

2016
Nebraska

State Oral Health Assessment



& Dental Disease Burden Report



NEBRASKA

Good Life. Great Mission.

DEPT. OF HEALTH AND HUMAN SERVICES



I. LETTER OF INTRODUCTION

The Nebraska Department of Health and Human Services (DHHS) Office of Oral Health and Dentistry (OOHD)¹ is pleased to present the 2016 Nebraska State Oral Health Assessment Report. This document will review our history and compare the current dental status of our citizens to overall national disease trends. We will describe our present needs and existing resources to identify focus areas to help overcome disparities within our state dental system.

The mission statement of DHHS is “Helping People Live Better Lives.”¹ Since 1949, the OOHD has worked to improve the wellbeing of all Nebraskans by promoting oral health through educational campaigns, increasing access to preventive services and reducing barriers to care. We directly support programs that are facilitated through our Local Public Health Departments (LPHDs). We also partner with other federal, state and community programs to perform essential public health functions. These affiliates include Federally Qualified Health Centers (FQHCs), the University of Nebraska Medical Center (UNMC) College of Dentistry, Creighton University School of Dentistry and the UNMC College of Public Health.

The OOHD is a member of the Association of State and Territorial Dental Directors (ASTDD) which coordinates all state oral health programs throughout the U.S.² ASTDD is non-profit organization which serves as a vital component of the dental public health infrastructure of the nation and supports state dental programs through oral health surveillance, policy development and community education projects. The 2016 State Oral Health Assessment Report is part of the master Nebraska State Health Improvement Plan (SHIP) 2013-2016 whose overarching goal is to help people, families, communities and public health agencies work together to improve lives for everyone.³

The American Dental Association (ADA) defines oral health as a functional, structural, aesthetic, physiologic and psychosocial state of well-being that is essential to an individual’s general health and quality of life.⁴ Dental health can and will affect each of us across the lifespan from pre-schools to senior centers. Poor dental health has been linked to heart disease, diabetes, pneumonia and malnutrition. Sound dentition is more than just being free of pain and infection. Proper oral health is needed for speaking, chewing, swallowing, tasting, and smiling. Without good dental health, children have trouble growing, adults have problems working and elders have difficulty living.

Most Nebraskans benefit from our excellent system of private and public health dental clinics that are staffed with professional dentists and hygienists providing superior standards of modern dental care. Many dental problems can be prevented with proper oral hygiene, diet, fluoride use, sealant protection and regular maintenance care. Unfortunately, there are gap populations that do not have full access to these services. These underserved groups can include: young children, low income, minorities, homeless, uninsured, disabled, rural, refugees, and many elderly people. They often face the traditional socio-economic obstacles of income, education, location, language and different culture. Our goal is to bring dental health equity to all of Nebraska’s population groups.

This document was developed through years of effort by the previous and current OOHD staff members who first held an Oral Health Stakeholders Summit in 2011. Over 70 health professionals were invited to identify specific areas of dental need. Priorities were reviewed by the DHHS Oral Health Advisory Panel who created a draft plan that was available for public comment through community meetings and on-line surveys. This final updated comprehensive version is a working reference guide that is meant to be periodically revised and improved as we constantly gather future information. Thank you to all individuals and partners who contributed to this plan. Special recognition goes to Jessica O. Ball (Dental Health Coordinator) and Yonghua Feng (Dental Data Analysis Intern) for their tireless efforts to research and clarify the facts and figures found here. We now urge all Nebraskans and their communities to join us as we move forward on the road to better oral health!

Dr. Charles F. Craft, Dental Health Director, State of Nebraska <charles.craft@nebraska.gov> 15 September 2016

TABLE OF CONTENTS:

Section I Letter of Introduction.....

Section II Executive Overview1

Global Oral Health Overview.....1

U.S. Oral Health Overview2

U.S. Current Dental Status2

U.S. Access to Dental Care.....3

U.S. Dental Disease Prevention3

State Oral Health Programs4

Nebraska Oral Health Assessment and Disease Burden Report.....4

Dental Measurements.....4

National Healthy People 2020.....5

Nebraska Healthy People 2020.....5

National and Nebraska Healthy People 2020 Dental Objectives.....6

Nebraska State Health Improvement Plan.....7

Section III Nebraska Dental Needs Assessment.....7

Oral Health Needs Assessment by Age Group.....7

Nebraska Children Age 0-58

 Caries Risk Assessment Tool.....8

Nebraska Youth Age 6-18.....9

Nebraska Adults Age 19-6410

 NE. Extraction Rates12

Nebraska Older Adults Age 65+12

Nebraska Vulnerable Dental Populations14

Nebraska Rural Residents14

 Rural Resident Oral Health Status14

 Rural Dental Workforce15

Nebraska Low Income and Uninsured16

 Hospital Emergency Rooms17

Nebraska Racial and Ethnic Minority Groups18

Nebraskans with Disabilities20

Nebraska Military and Veterans.....21

Nebraska Immigrants and Refugees.....22

Nebraska Smokeless Tobacco Users23

Nebraska Pregnant Women.....25

Section IV	Nebraska Oral Health Strategic Focus Areas	26
FOCUS AREA #1	Nebraska Public Policy	26
	DHHS and Nebraska Office of Oral Health and Dentistry	26
	Nebraska Professional Dental Workforce	26
	Dentist Workforce in Nebraska	26
	Dental Hygienist Workforce in Nebraska	27
	Dental Workforce Retention and Recruitment	28
	<i>Extramural Rotations</i>	28
	<i>Student Loan and Loan Repayment</i>	28
	<i>3RNet Recruitment</i>	28
	Nebraska College of Public Health	28
FOCUS AREA #2	Nebraska Oral Health Surveillance	29
	The Establishment of Dental Surveillance	29
	The Purpose of Dental Disease Surveillance	29
	Baseline State Oral Health Survey	30
	Oral Health Surveillance Concept	30
	Recommended Indicators and Challenges to Oral Health Surveillance	31
FOCUS AREA #3	Access to Dental Care Services	32
	Federally Qualified Health Centers	32
	Safety Net System	33
	<i>Mission of Mercy</i>	33
	<i>Charity Clinics</i>	34
	Medicaid and Children’s Health Insurance Plan	34
FOCUS AREA #4	Community-Based Prevention Programs	36
	Maternal and Child Health Partnership	36
	Local Public Health Departments	37
	Woman, Infant and Children Programs	37
	Head Start Programs	38
	Dental Disease Prevention Strategies	39
	Children Ages 0-5	39
	Youth Ages 6-18	39
	<i>Grading the States</i>	40
	<i>School-Based Sealant Programs</i>	40
	<i>Nebraska Sealant Rate</i>	40

<i>Community Action</i>	41
State Level Examples	41
<i>Oral Health Access for Young Children Program</i>	41
<i>Elder Health Enduring Smiles</i>	42
<i>Univ. of Nebr. Medical Center Dental Sealant Program</i>	43
Local Level Examples	43
<i>Building Healthy Futures</i>	43
<i>Miles of Smiles Program</i>	43
<i>Loup Basin Smiles Dental Program</i>	43
Nebraska Water Fluoridation	44
Community Water System.....	44
FOCUS AREA #5 Oral Health Education and Promotion	45
State Campaign Example	45
Children’s Dental Health Month 2015	45
Lifespan Dental Education	46
Section V The Future Outlook	46
Acknowledgements	47
Glossary of Terms	48
Appendices	49
Appendix A ASTDD 10 Essential Dental Public Health Services.....	49
Appendix B Data Sources for Oral Health Objectives.....	50
Appendix C Additional Nebraska Dental Surveillance Resources	51
Appendix D Dental Surveillance Goals and Strategies	52
Appendix E Community Based Dental Preventive Strategies.....	52
Appendix F Nebraska State Oral Health Fact Sheet.....	53
References	54-57

II. EXECUTIVE OVERVIEW

In 2003, the World Health Organization (WHO) stated that *dental disease is the most prevalent chronic illness on the planet* with an estimated five billion people having a history of tooth decay at that time. It can affect the quality of life for children and adults both physically and mentally.

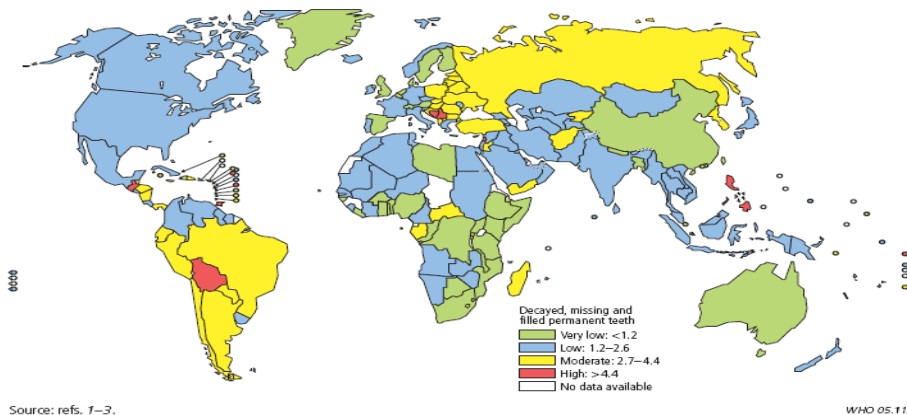
Despite modern equipment and treatments, dental decay, tooth pain, and oral infections remain a significant concern for many people in Nebraska who from suffer these conditions. We have not invented a vaccine to eliminate the problem of dental disease. It can however, be significantly reduced by utilizing these preventive tools:

- Daily tooth brushing and flossing
- Use of topical and systemic fluoride
- Protective sealants
- Proper diet and nutrition
- Regular access to dental care providers

Global Oral Health Overview

The World Dental Federation announced in their Vision 2020 report that more than 90% ^{5,6} of the world's population (now over six billion) ⁷ would suffer from oral disease during their lifetime. The American Academy of Pediatric Dentistry (AAPD) has reported that *tooth decay is now the most common chronic childhood disease found in the United States*, five times more common than asthma and 20 times more than diabetes.⁸

Fig. 1. Dental caries (Decayed, Missing and Filled Teeth (DMFT) index) among 12-year-olds worldwide, December 2004



Source: FDI World Health Organization 12 year old DMFT Dental Map 2004

Tens of thousands of dental clinics with hundreds of thousands of personnel provide Americans with millions of patient appointments and billions of dollars' worth of care across our nation every single year. Despite all this systemic support, much of oral health status is determined by individual patient habits, lifestyle choices and acquiring proven preventative interventions.

If this proactive care is somehow neglected or barriers to accessing the system exist, oral health can quickly deteriorate, requiring corrective care treatment that results in higher overall costs. As our U.S. health care system expenses spiral into the trillions of dollars, our challenge is to identify ways to improve the efficiency of our dental care system that increase overall patient wellness outcomes for our Nebraska communities.

U.S. Oral Health Overview In 2000, the U.S. Public Health Service and the National Institute of Health produced a historic milestone publication entitled Oral Health in America: A Report from the Surgeon General ⁹. This document stated that while there had been dramatic improvements in oral health for the majority of younger adults and middle aged citizens over the past 50 years, the gains have not been even. Profound disparities exist among certain populations including young children, racial and ethnic groups, elders and those with disabilities.

The report identified this “silent epidemic of oral disease” as a burden to the wellbeing of our national society. *The Surgeon General observed the relationship between oral health and total health and stated that without good oral health.....you are not healthy!* Poor dental health is directly linked to:

- Heart disease
- Stroke
- Diabetes
- Malnutrition
- Pneumonia
- Oral cancer
- Quality of life

The report stated that intervention methods – proven safe and effective oral disease prevention measures - did exist for government leaders, states and communities, but were not being fully utilized. The Surgeon General issued a nationwide challenge to gather more research dental data and to apply more appropriate policy plans that would start to improve oral health for all Americans.

In 2003, the U.S. Department of Health and Human Services created a framework guide entitled, “A National Call to Action to Promote Oral Health.”¹⁰ Five specific action steps were recommended in the areas of oral health education and public perception. They are:

- Improve public perception and oral health education
- Increase access to care to overcome barriers
- Build dental disease surveillance reporting
- Increase the oral health workforce
- Expand dental collaborations

In 2009, the Health Resources and Services Administration (HRSA) requested the Institute of Medicine (IOM) to further review the current situation and make strategic recommendations to ensure that oral health remained a national priority.¹¹ The IOM noted that while the Surgeon General’s report had greatly increased awareness of the importance of oral health, it had not led to immediate fundamental changes.

U.S. Current Dental Status The vast majority of patients get care through the private practice dental care delivery system if they have employee dental benefits, acquire private insurance or can afford to make direct payments. *In 2013, \$110 billion¹⁴ worth of dental care was provided in the U.S. through 500 million dental visits¹⁵.* But for the millions without regular private dental home options, there is a public health and safety net system comprised of:

- Community health centers
- Hospitals sites
- Academic institutions
- School-based centers
- Non-profit charity clinics

Low income children often rely on Medicaid as their primary coverage source but many dentists do not participate in the program. It has been estimated that two-thirds of retirees do not have dental coverage and Medicare does not cover dental services.¹⁷ The Health Resources and Services Administration reports over 5,000 dental health professional shortage areas in the U.S. which affects more than 45 million Americans.¹⁸ The safety net is not an integrated system and cannot effectively handle such a large demand. *Patients continue to utilize hospital emergency rooms to acquire symptomatic dental aid even when lower cost community options exist.* Disadvantaged people with barriers to care often turn to ERs where the number of visits for dental conditions has risen dramatically. Between 2008 and 2010, it was estimated that more than 4 million Americans went to hospital ER's for dental conditions at a cost of over \$2.7 billion.¹⁹ The American Dental Association started a national campaign in 2013 to address this "U.S. Dental Crisis."²⁰ Dental disease is a serious health concern across the world, the United States and here within our State of Nebraska.

ADA American Dental Association®
America's leading advocate for oral health

AMERICA IS IN A DENTAL HEALTH CRISIS

181 MILLION
The number of Americans who didn't visit the dentist in 2010, according to the ADA's Health Policy Resources Center analysis of 2010 MEPS and U.S. Census Data.

NEARLY 1/2 OVER AGE 30
Population of adults suffering from some form of gum disease, according to the Centers for Disease Control and Prevention (CDC).

NEARLY 1 IN 4
Children under the age of five who already have cavities, according to the CDC.

