

#### Socioeconomic challenges

#### RISK FACTOR

71% on Medicaid in 2021  
80% on Medicaid DID NOT receive dental care



#### BARRIER

#### Adverse childhood experiences (ACEs)

#### RISK FACTOR

44% of AIAN adults have experienced 3 or more ACEs



#### BARRIER

#### Water quality, fluoridation, and access issues

#### RISK FACTOR

89% of kindergartners drink pop daily  
Nearly HALF of community water systems lacking fluoride are in counties with an Indian reservation



**GREATER NEEDS EXIST FOR URGENT CARE**

More than **2X** as many AIAN kindergarteners have rampant tooth decay compared to all kindergarteners

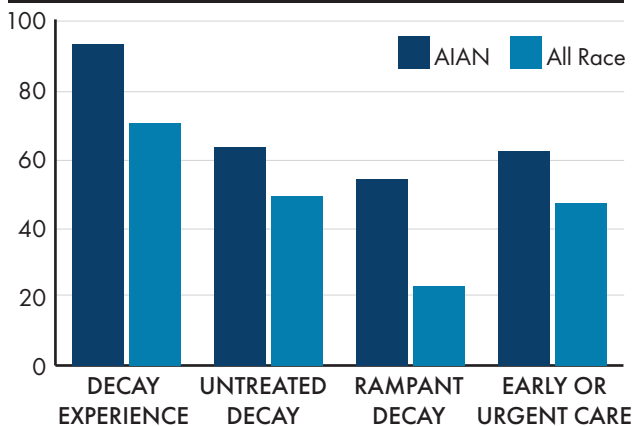
**ORAL HEALTH NEED STARTS IN CHILDHOOD**

**9 IN 10** AIAN kindergarteners and third graders have experienced tooth decay

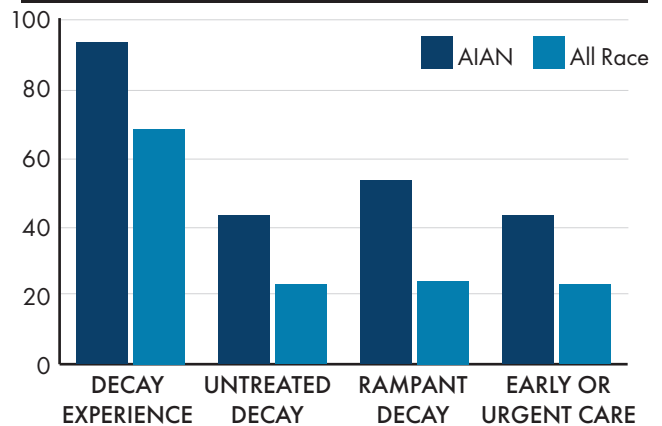
**CHILDREN WHO ARE INDIGENOUS EXPERIENCE WORSE ORAL HEALTH CARE THAN THEIR NON-INDIGENOUS PEERS**

AIAN kindergarteners are **30%** more likely to have untreated decay compared to their peers

**KINDERGARTNERS**



**THIRD GRADERS**



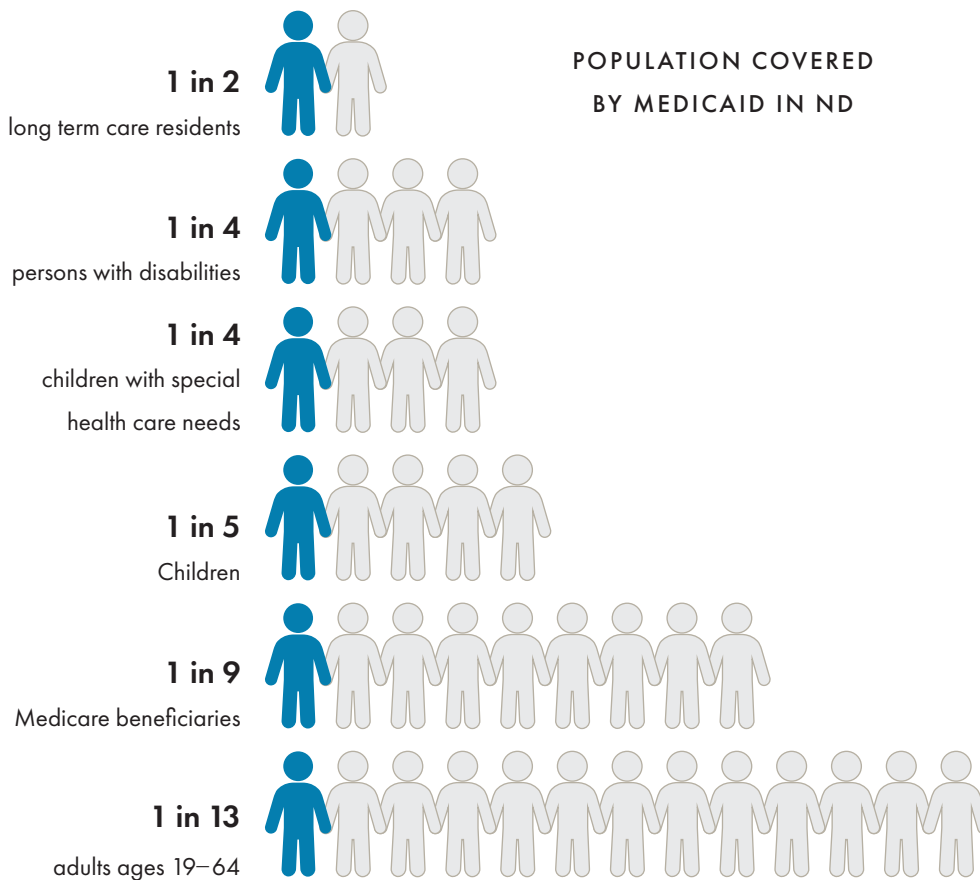
# NORTH DAKOTA MEDICAID | OVERVIEW OF ORAL HEALTH

Medicaid pays for health services for qualifying families with children, and people who are pregnant, elderly, or have a disability. In North Dakota, Medicaid covers exams, x-rays, cleaning, fillings, surgery, extractions, crowns, root canals, dentures (partial and full), and anesthesia.

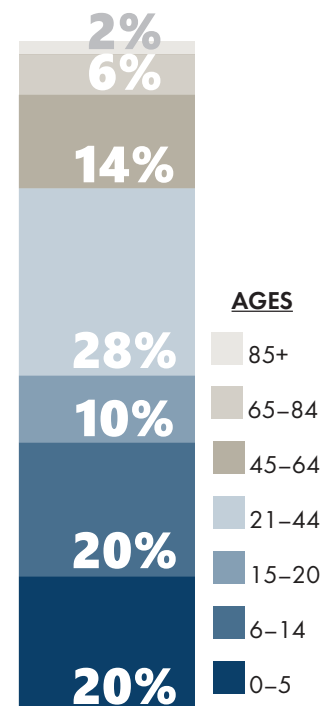
Good dental hygiene and access to quality, affordable, and regular dental care can

## IMPROVE ORAL HEALTH

for persons covered by Medicaid.