U.S. Dental Divide

Annual Household Income	<\$30,000	\$30,000+
Annual Dental Visit by Adult	52%	70%
Access to Permanent Dental Home	47%	75%
Have Dental Insurance	43%	67%

ADA 2013 Campaign to Address U.S. Dental Crisis Report

U.S. Access to Dental Care The key to maintaining good oral health is consistent utilization of the dental health system. However, biannual studies from the Nebraska Behavioral Risk Factor Surveillance System (BRFSS) adult survey show that less than 70% of the general population visit their dentist annually and the trend is going down.²¹ Figures from CDC for all ages indicate the rate may be closer to 50%. A 2013 study from the ADA tracked adults based on income levels. It found that 70% of the people earning over \$30,000 had visited a dentist in the past year while only half (52%) earning under \$30,000 had. 75% of those people earning over \$30,000 had access to a permanent dental home while only 47% of lower income adults did and 67% of higher income patients had dental insurance compared to 43% of lower income people.²³ A *“dental divide” definitely exists between low and high income groups.* Even greater disparity occurs when other circumstances are considered.

U.S. Dental Disease Prevention According to CDC, *A history of dental disease affects more than 25% of our children (0-5), 50% of our youth (12-15), 80% of our adults (35-44) and 90% of our elders (65+).*²⁴ Untreated dental decay rates can be much higher for minorities and low income communities. For example, Hispanic children experience decay rates two times higher than most children and Native American children are three to five times higher.²⁵ Additional contributing factors can include location, education level, language, cultural values, developmental disabilities, medical conditions and personal behavior.

The most cost effective way to have sound oral health is to stop dental disease before it can start and all states should implement individual and community-based health promotion projects and install the proven prevention measures that the Surgeon General has recommended.

These actions would include:

- Community water fluoridation
- Individual topical fluoride applications
- School based sealant placement
- Culturally appropriate education programs
- Increased disease surveillance and reporting

State Oral Health Programs

*State Oral Health Programs are critical to the success of state and national oral health improvements in access and prevention.*¹ It is a unit of the state government through the public health department. The Nebraska Office of Oral Health and Dentistry (OOHD) is staffed by the Dental Health Director and the Dental Health Coordinator. They partner with other state and local groups to perform essential public health functions which include reporting dental disease rates, developing policies to minimize dental disease and implementing programs to reduce dental disease. Each state differs on program funding and how the services are provided. The NE OOHD promotes statewide dental prevention services and access to care by partnering with many organizations on joint projects.

Nebraska Oral Health Assessment and Disease Burden Report

As a result of the 2011 Stakeholders Summit and the Advisory Panel review, a unified vision statement of oral health in Nebraska was drafted to improve oral health in our state. “Nebraskans, including health care professionals, parents, educators, funders, lawmakers and policy makers, recognize the importance of oral health to overall health across the lifespan by adopting good oral health behaviors and by supporting policies and programs to provide access to optimal oral health care and dental homes for all.”¹ To achieve this vision, the Nebraska Oral Health Assessment Report will set key priorities into five focus areas:

1. Ensure Public Policy and Workforce
2. Improve Disease Surveillance
3. Increase Access to Care
4. Enhance Community Based Prevention
5. Elevate Public Education and OH Promotion

The Association of State and Territorial Dental Directors (ASTDD) and Centers for Disease Control (CDC) identify, review and coordinate all 50 state oral health programs. ASTDD has created a list of the ten essential public health services to promote oral health in the United States. (**Appendix A**) They also provide States with standards of best practice and offer technical assistance on state plans, statewide surveys and data collection. Nebraska belongs to the Midwest region with partners in Kansas, Missouri and Iowa. Currently, 35 states have a documented state dental plan while several others have a plan in progress. ASTDD provides guidance on oral health objectives and organization into priority areas with monitoring through indicators.

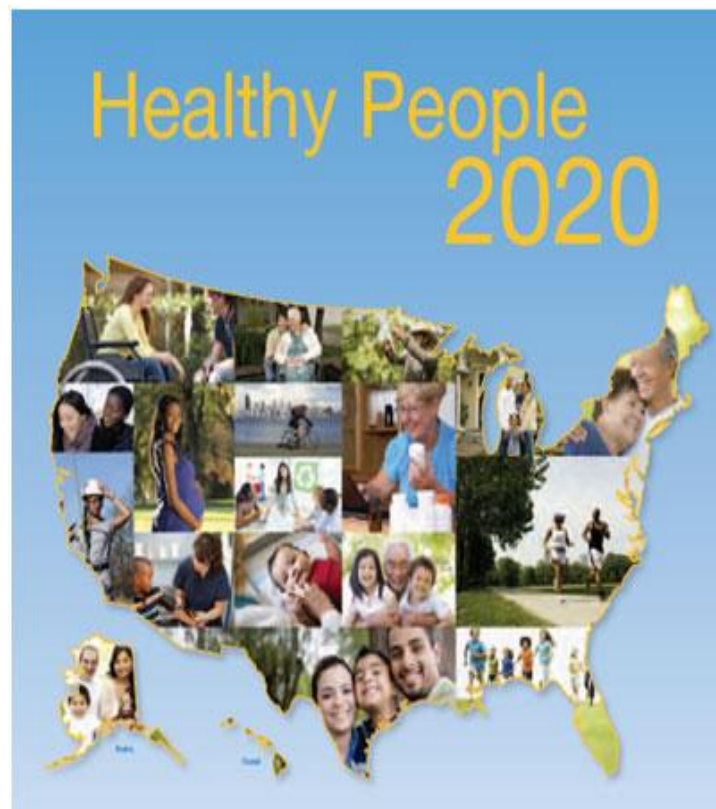
Dental Measurements

National Healthy People 2020 In 2010, CDC launched HP 2020 which lists 1,200 objectives organized into 42 public health areas. There are 26 Leading Health Indicators organized into 12 topics²⁶ aimed at preventing disease and reducing disparities. For the first time, dental health was selected as one of these main topics. ***This landmark designation places oral health among the very top of our national health priority issues*** and requires renewed effort to meet dental challenges over the next decade through collaboration across sectors and motivation for action at the national, state and community level.

The overall goal of the oral health topic is to prevent dental disease and improve access to care. CDC has listed 17 national objectives and 33 sub-objectives that can be used to monitor our oral health (OH) status.²⁷ Reaching these objectives goals will increase awareness of the importance of oral health to overall health, increase acceptance and adoption of effective preventive interventions and reduce disparities in access to effective preventive and dental treatment services. ***The 17 national HP2020 OH objectives emphasize a reduction in decay rates and tooth loss while increasing preventive care for various age groups.*** These targets are usually set at 10% above the baseline figure and they call for an increase in access to care, preventive services and water fluoridation. In addition, they track intervention programs for tobacco use and nutrition counselling and call for more monitoring of dental disease through surveillance systems.

Nebraska Healthy People 2020 There are also state performance measures used to determine our oral health status. Nine Nebraska Healthy People 2020 objectives have been currently selected to measure and include in the Nebraska State Health Improvement Plan (SHIP). The nine objectives are:

- Reduce dental caries experience for children age 6-9 from 59.3% to 53.4%
- Reduce untreated decay for children age 6-9 from 17% to 15.3%
- Reduce adult single tooth extractions age 45-64 from 47.7 to 45.3%
- Reduce adult all teeth extractions age 65-74 from 11.3% to 10.7%
- Increase % of people accessing oral health system from 67.6% to 71.0%
- Increase preventive care for low-income children from 50.4% to 55.4%
- Increase % of FQHC Patients who receive dental care from 28.7% to 31.6%
- Increase the amount of sealants for children 6-9 from 45.3% to 47.6%
- Increase community water fluoridation from 71.8% to 75.4%



National and Nebraska Healthy People 2020 Dental Objectives

		U.S. BASELINE	U.S. TARGET	NE BASELINE	NE TARGET
OH-1:	Decrease dental caries experience: Child				
	Age 3-5	33.3%	30.0%		
	Age 6-9	54.4%	49.0%	59.3%	53.4%
	Age 13-15	53.7%	48.3%		
OH-2:	Decrease untreated dental decay: Child				
	Age 3-5	23.8%	21.4%		
	Age 6-9	28.8%	25.9%	17.0%	15.3%
	Age 13-15	17.0%	15.3%		
OH-3:	Decrease untreated dental decay: Adult				
	Age 35-44 (any surface)	27.8%	25.0%		
	Age 65-75 (coronal caries)	17.1%	15.4%		
	Age 75+ (root surface caries)	37.9%	34.1%		
OH-4:	Decrease tooth extractions: Adult				
	45-64 years (single tooth due to decay or gum disease)	76.4%	68.8%	47.7%	45.3%
	65-74 years (all teeth)	24.0%	21.6%	11.3%	10.7%
OH-5:	Decrease moderate or severe periodontitis				
	45-74 years	47.5%	42.8%		
OH-6:	Increase early detection of oral cancer	32.5%	35.8%		
OH-7:	Increase access oral health care system/year	44.5%	49.0%	67.6%	71.0%
OH-8:	Increase low-income children to preventive care	30.2%	33.2%	50.4%	55.4%
OH-9:	Increase school-based health centers with				
	Dental sealants	24.1%	26.5%		
	Dental treatment care	10.1%	11.1%		
	Topical fluorides	29.2%	32.1%		
OH-10:	Increase oral health programs in:				
	FQHCs	75%	83%		
	Local health departments	25.8%	28.4%		
OH-11:	Increase % of patients at FQHC received dental services	17.5%	33.3%	28.7%	31.6%
OH-12:	Increase # of dental sealants on molar teeth				
	3-5 years (primary)	1.4%	1.5%		
	6-9 years (permanent)	25.5%	28.1%	45.3%	47.6%
	13-15 years (permanent)	19.9%	21.9%		
OH-13:	Increase community water fluoridation	72.4%	79.6%	71.8%	75.4%
OH-14:	Increase adults receiving preventive intervention				
	Tobacco cessation	10.5%			
	Oral cancer screening	23.3%			
	Glycemic control	14.3%			
OH-15:	Increase state recording of cleft lip and palates				
	Recording system	35 States			
	Referral system	31 States			
OH-16:	Increase states with dental surveillance systems	32 States	51 States DC		
OH-17:	Increase dental programs directed by dental professional with public health training.				
	Local agencies > 250,000 pop' l	23.4%	25.7%		
	IHS/Tribal > 30,000 pop' l	11 programs	12 program		

1. Data sources for national and state data for this table are provided in **Appendix B**

Nebraska State Health Improvement Plan Creating this first State Oral Health Assessment report now aligns Nebraska with other state and national organizations within an organized ASTDD framework that is designed to improve overall health for all. A statewide DHHS Nebraska health needs assessment was also completed in 2013 and the subsequent Nebraska State Health Improvement Plan (SHIP) was approved for 2013-2016.²⁸ *Oral Health is included in two of the five main Nebraska SHIP health priority areas.* There are determinates of population health that can affect how long and how well we live. Public health, environmental issues and genetics are major factors along with individual behavior.²⁹ Coordinating the OOH strategy into these overarching DHHS plans will allow us to apply for significant funding sources aimed specifically at oral health improvements corresponding to the five OOH major focus areas.

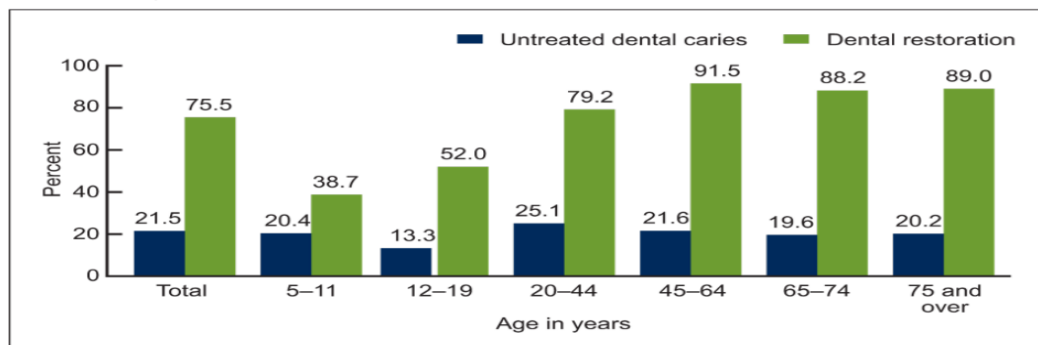


III. NEBRASKA DENTAL NEEDS ASSESSMENT

Oral Health Needs Assessment by Age Group

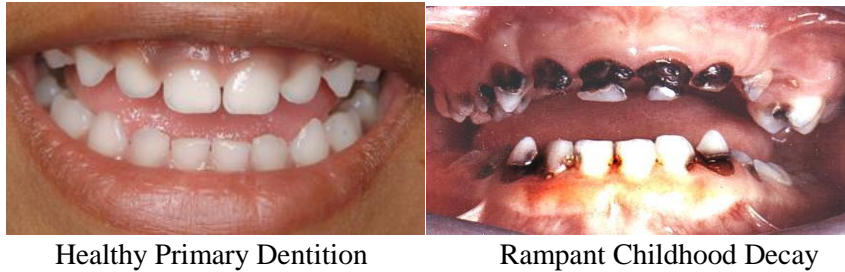
The graph below gives a general view of dental decay and restoration history by age group showing **90% of Americans will experience dental disease across the lifespan.** Vulnerable populations are at increased risk for dental disease due to possible barriers to care. These include rural residents, minorities, people with disabilities, military veterans, new immigrants and pregnant woman. Gender is not a significant factor, but education and personal income can have great effect. We will now describe the current U.S. trends for each group as compared to Nebraska status and the HP 2020 OH Objectives.

Figure 1. Prevalence of untreated dental caries and existing dental restorations in teeth, by age: United States, 2005–2008

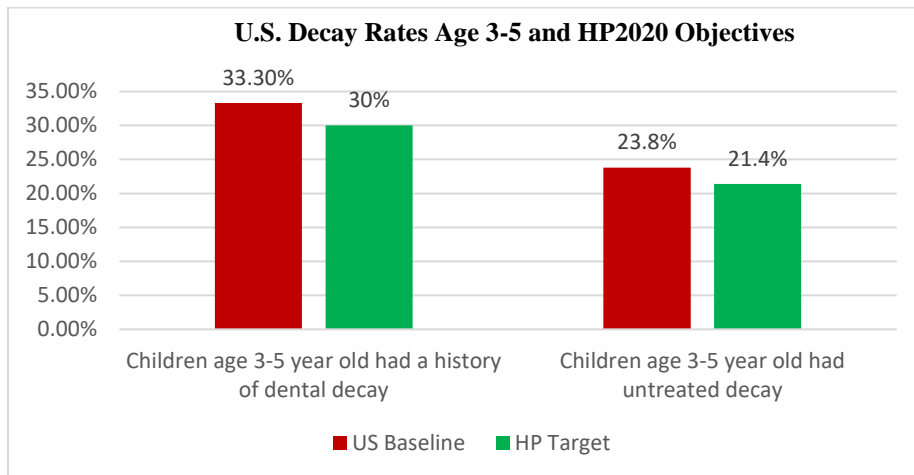


SOURCE: CDC/NCHS, National Health and Nutrition Examination Survey, 2005–2008.