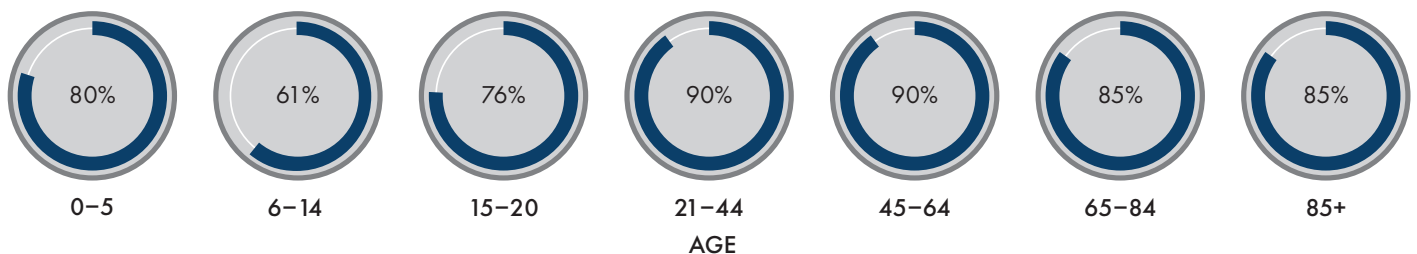
**40%** of Medicaid beneficiaries are age 14 or younger



Regardless of age, most Medicaid beneficiaries

## DID NOT HAVE ANY

preventive or treatment-based dental care in 2021

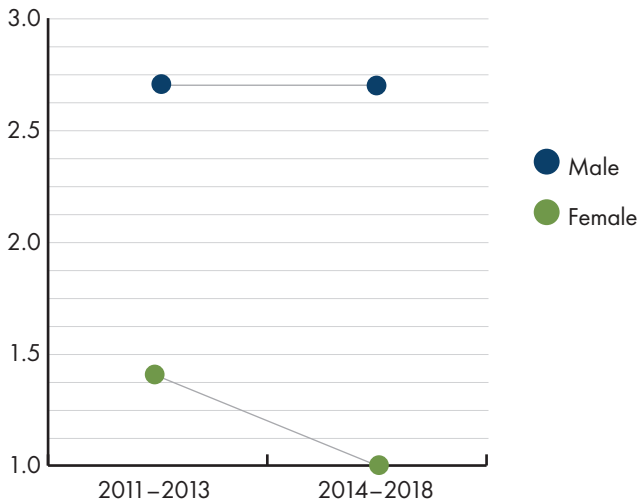


■ Medicaid beneficiaries who did not receive dental care

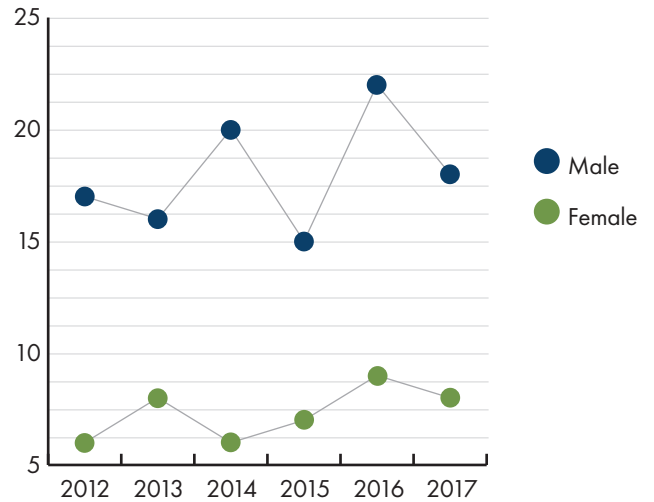
Oral cavity and oropharyngeal cancer are  
**TWICE AS COMMON IN MEN AS WOMEN**

Early identification of oral cancer is important to help prevent mortality.

ORAL CAVITY AND PHARYNX AGE-ADJUSTED  
 CANCER INCIDENCE RATE BY GENDER



ORAL CAVITY AND PHARYNX AGE-ADJUSTED  
 CANCER MORTALITY RATE BY GENDER



The lifetime risk of developing oral and oropharyngeal cancer is about 1 in 60 for men and 1 in 140 for women.

Deaths per year from oral cavity and pharynx cancer ranged from 1.8 to 2.1 people per 100,000.



**CLEFT LIP OR PALATE**

Dental health may be affected by structural oral health issues such as cleft lip and palate.

Cleft lip or palate treatment plans require care over time from teams of providers.

**16 BABIES**

were born with a cleft lip or palate in 2019; the highest number in six years

ND is one of only two states to **NOT HAVE** an American Cleft Palate-Craniofacial Association designated treatment center

**202 CHILDREN**

are estimated to have cleft lip or palate

# WATER FLUORIDATION | OVERVIEW OF ORAL HEALTH

Community Water Fluoridation is a proven, safe, and effective measure to prevent tooth decay and promote oral health.

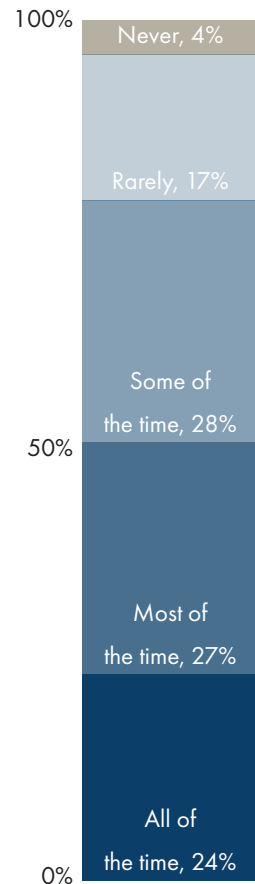
**96.5%**

of North Dakotans are served by optimally fluoridated community water systems

**5<sup>TH</sup> HIGHEST**

in the nation in 2018

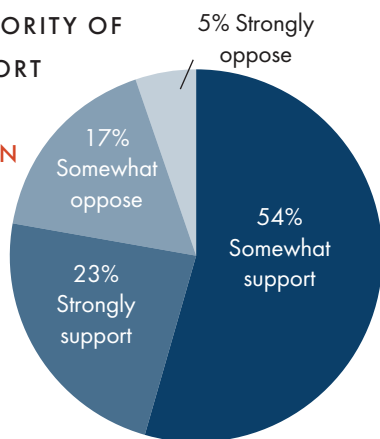
ONLY ABOUT HALF (51%) OF ADULTS **DRINK WATER** (TAP OR BOTTLED) MOST OR ALL OF THE TIME **WITH THEIR MEALS**



## Why care about Community Water Fluoridation?

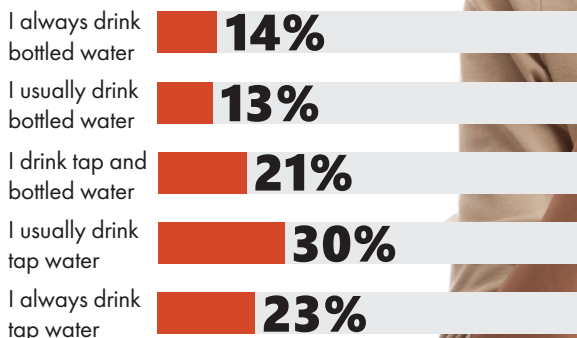
- Most water contains some fluoride, but usually more must be added by community water systems to reach optimal levels for preventing cavities.
- Reduces cavities by 25% in kids and adults.
- Reduces costs of dental care by protecting teeth.
- Fluoride has been added safely to public water supplies for the past 75 years to prevent tooth decay.