Nebraska Children Age 0 – 5



This groups represents 8% of Nebraska’s population and there are over 130,000 children in this age range. Dental decay is the most prevalent chronic disease affecting children in the U.S.²² ***Children in the 0-5 age range are at risk for high rates of early childhood caries*** (the presence of one or more decayed, missing or filled primary teeth). If the disease progresses to severe or rampant decay the only option may be treatment in the Hospital Operating Room where costs are much higher than the dental office. It is a significant public health problem for low income, minority and special needs children who are less likely to see a dentist on a regular basis.³³ A National Health and Nutrition Examination Survey conducted by CDC in 1999-2004 reported a baseline of 33.3% of children age 3-5 year olds have had a history of dental decay.³⁴ The goal of national HP 2020 OH#1 is to reduce this rate to 30%.²² This survey also showed that 23.8% of 3-5 year olds had active untreated decay and the national goal of HP 2020 OH#2 is to reduce this rate to 21.4%. A basic visual dental survey has not been performed for Nebraska pre-school age children and therefore we have no baseline data to report or compare to these U.S. rates. A state-wide visual survey of Head Start children will be conducted in 2015-2016.



Source: CDC, National Health and Nutrition Examination Survey, 1999-2004

Caries Risk: Once a child reaches age one, a dental referral to a qualified dental provider is recommended for an oral examination that includes a caries risk assessment. ***The American Academy of Pediatric Dentistry has recently created an assessment tool that helps providers determine the proper level of caries risk: low, medium or high.***¹¹⁵ This tool can be used in all private and public health settings and helps determine the frequency of recall access to preventive services based on their individual levels of risk as determined by their providers, instead of assuming all children need the same intervention.

Table. Caries Risk Assessment Tool.

	Low Risk	Moderate Risk	High Risk	
Caries Risk Indicators	Clinical Conditions	<ul style="list-style-type: none"> • No carious teeth in past 24 months • No enamel caries “white spot lesions” • No visible plaque; no gingivitis 	<ul style="list-style-type: none"> • Carious teeth in the past 24 months • 1 area of enamel caries “white-spot lesion” • Gingivitis 	<ul style="list-style-type: none"> • Carious teeth in the past 12 months • More than 1 area of enamel caries “white spot lesions” • Visible plaque on front teeth • Radiographic enamel caries • High titers of mutans streptococci • Wearing dental or orthodontic appliances • Enamel hypoplasia
	Environmental Characteristics	<ul style="list-style-type: none"> • Optimal systemic and topical fluoride exposure • Consumption of simple sugars or foods strongly associated with caries initiation primarily at mealtimes • Regular use of dental care in the established dental home 	<ul style="list-style-type: none"> • Suboptimal systemic fluoride exposure with optimal topical exposure • Occasional between-meal exposures to simple sugars or foods strongly associated with caries • Caregiver of mid-level socioeconomic status (ie, eligible for school lunch program or SCHIP) • Irregular use of dental services 	<ul style="list-style-type: none"> • Suboptimal topical fluoride exposure • Frequent (ie, 3 or more) between-meal exposures to simple sugars or foods associated strongly with caries • Caregiver of lower-level socioeconomic status (ie, eligible for Medicaid) • No usual source of dental care • Active caries present in the mother
	General Health Conditions			<ul style="list-style-type: none"> • Children with special health care needs* • Conditions impairing saliva composition/flow

*Children with special health care needs are those who have a physical, developmental, sensory, behavioral, cognitive, or emotional impairment or limiting condition that requires medical management. Chart based on the American Academy of Pediatric Dentistry Caries Risk Assessment Tool. For more information on using the tool, refer to www.aapd.org/foundation/pdfs/cat.pdf. Used with permission of the American Academy of Pediatrics.

Nebraska Youth Age 6 – 18

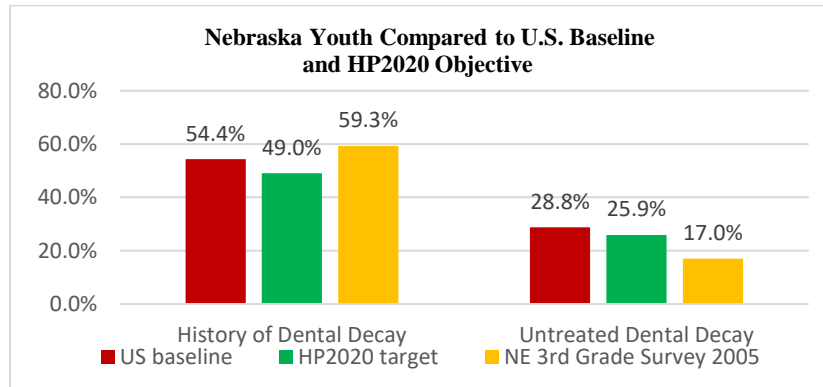
This group represents approximately 18% of our population and there were over 350,000 youth in this age range in Nebraska in 2013. School age adolescents demonstrate even higher levels of dental problems. *A 2012 national survey stated that almost 22% of all U.S. children in this age group had reported a toothache, decayed teeth or unfilled cavities within the past 12 months.*³⁷ It is estimated that 52 million school hours are lost each year due to dental-related illness. Primary teeth are falling out and permanent teeth erupt and dental concerns are frequent. The posterior molar teeth have deep grooves and fissures that are especially susceptible to decay. In the U.S., more than half (54.4%) of 6-9 year olds and (53.7%) of 13-15 year olds, have a history of caries. A goal under national HP 2020 is to reduce this to 49.0% and 48.3 %.). In addition, 28.8% of U.S. 6-9 year olds and 17% of the 13-15 year olds had untreated decay. National HP 2020 OH #2 targets are to lower those rates to 25.9% and 15.3%.²²

The DHHS Lifespan Unit coordinated the first visual Basic Screening Survey of third graders across the Nebraska to assess their dental health status and dental needs in 2005. A total of 2,057 children in 55 public and private schools were involved.³⁹ The age range for children in this survey was from 8 to 11 years. Analysis of that data was performed by the ASTDD and information was submitted to the National Oral Health Surveillance System (NOHSS) which gave Nebraska an initial baseline report on the status of our dental health that could be compared to other states and national trends.

According to those 2005 survey results:

- **59.3% of Nebraska third graders had caries experience (fillings), which was higher than the national baseline of 54.4%** and significantly above the national Healthy People 2020 OH #1 target of 49% for the 6 to 9 year old age group
- 17.0% of Nebraska third graders had untreated decay (cavities) which was lower than the national baseline of 28.8% and significantly below the national Healthy People 2020 OH #2 target of 25.9% for age 6-9
- 45.3% of Nebraska third graders had permanent molar sealant placement which is higher than the national baseline of 25.5% and above the national Healthy People 2020 OH #12 target of 28.1% for age 6-9
- About 40% of Nebraska third graders had decay in their primary teeth and 20% in their permanent teeth

But still, less than half of the youth in our state receive sealants and *a 2013 Nebraska Youth Risk Behavioral Survey (YRBS) found that about 60% of 9-12th grade students are drinking sugar sweetened beverages at least once per day in the past week.*⁴⁰ Exposure to soda pop, sports drinks and energy drinks can lead to high levels of added sugar in the diet. This suggests that our youth are still at high risk for dental decay and weight issues. A updated state-wide visual oral health survey will be conducted in 2015-2016.



U.S. baseline and HP2020 target is for youth aged 6 to 9, Nebraska 3rd Grade Survey is for youth aged 8 to 11.
Source: HP2020 Oral Health Objective, Nebraska DHHS, Basic Screen 3rd Grade Survey, 2005

The Nebraska School Health Program asked all schools to voluntarily conduct a dental screening for Pre K - 4th, 7th and 10th Grade students in 2011-12.⁴¹ A total of 101 schools from 61 geographically diverse school districts submitted screening data on 9,154 students (reflects 30% of total). Almost 90% of these screenings were performed by School Nurses and they were recorded in a simple 0-1-2 schema: 0 = no obvious dental problems, 1 = dental problems in one or two areas, 3 = dental problems in 3 or more areas. Results indicated 10% of the children had active dental problems but the rates were higher for younger ages and minority groups (30% for Native Americans).

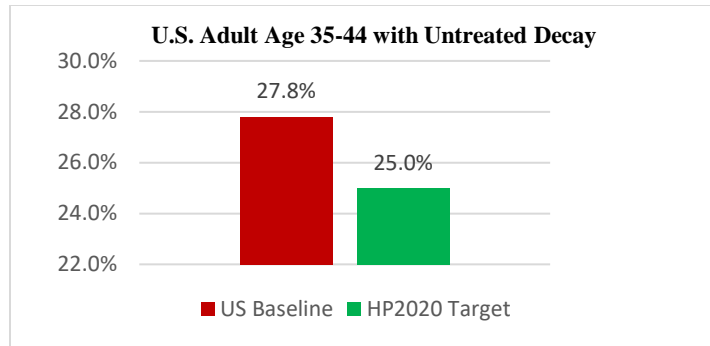
Nebraska Adults Age 19-64



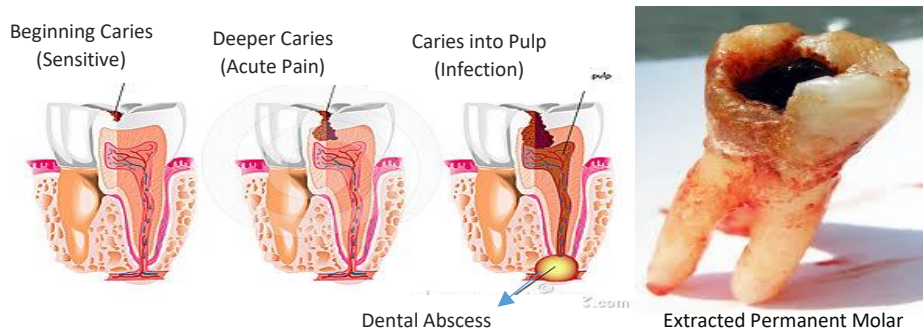
Healthy Adult Dentition

Chronic Decay and Gum Disease

Dental Decay This is our largest age group representing 60% of Nebraska's population or over 1.1 million people in the working class. This age group has the highest history of dental disease. *CDC has reported that almost 80% of adults age 20-44 have existing dental restorations and over 90% of ages 45-64 have dental caries experience.*⁴² CDC also reports nearly one-fourth of all adults (age 35-44) currently have untreated dental decay.³² The U.S. baseline now is 27.8% and the national HP 2020 OH#3 objective is to reduce this rate to 25.0%.²² Decay can be found on the biting surface, interproximal areas or even on the roots of teeth. Caries can advance through the enamel, into the dentin and even deeper into the pulpal tissue and surrounding bone structure resulting in acute pain and chronic infection requiring expensive root canal therapy or even extraction.



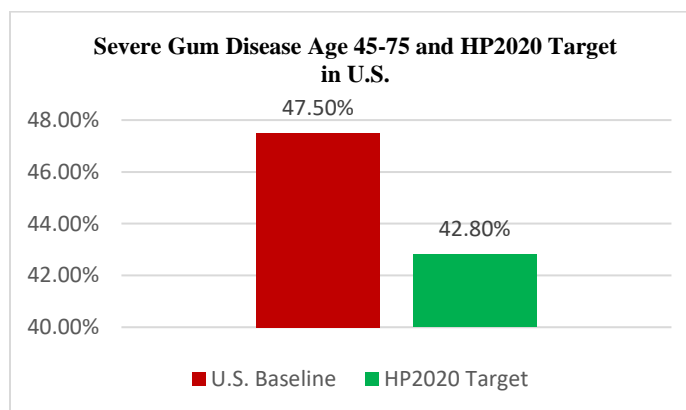
Source: CDC, National Health and Nutrition Examination Survey, 1999-2004



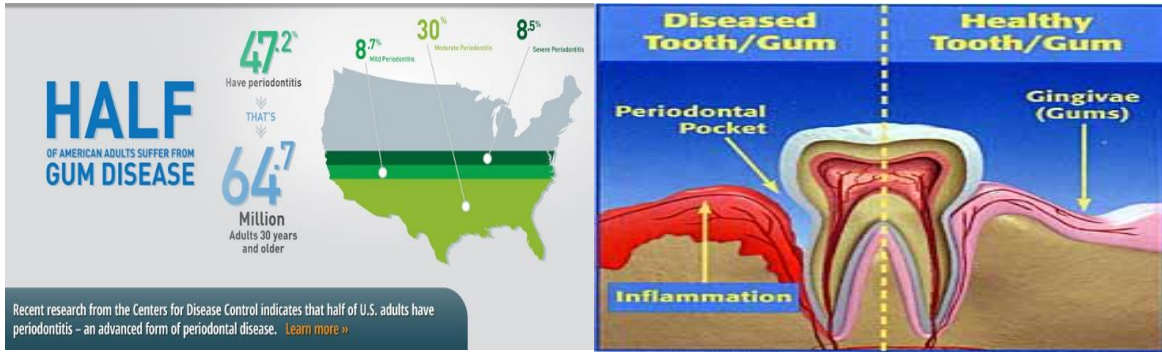
Gum Disease Adults also commonly suffer from gum disease which can affect the attached tissue and supporting alveolar bone around the teeth and can range from acute gingivitis to chronic ill-reversible periodontitis. *CDC reports almost half of American adults age 30 and older have mild to severe periodontal disease.*³² It is more common in:

- People with diabetes
- Smokers and smokeless users
- People living below the federal poverty level
- Men than women

Gum disease is a bacterial infection that is often caused by inadequate oral hygiene and a lack of professional periodic cleanings²². The U.S. baseline (which selects moderate to severe periodontitis for adults age 45-75) is 47.5% and the national HP 2020 OH#5 goal is to reduce this percentage to 42.8%.

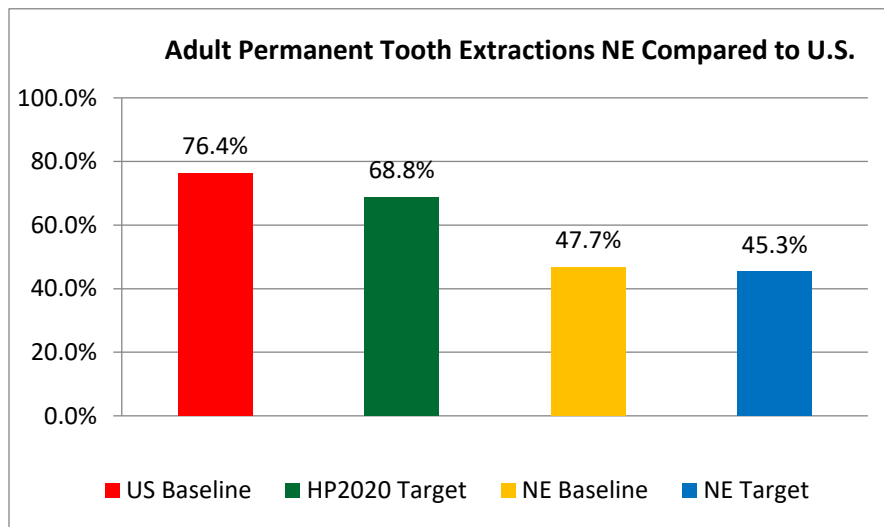


Data source: HP 2020 OH Objectives Revised 2015.