A LARGE MAJORITY OF PEOPLE SUPPORT **WATER FLUORIDATION**



## SOME PEOPLE OPT FOR BOTTLED WATER OVER TAP WATER.

Bottled water does not have the optimal levels of healthy fluoride.



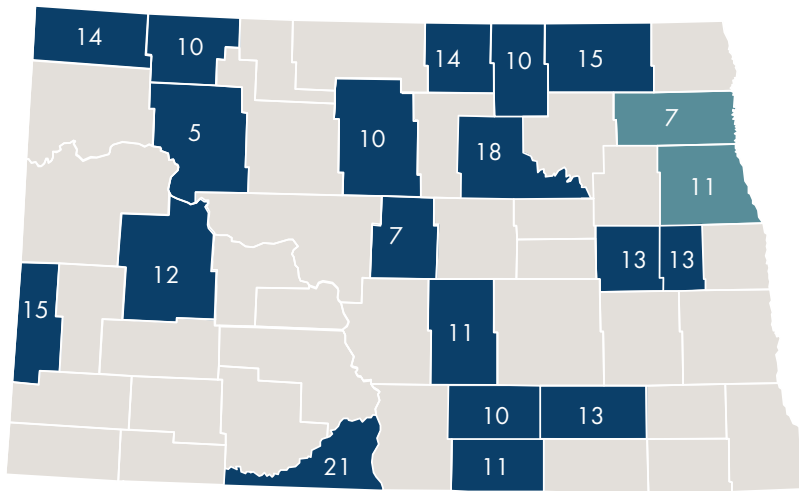


Individuals in rural counties, patients with urgent dental care needs, and patients on Medicaid are strongly affected by the dental provider shortage.

## ONLY 44% OF THE NEED IS MET

for dental practitioners in North Dakota.

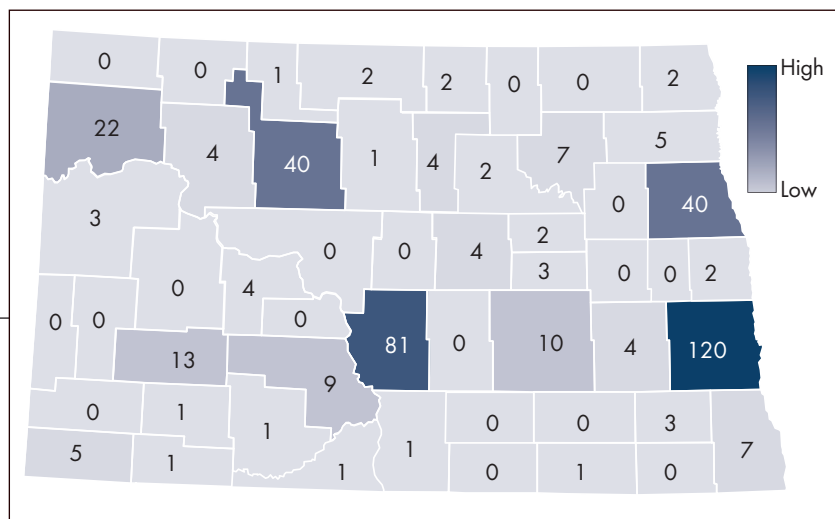
The state map shows county health practitioner shortage (HPSA) area scores, with higher numbers indicating greater workforce need.



**69**  
dental care HPSA  
designations with  
a service area  
that reaches  
**153,291**  
**PEOPLE**

■ Geographic dental health professional shortage area    ■ Low-income population health professional shortage area

## North Dakota has FEWER DENTISTS PER PERSON compared to the national average



**19**  
counties have  
NO dentist

**1,766**  
individuals visited an  
emergency room for  
tooth pain in 2021

**52**  
dentists per  
100,000 people vs.  
**61**  
per 100,000  
in the U.S. overall

**40%**  
of dentists did not  
have a paid  
Medicaid claim  
in 2020

**408**  
dentists with an  
in-state address

**678**  
dental hygienists with  
an in-state address

## INDIVIDUALS EXPERIENCING HOMELESSNESS



Nationally, inability to pay is the primary reason that individuals experiencing homelessness go without seeking dental care.

There are **541 individuals experiencing homelessness** in North Dakota on any given day.

## PERSONS WITH POOR MENTAL HEALTH STATUS



Poor mental health can make it hard to practice good dental hygiene, and dental pain can exacerbate poor mental health.

**Only 58%** of North Dakota adults with poor mental health **saw a dentist** in the last year compared to 69% of those with better mental health.

## RURAL POPULATIONS



People living in rural areas have greater unmet dental needs and may have long travel distances to seek care.

**41%** of North Dakota residents **live in a rural** or semi-rural county.

## REFUGEES AND IMMIGRANTS



Refugees and immigrants access dental services less frequently and may face language and culture barriers.

**540 refugees** and ten unaccompanied children settled in North Dakota in 2016.

## PEOPLE WITH SUBSTANCE USE DISORDER



Substance misuse is associated with serious oral health problems.

**8.6%** of people ages 12 and older in North Dakota **had a substance use disorder** in 2015–2017.

## LGBTQ2S+ COMMUNITY



**85.5%** of transgender patients in the U.S. report facing maltreatment in dental clinics.

There is a lack of data on the experience of **LGBTQ2S+** populations in North Dakota.

ORAL HEALTH FOR UNDERSERVED POPULATIONS

To improve oral health among underserved populations, more information is needed.



WHAT WE DON'T KNOW:

The number of dental providers who are LGBTQ2S+, Asian, Black or African American, Hispanic, or American Indian or Alaska Native in North Dakota.



WHY IT MATTERS:

Evidence suggests that implicit bias by a health provider plays a role in patient provider interactions, treatment decisions, patient treatment adherence, and health outcomes.

WHAT WE DON'T KNOW:

Prevention and intervention measures that would most benefit these underserved communities, based on the perspectives of community.