No Nebraska adult visual dental screening survey has been conducted to determine our adult oral health status on caries rates and gum disease so we cannot compare our situation with national HP 2020 Objectives. DHHS does conduct the annual Behavior Risk Factor Surveillance System that collects verbal information from adults 18 years or older on major health risks. Dental health is included as a rotating core topic every two years.⁴³ Three standard indicator questions are used to gather data on dental visits, tooth cleanings, and tooth extractions. Since 2012 this information has been collected by cell phone. This oral survey has been used in all 50 states for the past 30 years and remains the gold standard of behavioral surveillance. It is possible to add future supplemental dental questions on this survey and information on dental cleanings will be added in 2016. This is a very diverse and mobile age group and conducting visual oral surveys would be extremely difficult. This is not an age group that the ASTDD requires state periodic monitoring and analysis.

Nebraska Extraction Rate: The Nebraska BRFSS collected data on adult tooth extractions due to dental decay or gum disease in 2012 from cell phone interviews. *The state rate for tooth extractions in ages 45-64 was determined to be 47.7% (60.4% for people with diabetes)²¹ which is lower than the national average of 76.4%.* Dental data should be monitored to insure this favorable trend continues into the future. As more of our citizens are moving into the next older age category it is important to reduce the missing tooth rate so they can have an adequate functioning dentition to maintain their quality of life.



Source: NE DHHS BRFSS (Age 45-64) 2012-2014 HP 2020 OH #4; CDC national health and nutrition examination survey, 1999-2004

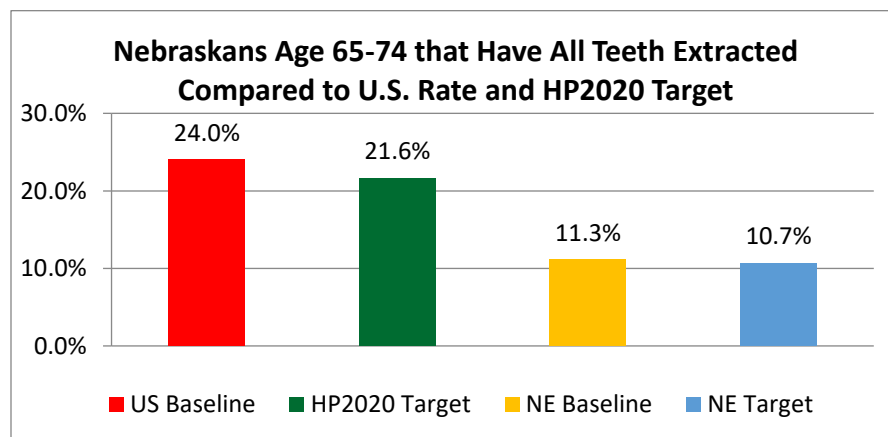
Nebraska Older Adults Age 65+

People in this age group make up about 14% of Nebraska’s population (over 250,000 people).¹² This number is expected to increase by nearly a third (75,000) this decade and could reach over 350,000 by 2030.⁴⁹ **Senior citizens are the fastest growing age population in our country with over 72 million expected by 2030.**⁴⁴ In 2014, Nebraska had 285 licensed Assisted Living Facilities with a total of 11,680 beds, 228 licensed Nursing Homes/Long Term Care Facilities with a total of 16,760 beds and 43 licensed Hospice Service Facilities. These people often demonstrate some of the most serious health care needs and costs that are associated with end of life issues. About 70% of older Americans do not have private or government dental insurance and 8 of 10 cannot make a direct payment for a major procedure.⁴⁵ Medicare does not provide any dental service benefit.⁴⁶ U.S. baselines indicate that 90% have experienced decay and 37.9% have untreated caries.⁴² About half have mild to severe gum disease and almost 25% have had all of their teeth removed.³² These conditions can lead to chronic dental pain and infection along with struggles in performing oral hygiene, difficulty in eating a normal diet and the risk of life threatening aspiration pneumonia. A study from Columbia University indicates up to 40% of elders have difficulty eating because of the poor state of their oral health.⁴⁷ Many elders live in assisted living facilities or nursing homes where they cannot independently care for themselves. Lack of mobility and transportation can limit access to care for even routine exams and cleanings. In 2013, the Kaiser Family Foundation reported that **23% of older American adults haven’t seen a dental provider for the past five years.**⁴⁸ Focus on severe health issues means oral care may be overlooked. Oral Health America has produced a report in entitled “State of Decay” in 2016 that outlined the dental barriers that elders face. States can join their national senior dental program called the “Tooth Wisdom Project”.

Nebraska has never conducted a visual oral health survey of this age group and the information we have comes from the 2012 BRFSS cell phone survey that found that 71% of adults over 65 had lost at least one permanent tooth. For elders age 65-74 who have lost all of their permanent teeth, the U.S. baseline is 24.0% and national HP 2020 OH#4 calls for a reduction to 21.6%.²² BRFSS results indicate Nebraska elders are at a rate of 11.3% (15.9% for people with Diabetes), which is below the national level.⁵¹ 20 states have submitted older adult survey information to ASTDD⁵⁰ and DHHS OOHD will conduct a survey as soon as funding and personnel become available.

The elderly face some of the greatest barriers to access dental care because:

- Many have mobility issues and require transportation assistance
- Many have physical limitations that interfere with personal oral hygiene
- Many have cognitive impairment that makes communication difficult.
- Many take multiple medications that create dry mouth and increase dental decay.

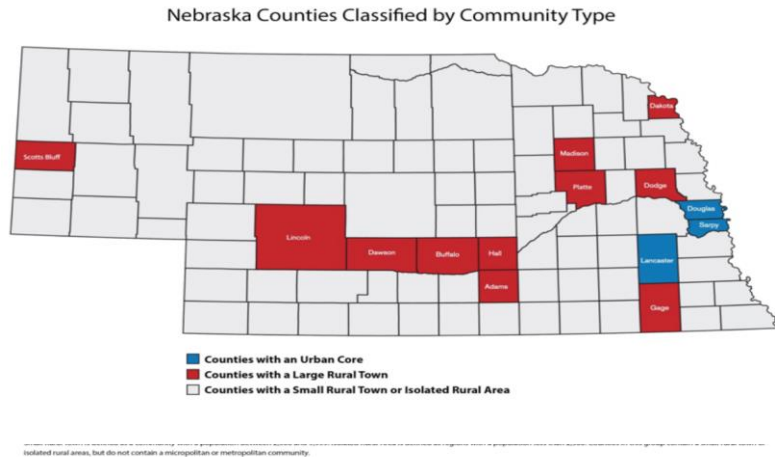


Source: Nebraska DHHS BRFSS (Age 65-74) 2012-2014 HP 2020 OH #4

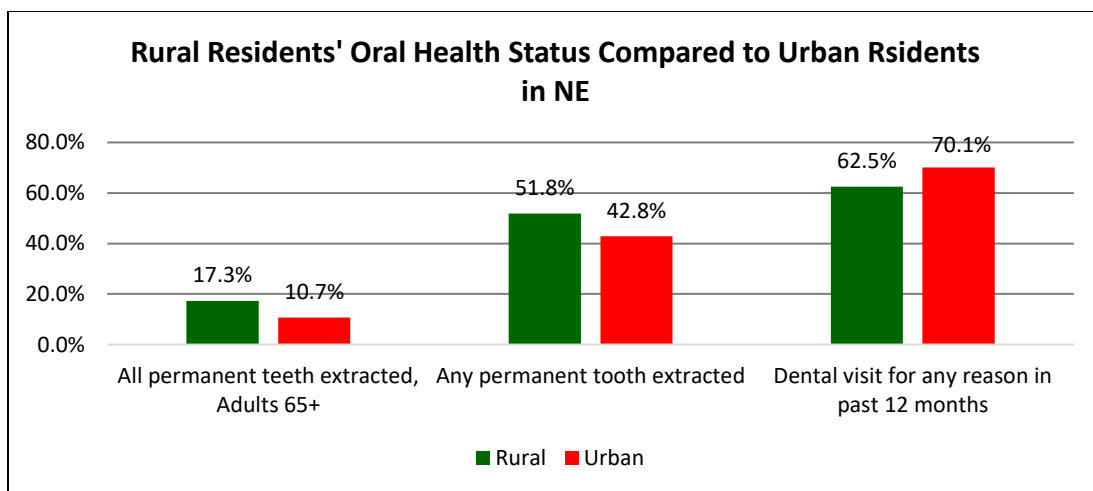
Nebraska Vulnerable Dental Populations

Our current health system has disparities and inequities in care for certain populations that are more vulnerable to dental disease due to a combination of circumstances. It is important to note that individuals may belong to more than one of these underserved groups, which can multiply the overall disparity effect.

Nebraska Rural Residents



Nebraska Rural Resident Oral Health Status Nebraska has a 2013 total population of 1,868,516 in 93 counties and approximately one third (over 600,000) live in rural locations.³⁰ The BRFSS survey from 2012 -2014 found *rural residents have higher oral disease rates and less access to dental care*. 51.8% of rural residents over age 18 had lost at least one tooth to dental decay or gum disease, while only 42.8% of urban residents did. And more rural elder people had lost all of their teeth (17.3%) compared to urban (10.7%). Many of these people are ranchers or farmers, often located many miles from the nearest dental clinic, community center or hospital. Just 62.5% of rural adult residents had seen a dentist in the past 12 months compared to 70.1% of their urban counterparts.²¹ In addition, the average age of rural county people is 40.5, which is 7 years higher than metro county people.^{51.5}



Source: Nebraska Department of Health and Human Service BRFSS Age 18+ 2012-2014

Rural Dental Workforce There are fewer dentists practicing in rural office locations to treat these higher disease rates. The UNMC Health Professional Tracking Service (HPTS) records the number and location of dentists practicing in Nebraska. In 2012, there were 1,497 licensed dentists in Nebraska and 1,034 were actively practicing:

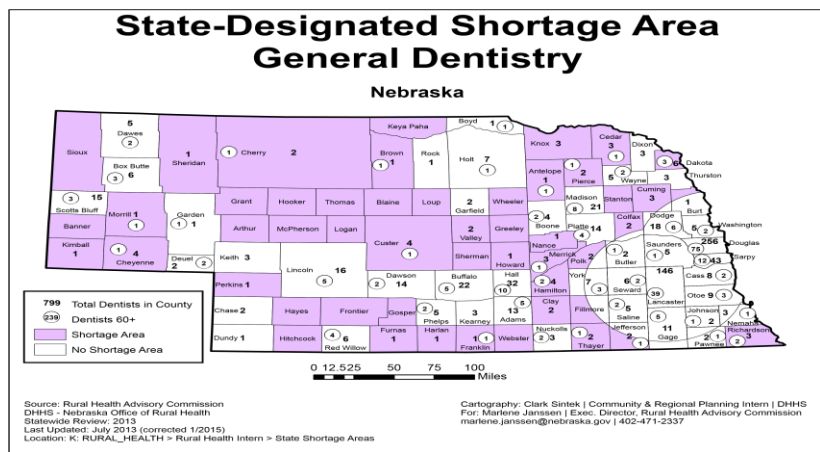
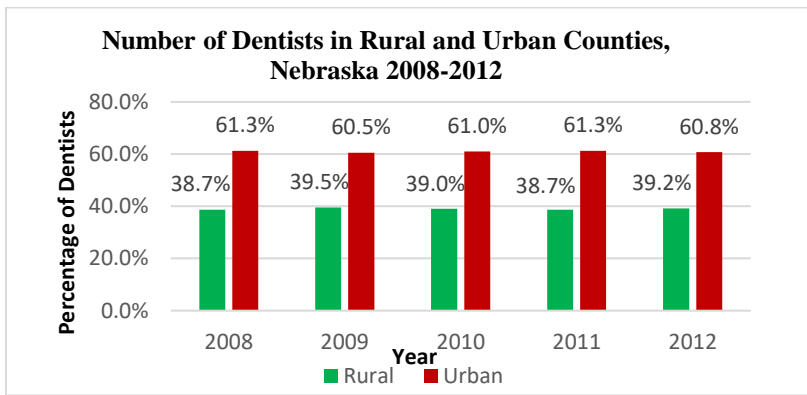
- 80% were general practice dentists
- 20% were specialists⁵²

*The majority of Nebraska dentists (61%) work in urban areas while only 39% work in rural settings.*⁵³ The DHHS Office of Rural Health tracks state general dental shortage areas, defined as no dentist in the service area or if the population-to-dentist ratio equals or exceeds 3000:1.⁵⁵ In 2013 there were:

- 49 counties designated as shortage areas
- 20 counties with no full time general dentist coverage⁵⁴

There were about 800 general dentists reporting in Nebraska in 2012 and almost 1/4th were over the age of 60 and were approaching retirement age.⁵² *More than half of Nebraska was considered a state designated general dentist shortage area.* That situation is more pronounced (almost 85%)^{56,54} when concerning Pediatric and Oral Surgery specialists, where only the Lincoln and Omaha regions are not considered shortage areas. Rural residents are one of the largest and most vulnerable groups for dental disease in our state, owing to:

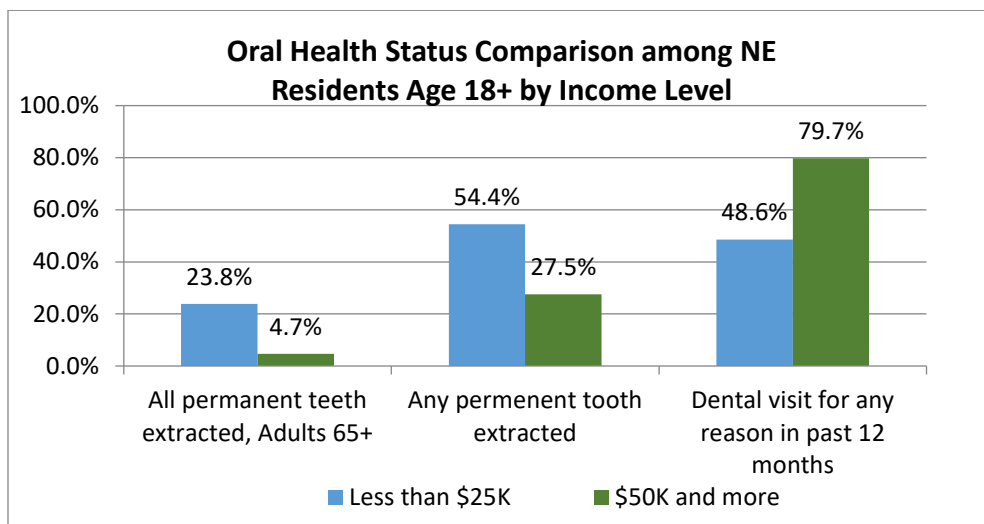
- Higher dental disease rates
- Fewer dental providers
- Geographic challenges
- Less employment options