WHY IT MATTERS:

Populations residing in communities are the most reliable source for determining effective investments to improve oral health.

WHAT WE DON'T KNOW:

The number of dental providers who are equipped to meet the needs of specific populations, especially those experiencing mental, emotional, cognitive, or physical challenges, or who are pregnant.

WHY IT MATTERS:

Dental providers benefit from specialized and cultural training to meet the needs of specific populations, including older adults, pediatric patients, and under-resourced populations in North Dakota.



Many partners, programs, organizations, and associations in North Dakota have developed, led, or participated in programs, volunteer opportunities, coalitions, and grassroots efforts to address the growing inequities in dental care access and overall population oral health. Offered here is an incomplete list of some of the activities that have been designed to address the burden of disease for residents in North Dakota as of summer 2022.

### **NORTH DAKOTA ORAL HEALTH PROGRAM**

The mission of the North Dakota HHS Oral Health Program (OHP) is to improve the oral health of all North Dakotans through prevention and education. The primary goal of the OHP is to prevent and reduce oral disease by:

Promoting the use of innovative and cost-effective approaches for oral health promotion and disease prevention	Fostering community and statewide partnerships to promote oral health and improve access to dental care	Increasing awareness of the importance of preventive oral health care	Identifying and reducing oral health disparities among specific population groups	Facilitating the transfer of new research into practice
----------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------	-----------------------------------------------------------------------------------	---------------------------------------------------------

Learn more about the HHS OHP, current activities, funding mechanisms, and contact information at [health.nd.gov/prevention/oral-health-program](https://health.nd.gov/prevention/oral-health-program).

## MISSION OF MERCY

Held in Fargo or Bismarck, ND, the event establishes a temporary 40-chair dental clinic where volunteers, with the support of generous donors, provide donated care to dental patients who, for whatever reason, have not received urgently needed dental care. Services provided during this event include cleanings (hygiene), fillings (restorations), root canals on front teeth (endodontics), limited number of temporary partial denture appliances (prosthodontics), extractions (oral surgery), oral health education, fluoride treatments, dental sealants, and x-rays. Learn more at [ndmom.org/](http://ndmom.org/).

## RONALD MCDONALD CARE MOBILE

The Ronald McDonald Care Mobile (RMCM) is a mobile dental clinic that delivers urgently needed dental care to underserved individuals ages 0 through 21 in their own neighborhoods in the western half of North Dakota. The RMCM is owned and operated by Ronald McDonald House Charities of Bismarck. They have partnered with Bridging the Dental Gap, Inc. of Bismarck, a non-profit dental clinic, to establish the RMCM Program. They strive to deliver services in an atmosphere of kindness, compassion, caring, and respect. Learn more about RMCM at [rmhcbismarck.org/caremobile/](http://rmhcbismarck.org/caremobile/).

## NORTH DAKOTA HEALTH TRACKS

Health Tracks is the name of North Dakota Medicaid's Early and Periodic Screening Diagnosis and Treatment (EPSDT) program. Health Tracks is a preventive health program for individuals age birth to 21 who qualify for the ND Medicaid program. Services include dental screenings, orthodontics, vision screenings, counseling, vaccinations, and other essential health services. Details on North Dakota Health Tracks are available at [nd.gov/dhs/services/medicalserv/health-tracks/](http://nd.gov/dhs/services/medicalserv/health-tracks/).

## NORTH DAKOTA ORAL HEALTH COALITION

In May 2021, the National Association of Chronic Disease Directors led a North Dakota Oral Health virtual Stakeholder Engagement Meeting (StEM). The purpose of this meeting was to identify and propose ideas to increase availability, accessibility, and utilization of oral health services especially among persons in the state who are Medicaid-eligible and/or underserved. The most significant take-away from the StEM was the identification of a new administrative lead for the previously dormant state Oral Health Coalition. As of 2022, the North Dakota Oral Health Coalition had been re-established and had built working groups around the key community needs identified at the StEM.

The Oral Health Coalition's mission is to foster collaborative solutions to achieve oral health equity. The purpose is to coordinate partners and organizations throughout North Dakota to create a collective impact by targeting oral health disparities. This proposed work focuses long-term on increasing access to oral health, improving North Dakotans' oral health literacy, and developing integration between all professions impacted by oral health. Learn more or join the coalition at [communityhealthcare.net/nd-oral-health-coalition/](http://communityhealthcare.net/nd-oral-health-coalition/).

## MEDICAL DENTAL INTEGRATION

Poor oral health is associated with several other chronic conditions including diabetes, respiratory infection, heart disease, ischemic stroke, Alzheimer's disease, mortality related to pneumonia, and chronic obstructive pulmonary disease (COPD) exacerbations. Clinical and dental research point to the relationship between oral health and overall health, and yet, we do not see widespread adoption of care coordination and support between the two. The ND HHS OHP has been working on several medical-dental integration programs focused on bi-directional referral and care. Activities have included training dental teams on how to conduct blood pressure screenings and appropriately refer dental patients with risk-level blood pressure; training pediatricians and family practice providers on how to apply fluoride varnish, conduct dental screenings, and provide appropriate dental referrals; data review and interviews with both medical and dental providers on use of the emergency department for dental pain; and, a program focused on integrating a dental hygienist into one family medical center as a member of the primary clinical care team. Learn more about medical dental integration activities taking place through the ND HHS OHP at [health.nd.gov/prevention/oral-health-program/medical-dental-integration](http://health.nd.gov/prevention/oral-health-program/medical-dental-integration).

## COMMUNITY WATER FLUORIDATION

Fluoride is naturally found in most water sources, rivers, lakes, wells and even the oceans. For the past 75 years, fluoride has been added to public water supplies to bring fluoride levels up to the amount necessary to help prevent tooth decay. Before water fluoridation, children had about three times as many cavities. Because of the important role it has played in the reduction of tooth decay, the CDC and Prevention has proclaimed community water fluoridation one of ten great public health achievements of the 20th century. Today, almost 75% of the U.S. population is served by fluoridated community water systems. In North Dakota, 96.5% of the total state population is served by fluoridated community water systems! The ND HHS OHP and the State Drinking Water Program under the ND Department of Environmental Quality continue to partner and ensure that residents receive optimally fluoridated, clean, and safe drinking water.

## PROFESSIONAL PROVIDER ASSOCIATIONS

North Dakota has three dental professional provider associations. The North Dakota Dental Association (NDDA) is a constituent organization representing over 87% of dentists in the state. The NDDA is a leading advocate of oral health, promoting education and service to its members and the public.

The mission of the North Dakota Dental Hygienists' Association (NDDHA) is to advance the art and science of dental hygiene by increasing the awareness of, and ensuring access to, quality oral health care; promoting the highest standards of dental hygiene education, licensure and practice; and representing and promoting the interests of dental hygienists. The North Dakota Dental Assistants Association (NDDAA) serves, promotes, and benefits dental assistants in the State.

## SEALIND

In 2012, ND HHS OHP implemented the SEALIND School-based Fluoride Varnish and Dental Sealant Program. Public health dental hygienists visit qualifying schools two times a year (fall and spring) and provide direct preventive services, under a standing order of a dentist. Services include oral health education, a dental screening, and both dental sealant and fluoride varnish applications. An oral hygiene bag including a result sheet of the child's screening, toothbrush, toothpaste and floss is provided to each child who sees the hygienist. Prior to the COVID-19 pandemic (the 2018–19 school year), 97 schools participated in SEALIND. Among the 48 schools qualifying for services (45% or more of the students on free-or-reduced lunch), 1,999 students were served, 3,879 molars were sealed, and 476 students were referred for dental care. Learn more about the impact of the program, or ways to participate in SEALIND at [hhs.nd.gov/health/oral-health-program/SEALIND](https://hhs.nd.gov/health/oral-health-program/SEALIND).

## NORTH DAKOTA ORAL HEALTH SURVEILLANCE SYSTEM

Monitoring dental care access and oral health status data is important to the people of North Dakota, to public and private oral and primary health care providers, to government agencies, to those working in oral health prevention, and to those interested in making data-driven policy decisions. The ND HHS OHP's Oral Health Surveillance System (OHSS) is dedicated to:

- Reporting annual oral health workforce data
- Conducting and reporting the results of oral health basic screening surveys among specific subpopulations of the state (including nursing home residents, third-grade students, and kindergarten students)
- Reporting annual oral health data provided through ND Medicaid
- Annually updating and tracking public-use data on oral health
- Publicly reporting, and disseminating evaluation data related to oral health programs and initiatives implemented through the ND HHS OHP

The ND HHS OHP's OHSS provides current, and visual data displays organized by topic and population demographics. Access the ND HHS OHSS at [hhs.nd.gov/public-health/oral-health-program/oral-health-data-and-statistics](https://hhs.nd.gov/public-health/oral-health-program/oral-health-data-and-statistics).

## DENTAL WORKFORCE INITIATIVES

The ND HHS OHP, the North Dakota Area Health Education Center (AHEC), and the State Office of Rural Health (SORH) are three of several entities engaging in activities to support and promote dental career workforce initiatives. AHEC and the ND HHS OHP have worked with one Federally Qualified Health Center (Spectra Health) in Grand Forks to host dental student rotations. Spectra hosts between two and four dental student rotations annually, and most recently reported the successful permanent placement of three of those dental residents into practice in North Dakota. The SORH hosts scrubs camps and academies throughout the state to promote health careers. These camps include dentists, dental hygienists, and dental assistants to spark interests in these careers among rural middle and high school students in the state.

## NORTH DAKOTA DENTAL FOUNDATION

The North Dakota Dental Foundation (NDDF) began with the belief that dentists are well-positioned to address issues that prevent people from getting dental care and is deeply committed to helping those who can't afford care. The NDDF is a Section 501(c)(3) organization established Sept. 22, 1986 to foster and promote dental health. The board is comprised of dental professionals as well as members from outside the profession who have a passion for dental health. The NDDF offers grant opportunities and in-kind services for programs that meet their core purposes. The focus is on supporting initiatives that create lasting improvement in oral health. Learn more at [nddental.org/](http://nddental.org/).

## GIVE KIDS A SMILE PROGRAM

The North Dakota State College of Science (NDSCS) hosts Give Kids a Smile Day where allied dental students perform cleanings, radiographs, sealants, fluoride applications, and oral health education to local, underserved children. The NDSCS is the only school in the state to provide dental career training, graduating both dental assistants and dental hygienists. Allied Dental Clinic is the clinic housed at NDSCS. The clinic welcomes children and adult patients including students, staff and faculty of the College and the public. All patients under the age of 18 must be accompanied by a parent or guardian. All services are provided by students and are supervised by dental hygiene faculty members and a supervising dentist.

## NORTH DAKOTA PRIMARY CARE OFFICE: LOAN REPAYMENT

The mission of the North Dakota Primary Care Office (PCO) is to improve primary care service delivery and workforce availability. This mission is accomplished by facilitating the coordinating activities related to improving access and delivery of primary care services and the recruitment and retention of critical health care providers. One key component of the PCO for dental workforce recruitment and retention is the information dissemination around available loan repayment programs. The ND HHS subcontracts with the University of North Dakota, Center for Rural Health to provide services for workforce development and shortage designation activities.

## SMILES FOR LIFE: FREE ORAL HEALTH CURRICULUM FOR HEALTH CARE PROVIDERS

Smiles for Life is a free online oral health training curriculum with continuing education credit for health care professionals. Health care providers may take advantage of this training to develop knowledge about a variety of oral health care issues from caries risk assessments and fluoride varnish application to geriatric oral health. This curriculum is designed to enhance the role of primary care clinicians in the promotion of oral health for all age groups through the development and dissemination of high-quality educational resources. In North Dakota, primary care providers (including clinical and public health nursing) are permitted to apply (and bill for) fluoride varnish application. Smiles for Life curriculum can be utilized to train primary care and public health nurses on the importance of, and how to apply, fluoride varnish.

## BRIDGING THE DENTAL GAP

Bridging the Dental Gap is a nonprofit, community dental clinic serving low-income and uninsured individuals within a 100-mile radius of Bismarck-Mandan. Over 600 patient appointments for dental care are provided each month. Learn more about Bridging the Dental Gap at [dentalgap.org/](http://dentalgap.org/).

Several partners, programs, organizations, and associations in North Dakota have developed, led, or participated in programs, volunteer opportunities, coalitions, and grassroots efforts to address the growing inequities in dental care access and overall population oral health. However, the burden of disease related to poor oral health and dental hygiene is still apparent in North Dakota, with some subpopulations experiencing greater inequities and barriers to resources and care than others.

### INDIVIDUALS EXPERIENCING A DISPROPORTIONATE BURDEN OF DISEASE RELATED TO ORAL HEALTH INCLUDE:

Persons covered by Medicaid or Medicare; under or uninsured; who are or have been incarcerated; living with mental health concerns to include substance misuse; who are Indigenous; who are new American, refugee, or immigrant; who are experiencing homelessness or displaced; living in a nursing home; and those who lack access because of their geography (rural or Tribal lands), income, or care need (e.g., a lack of local care availability for pediatric patients, older adults, and persons with special health care needs or developmental barriers).

### BURDEN OF DISEASE

Poor dental hygiene and lack of access to (or utilization of) quality and affordable dental health care negatively affects an individual's oral health. Having poor oral health can have a significant impact on one's overall health, chronic disease management, nutrition, mental health, self-esteem, employability, classroom success, and general health and well-being.

#### INDIVIDUAL AND SOCIETAL BURDEN



Individuals who report dental care affordability concerns miss more hours of work for unplanned dental care.