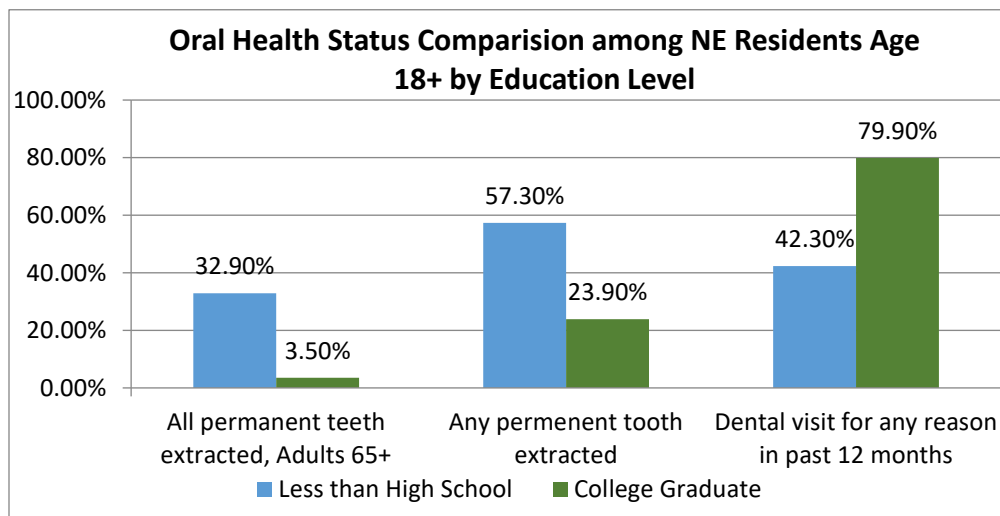
Nebraska Low Income and Uninsured

In 2014, 1 in 7 Nebraska adults (15.3%) in the working class (18-64) had no health care coverage (approximately 172,000 people).⁵⁷ It has been estimated that more than twice as many people in this group lack dental insurance (over 350,000).⁴⁷ The Affordable Care Act has reduced these numbers for medical insurance, but dental benefits were only mandated for children, still leaving a large gap in adult coverage.⁵⁸

While it has been estimated by CDC that only 44.5% of Americans of all ages access the oral health care system, only 27.8% of the lower income population do. *Kids Count Nebraska reported in 2014 that nearly 41% of our children are growing up in low-income families and many are minorities.* Over 10% of Nebraska children live in families where the head of the household lacks a high school diploma (U.S. rate 15%), 18% live below the federal poverty level (U.S. rate 23%), 22% of their parents lack secure employment (U.S. rate 31%) and 27% live in single-parent families (U.S. rate 35%).⁵⁹

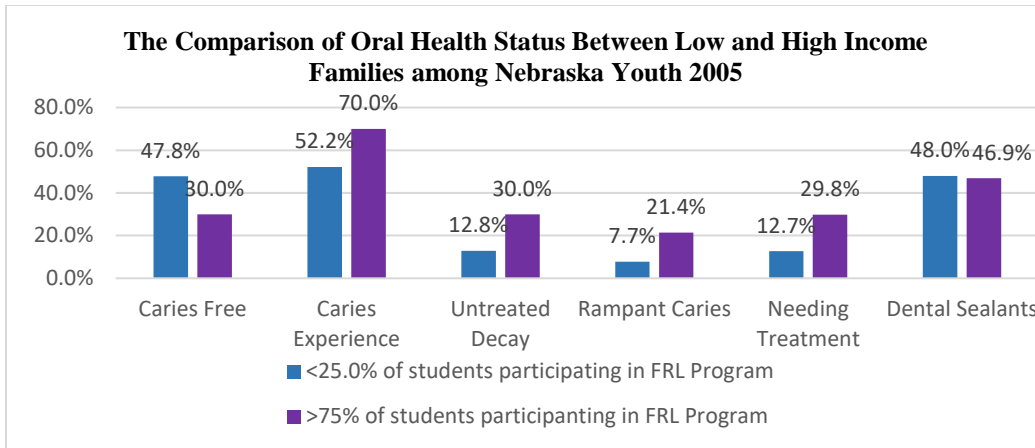


Source: Nebraska DHHS BRFSS Age 18+ 2012-2014



Source: Nebraska DHHS BRFSS Age 18+ 2012-2014

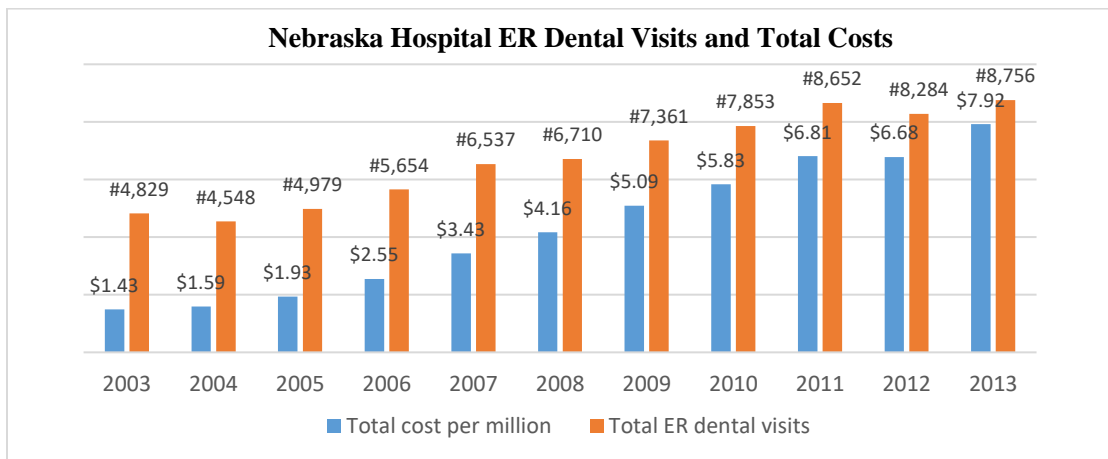
BRFSS Studies in Nebraska have shown that adults with lower income and education have higher rates of extractions while those with higher income and education visit their dentist more often (see above). The 2005 Nebraska 3rd Grade visual survey found that students who participated in the free or reduced lunch program were also more likely to have had fillings and untreated decay (see below).



FRL: Free/Reduced Lunch Program; Source: Nebraska DHHS 3rd Grade Survey Age 8-11 2005

Nebraska Hospital Emergency Rooms Many Americans in this vulnerable group have turned to our public health safety net system for episodic dental care. Located at Local Public Health Departments (LPHDs), Federally Qualified Health Center (FQHCs), dental schools or charitable clinics, they can offer reduced or free services. However, people often resort to hospital emergency rooms to alleviate their dental pain even when local dental offices are available. This is a very expensive and ineffective way to address dental care need. Most ER dental patients do not receive corrective treatment, only medications for the symptoms and they often return again.

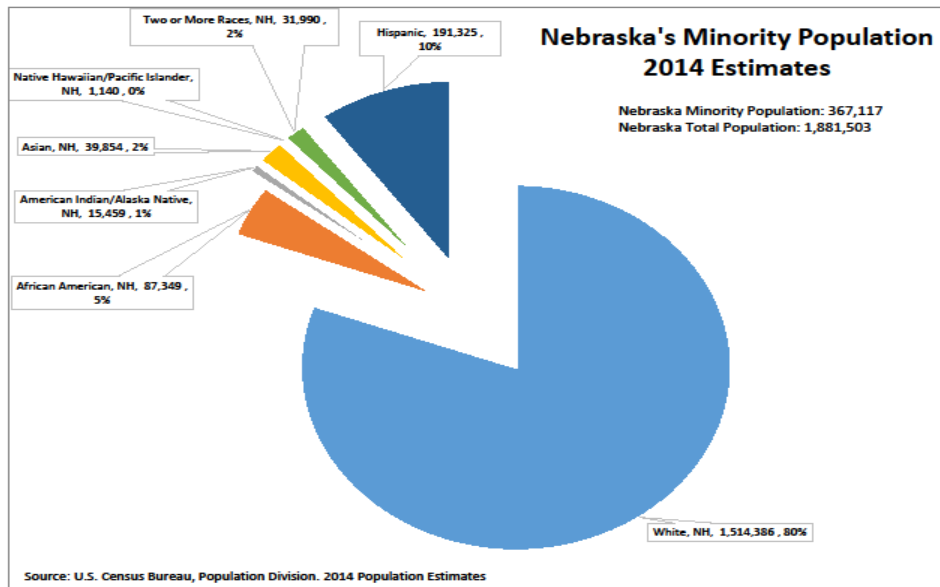
The Nebraska Hospital Association (NHA) annually collects ER data from 89 private and public hospitals.⁶⁰ The NDA tracks the nine most common dental conditions (ICD-9-CM 521-529). They report *from 2003-2013 the number of Nebraska Hospital ER Dental visits has risen 81% from 4,829 to 8,756 patients per year⁶¹ and the total expenses for these visits had increased fivefold from \$1.43 to \$7.92 million per year.⁶¹* In 2012, the average cost per visit was \$711.48. Nebraska is fortunate compared to some states that have seen numbers and expenses skyrocket.



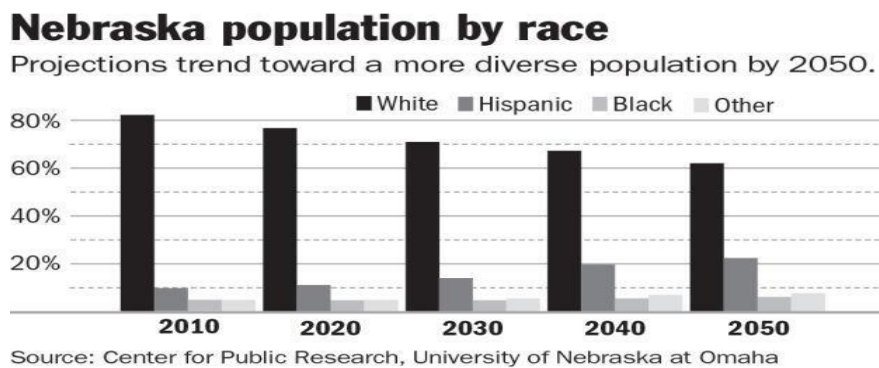
Source: Nebraska Hospital Association Emergency Room Data 2003-2013.

Nebraska Racial and Ethnic Minority Groups

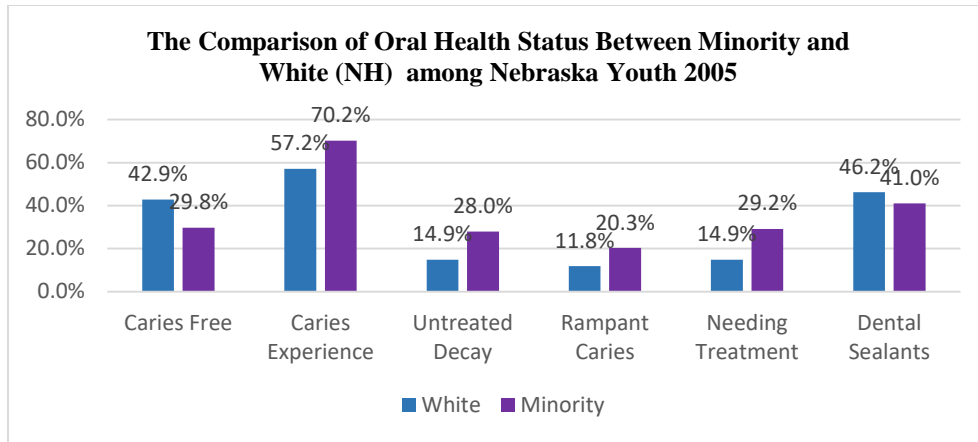
Nebraska has an approximate population of 1,868,516 people. Minority groups comprise 19.5% (about 350,000).¹² This is lower than the overall U.S. average of 22.3%, but it is projected that Nebraska will have an even more diverse population in the future and that Hispanics may increase to 20 % of our residents by 2050.⁶³



Note: some people belong to more than one group;
Source: Nebraska 2014 Census



According to the Nebraska 2005 visual 3rd grade oral health survey (see below), *African-American, Hispanic-American and children from low-income schools have significantly higher rates of caries experience, untreated decay and rampant caries.*³⁹ These students required more treatment needs and had a lower percentage of sealant placements compared to the Caucasian majority in higher income schools. Given the rapid growth of the Hispanic population and other ethnic groups in Nebraska, these disparities signal a growing need in both preventive care and access to providers who are sensitive and responsive to diverse population dental needs.