Combining data for 2018–21, there were 1,002 non-traumatic dental visits to the ED for every 100,000 residents.



Poor oral health results in more than 51 million lost school hours per year in the U.S. and impacts student success.



Poor oral health can result in loss of appetite and poor nutrition, which can complicate disease management.



Providing sealants to the 7 million children from low-income households in the U.S. could save up to \$300 million in averted dental treatment costs.



The inequities around dental hygiene, oral health care access, and care utilization are the result of complex personal, societal, and systematic barriers to health and well-being. Because of the complexities surrounding oral health care access and utilization, there is no one solution that will have a significant impact on the overall oral health of North Dakotans. However, there are many opportunities to promote good dental hygiene, and dental health care access and utilization.

Most broadly, programs and interventions that may have the most direct benefit to the oral health of all residents in North Dakota are those that promote PREVENTION and address one or more of three key concerns: access to care, utilization of care services, and health education.

**A multi-faceted, collaborative, diverse, and population-focused intervention is necessary if North Dakota is committed to the overall health and well-being of all residents**

### ACCESS

IMPROVE ACCESS TO CARE, ESPECIALLY AMONG PERSONS EXPERIENCING THE GREATEST BURDEN OF DISEASE

### UTILIZATION

IMPROVE UTILIZATION OF REGULAR, PREVENTIVE DENTAL HEALTH CARE SERVICES

### EDUCATION

IMPROVE INDIVIDUAL HEALTH BEHAVIOR AND DENTAL HYGIENE THROUGH ORAL HEALTH EDUCATION

### ACCESS

Access to care includes ensuring that there is an adequate health care workforce capable of providing regular, reliable, and timely dental care for all persons in the state. This includes ensuring an adequate workforce to serve older adults, persons with dementia, those who are incarcerated, those who are under or uninsured, those who are enrolled in Medicaid, and those with special health care needs among many others. However, solutions to address access to care are not narrowly limited to increasing the number of practicing dentists in the state. Instead, there are several interventions and programs that may support increasing access to oral health screening, preventive services, and dental care treatment.

### ACCESS SOLUTIONS

1. Increase the dental workforce
2. Increase capacity for providing oral health care among other health care workforce
3. Consider other innovative workforce solutions

## 1. Increase the Dental Workforce

Activities that can increase local dental workforce include (but are not limited to):

- Events that promote dental careers beginning in elementary school.
- Revision of guidance around, and increase in dollar amounts for, loan repayment and forgiveness options for dental workforce serving persons experiencing greater burden of disease and care access inequities.
- Reciprocity agreements with out of state dental schools to ensure that dental education is affordable for North Dakota residents, given there is no state school of dentistry.
- Clinic student rotations for dentists, dental hygienists, and dental assistants, especially in clinics that serve populations in greatest need for affordable care access in North Dakota.
- Promotion of dental careers, pipeline programs, and financial aid for Indigenous and rural youth interested in returning to serve their community.

## 2. Increase Capacity for Providing Oral Health Care among Other Health Care Workforce

Access to care does not have to be narrowly limited to growing the dental workforce and should also include supporting a diverse health care workforce that cares for the full patient.

Activities that can improve access to preventive dental care services include:

- Increase oral health care training and care provision among primary care providers to conduct oral health screenings and fluoride varnish application among all qualifying patients. In North Dakota, fluoride varnish application in non-dental (clinical) settings can be done by any level of direct care nursing, or more advance licensure. It is also a reimbursable service (Medicaid).
- Preparing nursing home direct care providers on how to conduct oral health screens, provide quality dental hygiene, and when and how to refer for further care.
- Utilizing public health providers to conduct oral health screenings and fluoride varnish application as part of their immunization clinics and other community-based services.
- Training providers who work with pregnant persons on how to screen for common oral health concerns that occur during pregnancy.
- Training pharmacists, oncologists, and other prescribing providers on medications and treatments that can have an adverse effect on the health of the mouth.

### 3. Consider Innovative Workforce Solutions

The current dental workforce cannot meet local demand for dental care prevention and treatment. There is opportunity to explore other innovative workforce solutions that have worked in other regions and states, or have been successfully piloted in North Dakota. Some of the innovative workforce solutions include:

- Increasing medical and dental integration programs in which dental health professionals are integrated into existing health care systems. They can provide prevention and emergency treatment services to patients where they are at, whether that be an emergency department, nursing home, or a family medical center.
- Building a sustainable workforce and funding mechanism for school-based sealant programs. Dental sealants are a proven strategy to reduce rates of dental decay, improving overall oral health and saving on dental care treatment expenditures, especially among persons covered by Medicaid. The current school-based sealant programs in North Dakota are highly effective. However, they are largely sustained through federal awards and donated dental services. They are not readily available to all schools in the state.
- Exploring dental therapy and populations that can be served through a similar model in rural and Tribal communities.
- Reviewing expanded scopes of practice for dental provision and reconsidering the role of providers in community.

### UTILIZATION

Outside of ensuring that there is a dental and medical workforce prepared to provide preventive and treatment-based services to residents of North Dakota, it is imperative that entities in the state consider other barriers that prevent populations from utilizing existing care. Important considerations include:

- Affordability of care
- Dental fear
- Inability to take off work during the hours dental clinics are open
- The need for childcare to attend appointments
- Confusion around Medicaid eligibility, enrollment, and care covered
- Confusion around dental services covered by Medicare
- Historical trauma related to dental care
- Transportation barriers especially for those traveling to care in FQHCs, those living in dental HPSAs, and those requiring specialty care
- Language barriers
- Limited number of local providers accepting new patients covered by Medicaid
- Lack of culturally appropriate and tailored services for diverse populations

One potential opportunity is the development, employment, and reimbursement of services provided by community dental health workers. Depending on the adopted model, these individuals could work in community settings, dental settings, public health units, or school settings. They can provide education, referrals, case management, and connect individuals

with other social support services to ensure they can attend scheduled appointments. There are several programs in North Dakota that support individuals and provide resources (including transportation vouchers and childcare) to ensure individuals can attend necessary appointments. However, these programs are not well known among private practice dental providers, and effort should be made to connect patients with the needed social supports and to inform providers of resources available to assist patients.

## EDUCATION

One barrier to dental care utilization is that not all community members understand how important regular preventive dental visits are for overall health and well-being. Additionally, many programs and health care organizations (outside of the dental clinic) do not prioritize, or are not equipped to prioritize, sharing oral health and dental hygiene education.

There are two important considerations when approaching community health education:

1. Who needs to be trained to offer the education in the community?
2. How do you ensure the education and resources are appropriate and meaningful for each community?