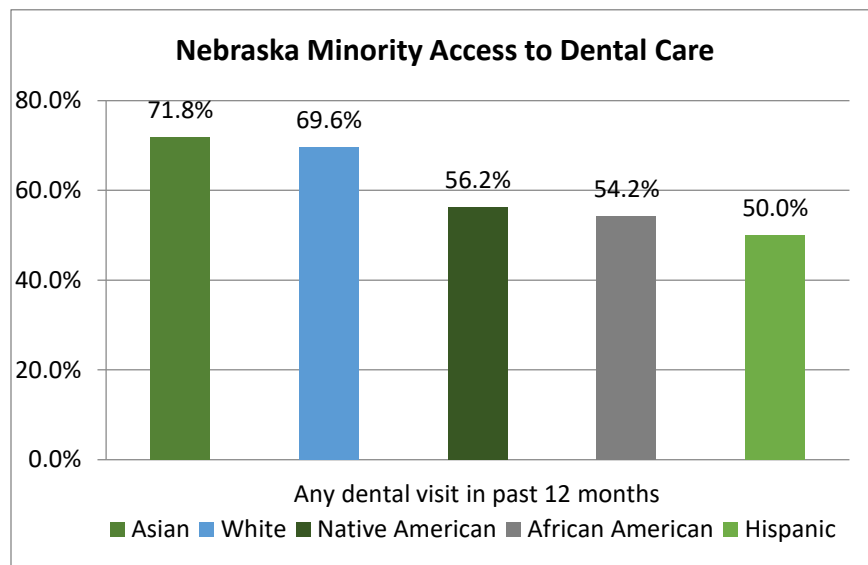


Data source: Nebraska DHHS 3rd Grade Survey Age 8-11 2005

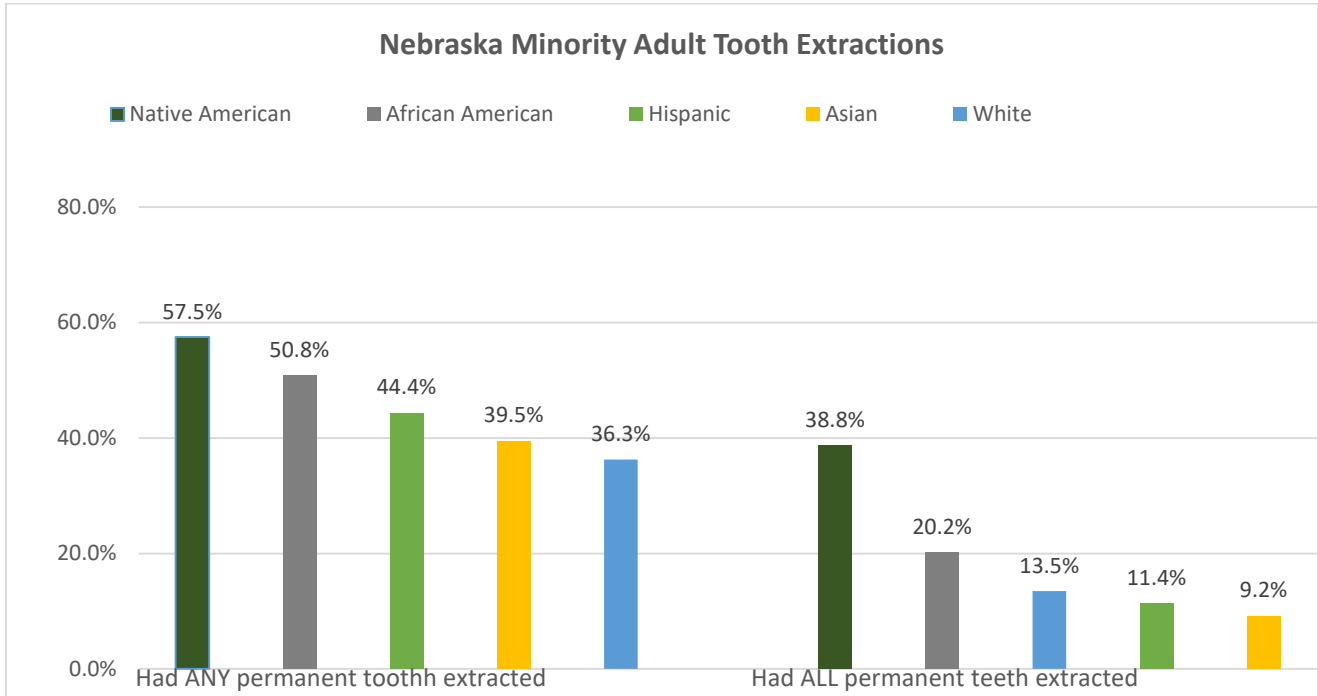
The Nebraska Behavior Risk Factor Surveillance Survey (BRFSS), biannually asks questions of adults to help determine their dental status and behavior factors that contribute to their oral health such as:

- Dental visits
- Teeth cleaning
- Tooth extractions
- Smokeless tobacco use

The results are broken down by sex, location, age, race, income and education. According to BRFSS combined data 2012-2014 (see below), **Nebraska minority adults have lower percentages of visits to the dentist and a higher rates of permanent tooth extractions compared to the white majority.** Native American, African American and Hispanic Americans all demonstrated poorer overall dental health compared to Whites, while Asian Americans compared favorably. Minorities often face economic, language and cultural differences along with health literacy problems that make effective communication difficult and create barriers to access preventive and corrective health care. Culturally competent oral health literacy and dental care should be provided to help reduce dental health inequities.



Source: Nebraska DHHS BRFSS Age 18 + 2012-2014

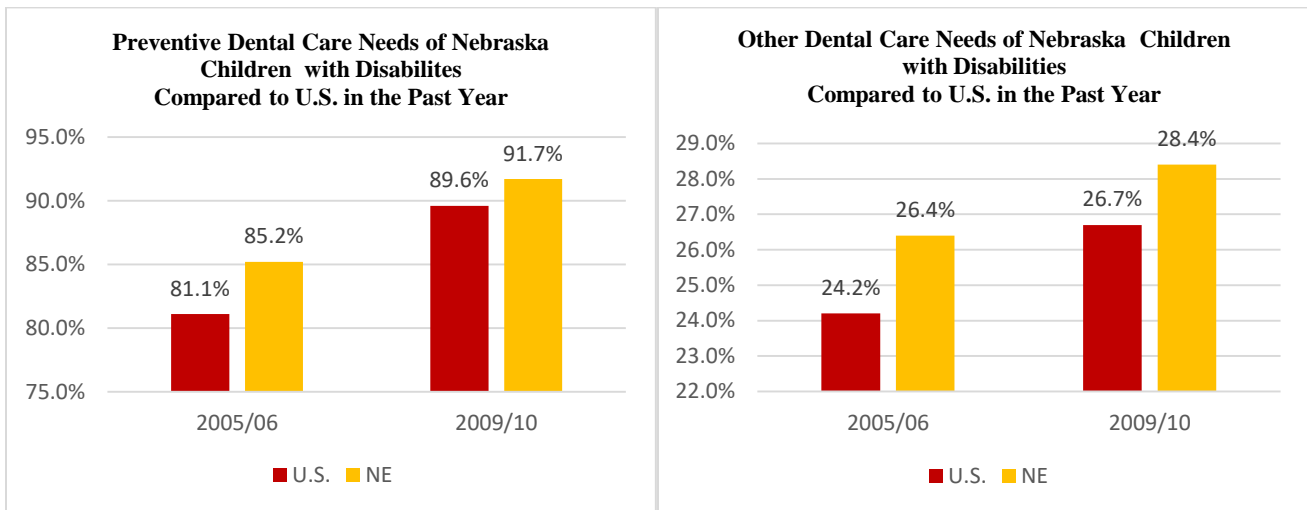


Source: Nebraska DHHS BRFSS Age 18 + 2012-2014
 Source Nebraska DHHS BRFSS Age 65+ 2012-2014

Nebraskans with Disabilities



It is estimated that 10.6% of Nebraska’s population has one or more disabilities, (about 200,000).¹² Common concerns are physical, visual, hearing and behavioral. No oral health surveys have been conducted but we do have information from the National Survey of Children that indicates *Nebraska special care children have slightly higher needs for preventive and dental services compared to other children in the U.S.*



Source: National Survey of Children with Special Health Care Needs Age 1-17 2005/06, 2009/10.

The National Survey of Children with Special Health Care Needs provides both state and national levels of dental information for children age 1 to 17 years with emotional/developmental/behavioral issues. It provides a general picture about the oral health status of people with disabilities in Nebraska. According to the results in 2005/06 and 2009/10, these children have higher need for prevention than the rest of the U.S. (91.7% to 89.6%) and have higher rates of other dental needs (28.4% to 26.7%) (See graph above).⁶² The data shows an overall need for more emphasis in providing access to preventive and corrective dental care for people with disabilities. State dental disease prevention and health promotion programs should be designed to accommodate members of this group.

Nebraska Military & Veterans



Active Duty: Nebraska is home to almost 8,000 active duty Army, Navy, Marine Corps, Air Force, and Coast Guard personnel.⁶⁵ There are also over 9,500 Reserve and National Guard personnel.⁶⁵ In 2008, the Department of Defense (DoD) conducted a nationwide Oral Health Study of over 5,000 Army, Navy, Air Force and Marine Corps recruits.⁶⁹ As part of their medical evaluation, each recruit undergoes a dental examination to determine their dental readiness classification. Service members who do not require urgent care now or in the next 12 months are considered worldwide deployable. Those members who require urgent or emergency treatment are considered non-deployable. *The DoD survey results showed that over half (52.4%) of their young adult recruits had unmet dental needs that classified them as non-deployable*, demonstrating the fact that oral health can even affect our military capabilities.⁶⁹ The majority of our Nebraska Military members receive their dental readiness examinations and routine care at Offutt Air Force Base in Omaha and the Army/Air National Guard facilitates in Lincoln.

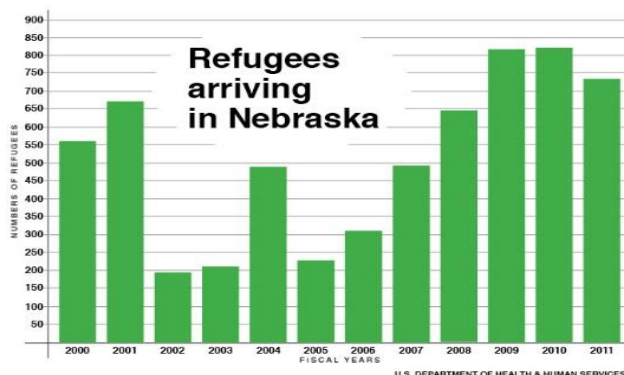
Veterans: There are estimated to be over 140,000 Veterans of all ages living in Nebraska⁶⁵ and *there are approximately 5,500 Operation Enduring Freedom (OEF)/ Operation Iraqi Freedom (OIF) Veterans in the VA Nebraska-Western Iowa Health Care System who have recently returned from overseas.*⁶⁴ Dental benefits are more limited than medical benefits through the Veterans Administration. Patients who do not meet eligibility requirements can receive assistance to be enrolled in the VA Dental Insurance program at a reduced cost. In 2013, over 17,000 dental visits were provided at three dental facilities located in Grand Island, Lincoln and Omaha.⁶⁶ The clinics were staffed by four full time and 12 part time dentists produced over \$8 million⁶⁶ worth of care to their patients. The VA also sponsors advanced dental student residency training positions through the UNMC College of Dentistry. If eligible Veterans live more than 40 miles from a VA facility, they can get covered care in the local community. DHHS also manages four Veterans homes that serve approximately 650 disabled Veterans in Scottsbluff, Bellevue, Norfolk and Grand Island. In 2014, the Nebraska Association of Local Health Directors received a grant from VA to assist returning Veterans reintegrate into their families and rural communities. This project, “Vet SET”, provides resources and training to health departments to meet the distinctive needs of Veterans and assure that they can access support services (including health) that they need to successfully make the transition from the military back to civilian life.⁶⁷

In 1992, the Homeless Veterans Dental Program was established by the VA. *In VA surveys ranking the 10 highest unmet needs for homeless Veterans, dental care was consistently ranked as one of their top 3 unmet needs.*⁶⁸ Studies have also shown that after dental care, Veterans report significant improvement in their perceived general health and overall self-esteem which helps them re-enter society as productive members.

Nebraska Immigrants and Refugees

According to the American Immigration Council in 2013, 6.6%, or approximately 123,000 of Nebraskans are foreign born.⁷⁰ Nebraska is also home to many refugees who fled persecution in their home countries. Since 2000, more than 8000 refugees, mostly from the regions of SE Asia, Africa and the Middle East have resettled in Nebraska.⁷¹ In 2015, 1,309 refugees and persons with special immigrant visas resettled in Nebraska.⁷² There is also a large number of secondary refugee migrants who were resettled in a different state but then moved to Nebraska. Refugees undergo an overseas medical screening and a domestic medical exam in Nebraska within 30 days of arrival. A dental screening is part of this process and utilizing translators can help bridge some of the linguistic and cultural challenges.

Definitive dental data information is needed on refugee populations, but it can be assumed that *economic and cultural challenges for refugees result in lower access to oral health care than the majority of Nebraskans.* Limited Medicaid benefits are available for treatment and an emphasis should be put on preventive care. Future collaboration efforts should be made by the OOHD through the DHHS Refugee Program Coordinator, the Omaha Refugee Task Force and the New Americans Task Force in Lincoln to learn more about the health care status and dental needs of Nebraska’s immigrant and refugees.



Nebraska Smokeless Tobacco Users

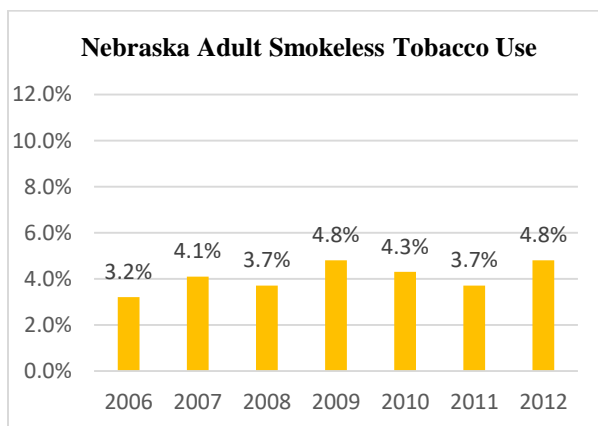
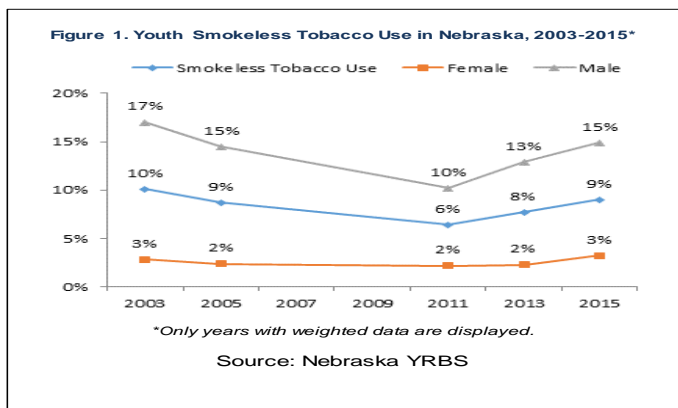


In 2012, the American Cancer Society reported that 9 million people in the U.S. use smokeless tobacco.⁷⁵ Although cigarette smoking in the U.S. has been on the decline, surveys from the CDC show that the use of smokeless tobacco among youth has held troublingly steady.⁷⁶ Each year, more than 500,000 American youth ages 12-17 use smokeless tobacco for the first time.⁷⁷ In 2013, 14.7 percent of high-school boys and 8.8 % of all high school students reported current use of smokeless tobacco products.⁷⁸ The use of cigarette, pipes and cigars can also contribute to staining of the teeth, bad breath, intra-oral lesions, gum recession and periodontal disease, which can then lead to tooth loss. In addition, dental caries rates, particularly on the root surfaces of teeth, are higher for tobacco users than non-users.