Community groups, providers, and individuals who can serve as a resource and prepare populations to be advocates of their own oral hygiene include:

- Medical providers (including direct care providers in nursing home settings and specialist care)

- Educators (to include Head Start)
- Public health professionals
- Community health workers
- Behavioral health specialists including those who work in substance misuse recovery
- Family crisis shelters and community groups supporting individuals experiencing homelessness
- Organizations, associations, and community groups focused on social services and family supports
- Criminal justice systems (e.g., probation and parole, prisons/jails, state penitentiaries)

Another important consideration is ensuring that these groups have appropriate materials and referral resources that are tailored to community. For example, in 2021, the ND HHS OHP worked with community to develop one-page resources that organizations can distribute and are available online at [hhs.nd.gov/health/oral-health-program](https://hhs.nd.gov/health/oral-health-program).

## FUTURE OF ORAL HEALTH

There have been several initiatives focused on promoting dental hygiene and good oral health practices, but it is clear there are still opportunities for improvement. Outside of increasing education around and access and utilization of, oral health care, it is also important to create a network of partners, in addition to the newly established State Oral Health Coalition, that is responsible for increasing representation in data and intervention design.

Although the ND HHS OHP has established and sustained an Oral Health Surveillance System, and has consistently secured federal awards to promote workforce and access to dental care, one short-coming is that not all of the data, nor the interventions, readily identify need among historically marginalized communities.

It is imperative that entities focused on promoting oral health equity engage these communities to start understanding burden of disease, and to establish specific and relevant interventions.

**HEALTHY PEOPLE 2030**

As North Dakotans continue to work together to promote oral health equity, programs and stakeholders can utilize Healthy People 2030 objectives and baseline goals.

The overall goal of the Healthy People 2030 oral health objectives is to prevent and control oral and craniofacial diseases, conditions, and injuries and improve access to related services. Like general health, oral health status in the United States tends to vary based on social and economic conditions. The primary goal is to improve oral health by increasing access to oral health care, including preventive services. Learn more at [health.gov/healthypeople/objectives-and-data/browse-objectives/oral-conditions](https://health.gov/healthypeople/objectives-and-data/browse-objectives/oral-conditions)

 Healthy People 2030

 ODPHP | Office of Disease Prevention and Health Promotion

**The data in this report can be used to appropriately target programs and policies to establish equitable oral health care education, access, and utilization in North Dakota.**



**Following guidance from Healthy People 2023, to achieve the broad goal of improved oral health, states are encouraged to implement initiatives that do the following:**

- Reduce the proportion of adults with active or untreated tooth decay.
- Increase the proportion of oral and pharyngeal cancers detected at the earliest stage.
- Increase use of the oral health care system.
- Reduce the proportion of children and adolescents with lifetime tooth decay.
- Reduce the proportion of children and adolescents with active and untreated tooth decay.
- Reduce the proportion of people who can't get the dental care they need when they need it.
- Increase the proportion of people with dental insurance.
- Increase the proportion of people whose water systems have the recommended amount of fluoride.
- Reduce consumption of added sugars by people aged two years and over.
- Reduce the proportion of older adults with untreated root surface decay.
- Reduce the proportion of adults aged 45 years and over who have lost all their teeth.
- Reduce the proportion of adults age 45 and older with moderate and severe periodontitis.
- Increase the proportion of low-income youth who have a preventive dental visit.
- Increase the proportion of children and adolescents who have dental sealants on one or more molars.
- Increase the number of states including Washington, D.C., that have an oral and craniofacial health surveillance system.

**CLEFT LIP:** Congenital split in the upper lip on one or both sides of the center that does not fuse together during development in the womb.

**CLEFT PALATE:** An opening or split in the roof of the mouth that occurs when the tissue does not fuse together during development in the womb.

**DENTAL CARIES (CAVITIES):** Dental caries is the clinical term for a cavities. Cavities are permanently damaged areas in the hard surface of your teeth that develop into tiny openings or holes. Cavities can also be called tooth decay or caries and are caused by a combination of factors, including bacteria in your mouth, frequent snacking, sipping sugary drinks and not cleaning your teeth well.

**DENTAL SEALANTS:** A thin plastic coating placed on the biting surface of permanent molars. It is placed by a dental professional and can last for many years. They are easy to apply and both prevent decay, and slow existing decay.

**EARLY CHILDHOOD CARIES:** The presence of one or more missing, filled, or decayed primary teeth in a child that is younger than age six.

**EDENTULISM:** Total tooth loss.

**FLUORIDE VARNISH:** A thick, clear liquid that is painted on all teeth and both strengthens tooth enamel and prevents dental decay. It is quick and can be applied by medical and dental professionals.

#### **GEOGRAPHIC DENTAL HEALTH PROFESSIONAL SHORTAGE**

**AREAS:** A shortage of dental providers for an entire group of people within a defined geographic area. Dental health professional shortage areas are defined by the Health Resources and Services Administration.

#### **HEALTH PROVIDER SHORTAGE AREA (HPSA) SCORES:**

Developed for use by the National Health Service Corps to determine priorities for the assignment of clinicians. HPSA scores range from 1–26 for dental health and the higher the score the greater the priority of assigning care to the area as the result of greater health need.

**HOLISTIC:** Treatment of the whole person, that considers the social and mental factors rather than just the disease itself.

**INEQUITY:** Lack of fairness or justice.

**NOMA:** A type of gangrene that destroys mucous membranes of the mouth and other tissues that can occur due to poor sanitation or cleanliness.

**ORAL CANCER:** Cancer that forms in any part of the mouth or back of the throat.

**RAMPANT DECAY:** A condition characterized by wide-spread and rapidly growing cavities; when a person presents with dental caries (cavities) in more than seven teeth.

**RURAL:** State snapshot: Fewer than 10,000 people in county.

**RURAL:** (Children’s health section): Counties that do not have any towns containing a population greater than 2,500.

**SEMI-RURAL:** State snapshot: Between 10,001 and 49,999 people in a county.

**SEMI-RURAL:** Children’s health section: Nonmetro counties that contain towns with populations greater than 2,500 people.