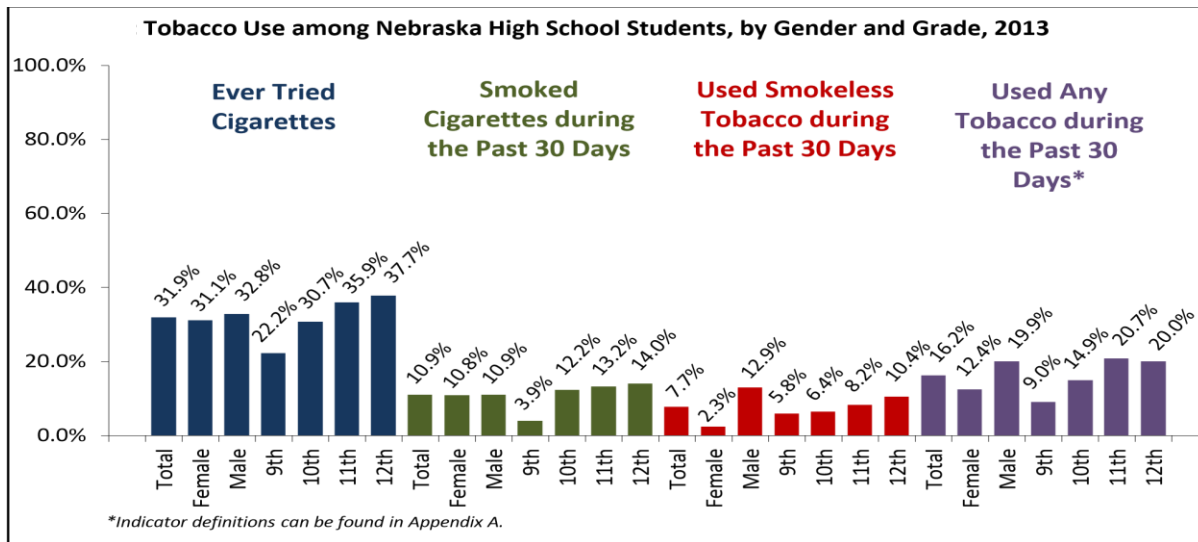
Substance abuse of tobacco in any form puts the user at risk for long term nicotine addiction and leads to higher rates of heart disease, elevated blood pressure and stroke. Chewing tobacco contains higher levels of nicotine than cigarettes and is therefore more addictive.⁷⁹ Major tobacco companies have recently tried to promote smokeless as a safe alternative to smoking and have increased their marketing efforts due to the successful smoking bans enforced around the country. The OOHd needs to work closely with DHHS Tobacco Free Nebraska⁸⁰ to track our user trends and to increase public health campaign efforts to educate and protect our citizens.

Youth and Adult Smokeless Tobacco User Rates

Tobacco surveys in Nebraska indicate that more than 75,000 people use smokeless tobacco (there are more than 200,000 smokers).⁶⁸ In Nebraska, results from surveys show that youth chew at a higher rate than adults. The 2013 Youth Risk Behavior Survey indicates our rate at 7.7%.⁸¹ DHHS Tobacco Free Nebraska also conducts periodic surveys on youth and adults. ***The survey results indicate an increased use among youth and a relatively steady trend among adults.*** In 2015, they found that 9.3% of youth and 4.7% of adults use smokeless tobacco¹¹⁹ (see graphs below). These figures are higher than the national average and due to recent tobacco marketing efforts. The OOHd will place special emphasis to collaborate with Tobacco Free Nebraska to address this situation.



Question: Use of Smokeless Tobacco in the Past 30 Days; Source: Nebraska DHHS TFN Youth and Adult Tobacco Survey 2000-2015



Source: Nebraska DHHS YRBS Survey Grades 9-12 2013 Question "Used Smokeless Tobacco in past 30 days" Overall 7.7%

Oral & Pharyngeal Cancer:

Smokeless tobacco contains 28 known carcinogens and there is a direct correlation of smokeless use to oral cancer (90% of people with oral cancer are tobacco users).⁷⁶ Chronic use has been directly linked to cancer of the mouth, throat and larynx. Oral Cancer is the 12th⁸³ leading type of cancer in the U.S. and it represents 2.5% of all new cancer cases in the U.S. **Over 30,000 Americans are diagnosed with oral or pharyngeal cancer each year⁷⁴ and only slightly more than half will be alive in 5 years.** Survival rates are lower for African American men than white (36% vs 61%). It causes nearly 8,000 deaths annually and kills roughly one person per hour.⁸³ Risk factors include genetic predisposition, heavy alcohol consumption and prolonged tobacco use. Historically, the death rate associated with this cancer is high because it is often discovered late in its development stage. Increased early cancer screenings by dental professionals would lead to earlier detection and more successful long term outcomes.

The Nebraska Surveillance, Epidemiology, and End Results Program (SEER) reports the incidence of and mortality of oral and pharyngeal cancer every year. Going back to 2000, the incidence rate of around 11 per 100,000 people has not changed significantly. The death rate per 100,000 people remain constant.⁸⁴ Nebraska also has a birth defect registry records cleft lips and palates when diagnosed.

NEBRASKA ORAL CANCER	INCIDENCE		MORTALITY	
	Diagnoses	Rate*	Deaths	Rate*
2014	245	11.6	51	2.3
2009-2013	1,162	11.3	245	2.3

*Rates are expressed as the annual number of invasive diagnoses or deaths per 100,000 population. Age-adjusted to the 2000 U.S. standard population Data source: Nebraska DHHS Cancer Registry, 2014.

Nebraska Pregnant Women

Nebraska has approximately 25,000 new births each year.¹² The perinatal time period is an opportunity to take extra care of the mother's teeth and gums and also to learn about early dental health and nutrition for the newborn. Hormonal changes reduce resistance level to oral disease and it is important to increase oral hygiene efforts with brushing, flossing and professional cleanings to prevent bacteria from causing dental infections. Common dental problems during pregnancy include painful and bleeding gums, swollen pregnancy granulomas, advancing periodontal disease, and increased risk for tooth decay for the mother.⁸⁵

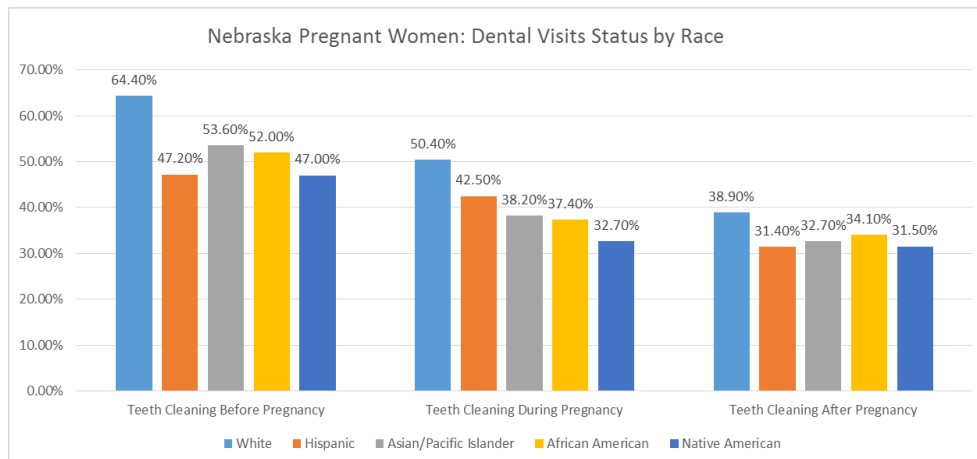


Acute Pregnancy Gingivitis

It is important to also remember the connection between the mother's oral health and the oral health of her unborn baby. During this time, the mother should receive perinatal nutrition counseling with special emphasis on calcium, protein, fruits, nuts and cheese with prenatal vitamins to help with the development of their child's baby teeth. **Nationally, only about one fourth of women see a dentist during their pregnancy.**⁸⁶ The American Academy of Pediatric Dentistry is working to increase awareness of the importance of oral health care in expectant mothers.

Dental information has been collected over the past ten years through the Nebraska Pregnancy Risk Assessment and Monitor Survey (PRAMS). The data from the years 2009-11 shows Caucasian pregnant woman were more likely to visit their dentist during this period of time than other races.⁸⁵ Ideally, 100% of these ladies should get cleanings. Of the more than 5,000 women responded to this survey:

- 60.3% received a cleaning before their pregnancy
- 47.8% received a cleaning during the pregnancy
- 37.2% received a cleaning after their pregnancy



Source: Nebraska Department of Health and Human Service, Pregnancy Risk Assessment and Monitor Survey PRAMS, 2009-2011

IV. NEBRASKA ORAL HEALTH STRATEGIC FOCUS AREAS



"In Pursuit of Dental Health Equity"

Focus Area #1 Nebraska Public Policy

DHHS and the Nebraska Office of Oral Health and Dentistry

Nebraska Statutes #38-1149⁸⁷ states that the DHHS shall appoint a permanent full time Dental Health Director within the Office of Oral Health and Dentistry. Statue #38-1151⁸⁸ further states that the OOHD will promote and develop activities which will result in the practice and improvement of the dental health of the people of the state. This position has been vacant several times in the past which has greatly limited the progress of dental health services within our state. HP2020 national Objective #OH-17 calls for an effective public dental health program in each state, tribal or local jurisdiction of more than 250,000 people, led by a dental professional with public health experience.²² Not having an active state Office of Oral Health or Director has cost Nebraska opportunities to qualify for large federal grants that were available to other states.⁸⁹ Positive public health outcomes depend on adequate public financial resources. In 2013, the Nebraska Legislature appropriated the first funding for the OOHD Dental Director position and it has continued.⁸⁷ The allocated position should remain actively filled so Nebraska can align with the rest of the nation on the subject of dental health. ***Having a State Dental Director permanently in place gives Nebraska the organizational structure needed to coordinate with federal agencies and to apply for their funding.....such as the HRSA State Oral Health Workforce Development grants.*** The Dental Coordinator position allows the OOHD team to inform and provide assistance to state and local dental health leaders and policy makers for improvements that illustrate a commitment to oral health.

Nebraska Professional Dental Workforce

Dentist Workforce: The Health Professional Tracking Service (HPTS) conducts a voluntary survey of dentists who are located in Nebraska and actively provide services. The UNMC Center for Health Policy analyzed the HPTS data from 2008 to 2012. In 2012, there were 1,497 licensed dentists and of those who responded, 1,034 dentists were actively practicing.⁹⁵ ***The majority of Nebraska dentists were urban males with limited ethnic diversity and more than half worked part-time,*** 29% were 21-40 years old, 45% were 41-60 years old and 26% were over 60 years and rapidly approaching retirement age.⁵⁶ The findings indicate uncertainty about the future dental workforce needs. In 2014 the number of dentists increased to 1,586, and 1,049 were actively practicing.⁹⁵ There are eight specialties in the field of dentistry: Orthodontics, Oral Surgery, Pediatric, Periodontics, Endodontics, Prosthodontics, Public Health and Oral Pathology.



University of Nebraska College of Dentistry



Creighton University School of Dentistry

There are 65 Dental Schools in 35 states with approximately 4,500 dentists and over 5,500 hygienists graduating each year.⁹¹ Nebraska is fortunate to have two dental schools, the UNMC College of Dentistry in Lincoln and Creighton School of Dentistry in Omaha. In 2014, 47 general dentists, 13 specialists and 20 hygienists graduated from UNMC.⁹² Fifteen hygienists graduated from Central Community College in Hastings and 85 general dentists graduated from Creighton University School of Dentistry.^{93,94}

Nebraska is ahead of most states in training a professional health care workforce to meet needs. But a concern remains as to if these providers will remain in the state, especially in underserved rural areas. A 20-year Nebraska dental graduate study from 1989 to 2008, found that 85% of rural Nebraska dentists were graduates of UNMC.⁹⁷ A total of 879 UNMC students graduated during this period and 35% of these graduates (311) stayed in Nebraska.⁹⁸ Over half of the graduates who did remain in the state were practicing in rural communities, with female and nonresident graduates more likely to practice rurally. This percentage has been steadily improving due to many student training programs and incentive opportunities that have been started.

The HPTS further tracked the number of dentists leaving and joining the workforce from 2005-2014 and found that the overall workforce numbers are adequate now but they may not be distributed evenly across the state, especially in areas with underserved patients. With 26% of general dentists approaching retirement age, this data also suggests that the future dental workforce may have trouble keeping up with the demands of our growing population.⁹⁵ These numbers should be closely watched and a future task force could be assembled that could contain members from all involved groups: DHHS, Dental Colleges, NDA, NDHA, LPHDs and FQHCs etc. to determine proper workforce recommendations and a clear strategy for meeting these demands in the future.

Dentists - Nebraska Primary Practice Location						
Change During Year	Count Beginning of Year	# of Dentists added to the NE workforce during the year	# of Dentists removed from the NE workforce during the year	Net Change	Count End of Year	% change from prior year
2005	967	42	43	-1	966	-0.1%
2006	966	58	39	19	985	2.0%
2007	985	73	48	25	1010	2.5%
2008	1010	53	41	12	1022	1.2%
2009	1022	46	48	-2	1020	-0.2%
2010	1020	60	43	17	1037	1.7%
2011	1037	45	52	-7	1030	-0.7%
2012	1030	32	28	4	1034	0.4%
2013	1034	77	61	16	1050	1.5%
2014	1050	50	51	-1	1049	-0.1%
Total		536	454	82	2005 to 2014	8.6%

Source: UNMC Health Professions Tracking Service 2015

Dental Hygienist Workforce in Nebraska: In 2014, Nebraska had 1,360 registered dental hygienists⁹⁵ and the majority work in private practice dental locations in urban settings. A Public Health Authorization was first introduced in 2008 to allow Registered Dental Hygienists to obtain a Public Health permit. *Nebraska Public Healthy Hygienists can provide education and preventive oral health services (such as screenings, fluoride treatments and cleanings) in community settings, including school based programs.*⁹⁹ In 2013, this permit was further expanded to include adults in locations such as elder facilities. In 2014, a total of 98 hygienists had their Public Health Authorization Permit (88 Child/Adult and 10 Child).¹⁰¹ The only HPTS written survey of Nebraska hygienists was performed in 2010 and it should be updated to determine current level of activity and practice location of these essential dental care providers.

Nebraska Public Health Hygienists can work in non-traditional settings such as:

- Hospital sites
- Assisted-Living facilities and Nursing Homes
- Correctional facilities
- Tribal clinics
- Federal/state/local public health departments
- School settings
- Community centers or other similar programs¹⁰⁰

Dental Workforce Retention and Recruitment:

Extramural Rotations: In an effort to retain more Nebraska graduates and to place dentists in underserved locations, several programs are now in place. **Both UNMC and Creighton offer intramural, extramural and elective programs that match upper class students to private and public locations across the state for 4-6 week periods.**¹⁰² These experiences allow students to gain valuable insight into professional life after school and exposes them to urban and rural parts of the state where they can provide care under the guidance of approved preceptors. This program can encourage students to return to these communities to practice.