**URBAN:** State snapshot: 50,000 or more people in a county.

**URBAN:** Children’s health section: Metro counties that contain towns with populations greater than 250,000 people.

# ACRONYMS AND ABBREVIATIONS | KEY TERMS

**ACES:** Adverse Childhood Experiences

**ACS:** American Community Survey

**ADA:** American Dental Association

**AHEC:** Area Health Education Center

**BRFSS:** Behavioral Risk Factor Surveillance System

**BSS:** Basic Screening Survey

**CDC:** Centers for Disease Control and Prevention

**ND HHS:** Department of Health and Human Services

**DRCCAH:** Data Resource Center for Child and Adolescent Health

**ESSENCE:** Electronic Surveillance System for the Early Notification of Community-based Epidemics

**FQHC:** Federally Qualified Health Center

**HPSA:** Health Professional Shortage Area

**HRSA:** Health Resources and Services Administration

**HUD:** United States Department of Housing and Urban Development

**KFF:** Kaiser Family Foundation

**LTC:** Long Term Care

**NSCH:** National Survey of Children's Health

**NDBDE:** North Dakota Board of Dental Examiners

**NDDA:** North Dakota Dental Association

**NDDAA:** North Dakota Dental Assistants' Association

**NDDF:** North Dakota Dental Foundation

**NDDHA:** North Dakota Dental Hygienists' Association

**NOHSS:** National Oral Health Surveillance System

**OHP:** Oral Health Program

**PHH:** Public Health Hygienist

**PRAMS:** Pregnancy Risk Assessment Monitoring System

**SAMHSA:** Substance Abuse and Mental Health Services Administration

**SEER:** Surveillance, Epidemiology, and End Results

**SORH:** State Office of Rural Health

**StEM:** Stakeholder Engagement Meeting

**YRBSS:** Youth Risk Behavior Surveillance System

**WHO:** World Health Organization





Event	Data	Source
<b>STATE SNAPSHOT</b>		
Urban, semi-rural, and rural counties	Map	U.S. Census, 2020
American Indian Reservations	Map	NDIAC
ND population by race	Pie chart	U.S. Census, 2020
Total population count	774,948	U.S. Census, 2020
Total population change	15% increase	U.S. Census, 2020
Per capita personal income	\$65,315	U.S. Census, 2020
Eligible and enrolled	18%	ND Medicaid, 2022
Bachelor’s degree or higher	1 in 3 people	U.S. Census, 2020
Living in poverty	1 in 10 people	U.S. Census, 2020
Living in poverty	1 in 10 children	Kids Count, 2022
Living in poverty	1 in 12 older adults	U.S. Census, 2020
Living in nonmetro	50%	U.S. Census, 2020
<b>CHILDREN</b>		
Tooth decay	1 in 2 kindergartners	BSS, 2018–2019
Lack of dental treatment	1 in 5 children in Head Start	ND Head Start report
Kindergarten oral health	Rural and urban	BSS, 2018–2019
Third grade oral health	Rural and urban	BSS, 2018–2019
<b>ADOLESCENTS</b>		
Tobacco use	1 in 10 middle school students	YRBSS, 2021
Tobacco use	More than 1 in 3 high school students	YRBSS, 2021
Alcohol use	Nearly 1 in 3 high school students	YRBSS, 2021
Dental visits	1 in 4 middle school and high school students	YRBSS, 2017–2021
Preventive visits	74.2% children ages 1–17	NSCH/DRSCCAH, 2020–2021 (Two years combined)
<b>ADULTS</b>		
No dental cleaning	1 in 3 adults	BRFSS, 2020
Visits to dentist	Race (51% and 31%)	BRFSS, 2020
Adult dental visits by educational level	Piechart	BRFSS, 2020
Urgent dental treatment need	U.S. adults with diabetes (2x likely)	Griffen et al., 2009
Adults with total tooth loss	35% with diabetes, 26% without	BRFSS, 2020
Lost 6 or more teeth due to gum disease	27% with diabetes, 12% without	BRFSS, 2020
No dental cleaning	1 in 3 adults	BRFSS, 2020
Visits to dentist	25–34 year old visits	ND ESSENCE 2018–2021; ND Medicaid 2019 & 2020

Event	Data	Source
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## ADULTS IN LONG TERM CARE

Untreated tooth decay	1 in 4 adults	BSS, 2016
Total tooth loss due to tooth decay	32% long term care, 13% adults	BRFSS, 2018
Oral health conditions	Insurance status; rural vs. urban	BSS, 2016

## PREGNANT PERSONS

Insurance, affordability, Medicaid	27%, 15%, 7%	PRAMS, 2017–2020
Dental prevention visit	Column chart by race	PRAMS, 2017–2020
Teeth cleaned	Bar chart by age	PRAMS, 2017–2020
Teeth cleaned	Bar chart by education level	PRAMS, 2017–2020

## INDIGENOUS HEALTH

American Indian Tribes and Tribal community	Map and population (5.7%)	U.S. Census, 2021
Tooth decay experience	9 in 10 kindergartners and third graders	BSS, 2019
Rampant decay	2x	BSS, 2019
Emergency visits for tooth pain	3x	ND ESSENCE Data
Zero dentists	19 counties	NDBDE, 2022
Kindergartners drink pop	89%	BSS, 2019
Lack fluoride	Half of community water systems	CDC My Water's Fluoride
Enrolled in Medicaid	71%	ND Medicaid, 2021
Did not receive paid dental care	80%	ND Medicaid, 2021
U.S. dental providers who are AIAN	0.3%	Mertz et al., 2017
3 or more ACES	44%	BRFSS, 2020
Untreated decay	30% more likely	BSS, 2019
Kindergarten	Column chart by race	BSS, 2019
Third grade	Column chart by race	BSS, 2018

## PERSONS ENROLLED IN MEDICAID

Covered by Medicaid	Population graphic	KFF, 2019
Medicare Beneficiaries by age	Column chart by race	ND Medicaid, 2021
Did not have any dental visit	Circle charts by age of beneficiary	ND Medicaid, 2021

Event	Data	Source
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## OTHER ORAL HEALTH BURDENS

Lifetime risk	1 in 60 men, 1 in 40 women	ACS, 2022
Cancer incidence and mortality	Line charts, male and female	Vital Records, NIH Cancer
Cleft lip or palate	16 babies	ND Vital Records, BR
Cleft lip or palate	202 children	Peck et al., 2021
Lack ACPCA-designated treatment center	ND is one of two states	Wolfswinkel et al., 2022

## WATER FLUORIDATION

Stance on fluoridation	Pie Chart	Wakefield Research
Frequency of drinking water while eating	Column chart	Wakefield Research
State rank for fluoridation	5th highest	CDC WFRS, 2018
Bottled vs. tap water	Bar chart	Wakefield Research

## DENTAL WORKFORCE

Need met for dental practitioners	44%	KFF
HPSA scores by county	Map, 69 HPSAs	HRSA, 2022
Live in counties with HPSA's	153,291 people	U.S. Census, 2020
Dentists per county	Map	NDBDE, 2021
Dentists per 100,000	52 ND, 61 U.S.	ADA, 2022
Providers with in-state address	Dentists and Hygienist	NDBDE, 2021
Zero dentists	19 counties, about 30%	NDBDE, 2022
Emergency room visit	1,766 patients	ESSENCE, 2021
No paid Medicaid claim	40%	ND Medicaid, 2020

## POPULATION-SPECIFIC HEALTH EQUITY

Persons experiencing homelessness	541 people	HUD, 2020
Dental visit in prior year	58% poor mental health, 69% other	BRFSS, 2020
ND living in rural or semi-rural counties	41%	U.S. Census, 2020
Settled in ND in 2016	540 refugees and 10 unaccompanied children	Refugee Council USA, 2019
Substance use disorder	8.6% people 12 and older	SAMHSA, 2017
Transgender patients facing maltreatment in dental clinics	85.5% in the U.S.	Heima et al., 2017

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