Student Loan and Loan Repayment: U.S. dental students now graduate with close to \$250,000 of student loan debt.⁹⁶ This figure has more than doubled over the last decade. The DHHS Office of Rural Health Advisory Commission offers two tax free incentive programs: **The Nebraska Rural Health Student Loan Program and the Nebraska Loan Repayment Program are available to UNMC and Creighton dental students.** The first is offered to Nebraska residents attending medical, dental, physician assistant or mental health study. Students can receive up to \$20,000 per year for up to four years. The second can be obtained by licensed graduates and pays up to \$20,000 a year (with a local match) over a 3 year period.¹⁰³

3RNet Recruitment: The Rural Recruitment and Retention Network (3RNet) is a non-profit organization that connects rural and underserved communities with health care professionals.¹⁰⁴ **3RNet unites numerous resources around Nebraska to provide background information about current practice opportunities.** It creates a data base of available dental practices in rural and urban settings and currently lists about 35 sites.¹⁰⁴ It is coordinated through the UNMC College of Dentistry Rural Opportunities Program.

Nebraska College of Public Health: There are 52 accredited Schools of Public Health in North America¹⁰⁵ and Nebraska opened the UNMC College of Public Health in 2010 in Omaha. The Center focus on topics such as global health, environmental health and biostatistics. **Over 225 students study at UNMC to obtain certificates, masters or doctoral degrees in Public Health.**¹⁰⁶ Only four schools in the U.S. currently offer a dental MPH degree to focus on oral health issues for populations and communities¹⁰⁷ The OOHD will seek opportunities to partner with this resource for assistance in epidemiology and evaluation.



UNMC College of Public Health

Focus Area #2 Nebraska Oral Health Surveillance

The Establishment of Oral Health Surveillance

The Purpose of Dental Disease Surveillance: To improve our oral health, state legislators and federal agencies must have current and reliable information on a regular basis to determine Nebraska's oral health status. *Dental surveillance is needed to determine our current status, to identify our deficiencies and to take positive action moving forward.* Surveillance is carried out by public health officials and involves collecting information, analyzing the data and distributing report findings. Nebraska has never had an active surveillance system in place to consistency track oral health evidence.

The national HP 2020 OH-16 target is to have an active oral health surveillance system in each state. According to the proposed new operational definition of HP2020 OH #16 from Council of State and Territorial Epidemiologists (CSTE), ten indicators are suggested for tracking in state-based oral health surveillance systems. At least eight of these indicators are needed for the system to be considered reliable.

The OOHD has identified data sources to actively monitor 7 of the 10 essential CSTE OH indicators:

- Permanent tooth loss data for adults obtained within the previous two years. Source for monitoring: Nebraska Behavioral Risk Factor Surveillance Survey
- Annual data on oral and pharyngeal cancer incidence and mortality. Source for monitoring: Nebraska Cancer Registry and DHHS vital statistics data
- Annual claims data on the percent of Medicaid- and CHIP-enrolled children who had a dental visit within the past year. Source for monitoring: CMS Form CMS-416 Early and Periodic Screening, Diagnostic, and Treatment (EPSDT)
- Data on the percent of adults (≥ 18 years) and adults with diabetes who had a dental visit within the past year. Source for monitoring: BRFSS
- Data on the fluoridation status of public water systems within the state, updated annually. Source for monitoring: Nebraska DHHS Water Fluoride Program
- Annual data on state oral health programs and the environment in which they operate, including workforce and infrastructure indicators. Source for monitoring: Nebraska Health Professional Tracking System
- Data on the percent of children 1-17 years who had a dental visit within the past year. Source for monitoring: National Survey of Children's Health and Nebraska YRBS

The OOHD cannot currently monitor 3 of the 10 essential CSTE oral health indicators:

- Oral health basic visual screening survey data for Head Start and Third Grade students with state-wide representation. Survey would include prevalence of caries experience, untreated tooth decay, dental sealants and urgency of care. Data must have been collected within five years. Last Nebraska survey done in 2005 and should be updated soon to include older adults when funding is feasible
- A written oral health surveillance system plan that was developed within the previous five years. The plan should include the following components: purpose, measured objectives, prioritized indicators and their definitions, data sources and target populations, data collection/analysis methods and frequency and a plan for data dissemination and evaluation
- Publicly available, actionable data to guide public health policy and programs and a Communication Plan to disseminate reports in a timely manner. May take the form of a state oral health assessment report and web-based interfaces (Dashboard) that provide information on the oral health of the state's population developed within the previous five years

The ASTDD guidelines on oral health surveillance also encourage each state program to expand their own oral health tracking to include additional factors that can relate to their specific individual needs. Examples for Nebraska could be rates of Smokeless Tobacco Use, Refugee Screenings and data on nutrition and high sugar intake. There are other available dental resources that could be utilized to help produce a broader and more comprehensive periodic state wide oral health assessments and these are listed in **Appendix C**.



Baseline State Oral Health Survey: In 2001, the National Oral Health Surveillance System (NOHSS) was launched as a collaborative effort between CDC's Division of Oral Health, the CSTE and the ASTDD. NOHSS is designed to monitor the burden of oral disease, use of the oral health care delivery system, and the status of community water fluoridation on both a national and state level. *Oral health monitoring now falls within the domain of state government and it is essential that their offices establish baselines to track their dental disease trends.* NOHSS recommends that each state:

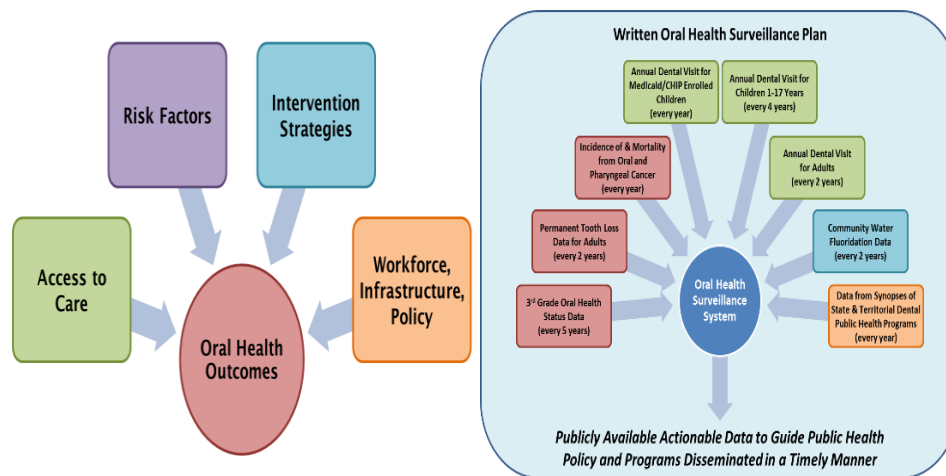
- Conduct a visual oral health Basic Screening Survey (BSS) of third graders every five years
- Survey dental information on Head Start children and senior citizens also

The first and only Nebraska state basic visual dental screening survey was conducted by the DHHS Lifespan Unit in 2005 in which 2,057 third graders in 55 elementary schools were examined.

In 2015, the OOHD obtained funding to partner with ASTDD to restart the Baseline State Survey (BSS) coordination process. There are approximately 25,000 3rd grade students in 502 schools in Nebraska and the new visual oral health survey will sample approximately 6,000 children in about 100 public and private schools across the state (with oversamples in Omaha and western Nebraska). The BSS will also include about 800 children in Head Start programs. The OOHD is collaborating with the Nebraska Department of Education, UNMC Pediatric Dental Residency Program, PHRDHs and School Nurses to up the framework and professional expertise needed to conduct these screenings *during the 2015-2016 school years. Calibrated dental teams will collect field OH data to be analyzed by state and national epidemiologists and the results will be compared to the 2005 data looking for changes in disease patterns and trends.*

Oral Health Surveillance Concept: Once a baseline on dental disease has been established, it needs to be constantly monitored and evaluated to see if current access and prevention efforts are effective. States are encouraged to expand their ongoing surveillance to include a wider variety of indicators. Oral health can be influenced by a number of factors such as individual behavior, access to care, infrastructure, public policies and the dental workforce. ASTDD and CSTE recommend state dental surveillance plans include:

- Oral health outcomes
- Risk factors
- Community interventions
- Access to the oral health care system¹⁰⁸



Factors Impacting Oral Health Outcomes

Recommended Core Indicators for Oral Health Surveillance: The 2016 Nebraska State Oral Health Assessment Report will now be used to understand our current dental status and to protect and promote the future of Nebraska population-wide oral health. It is a written roadmap to help establish a dental disease surveillance system and communication plan. A Surveillance plan will begin with a system design, data collection, analysis and public communication of the findings to help shape program policies. It will require a team of experts in public health, epidemiology, biostatistics, and evaluation that will mostly come from within DHHS but may also include external assistance from our LPHDs, FQHCs and Universities. The ASTDD and CSTE provided a guideline of ten essential indicators that could be tracked. Four age group (preschool, school, adult and elder) areas are identified. Eight of the ten indicators were identified as core measures of an oral health surveillance system. Three of them monitor oral health outcomes (3rd grade oral health status, permanent tooth loss for adults, incidence of & mortality from oral and pharyngeal cancer), three indicators measure access to care (annual dental visit for all children age 1-17, annual dental visit for Medicaid/CHIP children and annual dental visits for adults with Diabetes) and two measure intervention strategies (community water fluoridation and the OH workforce).

Expectations and Challenges: A functioning oral health surveillance and communication plan would be expected to monitor the prevalence of oral diseases on a consistent basis, to identify the risk factors, to detect the access to dental care services and to determine the effectiveness of current preventive dental programs. *An operational dental surveillance system would provide concise and reliable dental data to the state dental director, program partners, policy makers, stakeholders and the general public.* To implement such a surveillance system and to distribute the information through an established communication plan is difficult for many small state oral health programs due to funding restraints and personnel limitations. Budgets must be large enough to employ or contract with professional epidemiologists and evaluators and this is not always possible without grant support. Gathering data and reporting current dental surveillance is a challenge that will take a long term effort by the Nebraska Office of Oral Health and Dentistry who currently has two employees. A listing of the OOH surveillance goals and strategic actions are found in **Appendix D**.

Focus Area #3 Access to Dental Care Services

Most dental patients in Nebraska access the health system through private offices where the majority of dentists practice. Other options to services include Community Health Centers and Safety Net locations.

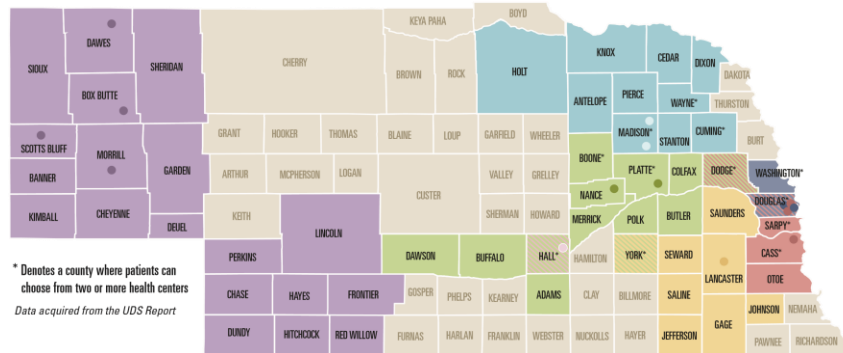
The key to better oral health for everyone is to have the greatest number of children and adults access ongoing care at established dental homes through the private or public health system.

Federally Qualified Health Centers FQHCs enhance the provision of primary care services in urban and rural communities. They are federally funded and are the largest public health source for underserved populations. Clinics are located in high need areas and are open to all residents regardless of insurance status.¹¹⁰ They focus on providing comprehensive primary care services to low income populations in a culturally appropriate manner. They also provide translation and transportation services.

*There are seven FQHCs in Nebraska and all centers offer dental care activities that are reported through the Health Center Association of Nebraska (HCAN).*¹¹¹ The One World and Charles Drew Center also operate mobile dental vans in Omaha. In 2013, HCAN reported 18,445 dental patients and produced 61,573 services valued at over \$6.5 million.¹¹² All clinics are required to provide preventive care. The national HP 2020 OH #11 objective is to increase the percent of health center patients who receive oral health care at FQHCs each year from a baseline of 17.5% to a target of 33.3%.²² Nebraska’s Community Health Centers reported their percent of dental patients at 28.7%....higher than the national average.

Dental Services Provided by Nebraska FQHCs in 2013										
Total Dental Patients	Total Dental Visits	Total Dental Exams	Total Dental Cleanings	Total Sealant Application	Total Fluoride Treatment	Restorative Service	Rehab Services	Oral Surgery	Emergency Services	Total Dental Services
18,445	42,298	19,201	11,495	1,944	8,289	10,114	5,270	4,085	1,175	61,573

Source: Nebraska HCAN Fact Sheet 2013



Nebraska FQHC Community Health Center Centers	Location	Counties Served
Charles Drew Health Center	● Omaha	
Community Action Partnership of Western Nebraska Health Center	● Gering, Alliance, Bridgeport, Chadron	
Good Neighbor Community Health Center East-Central District Health Department	● Columbus	
Heartland Health Center	● Grand Island	
Midtown Health Center	● Norfolk, Madison	
One World Community Health Centers	● Omaha, West Omaha, Northwest Omaha, Plattsmouth	
People's Health Center	● Lincoln	

Data Source: Heath Center Association of Nebraska 2014

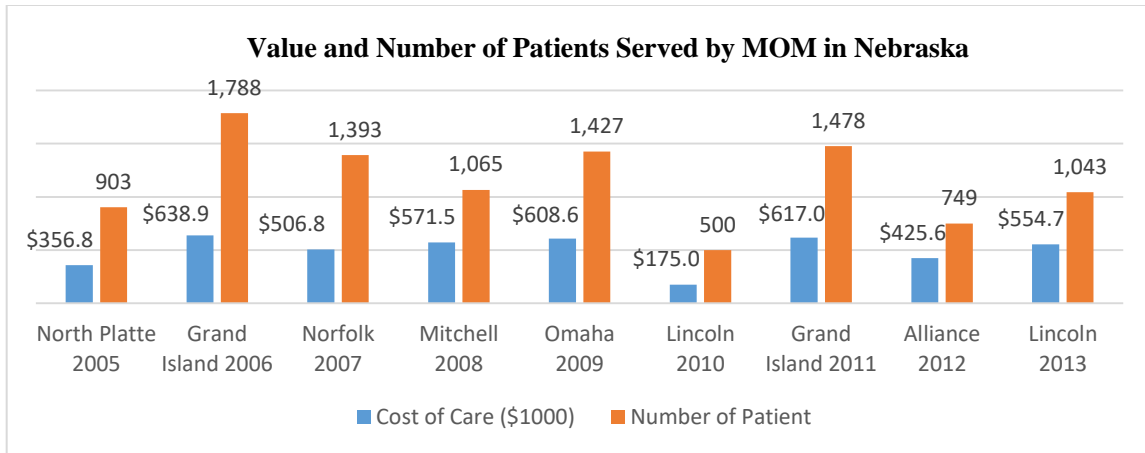
Safety Net System Unfortunately, thousands of Nebraskans lack the resources to receive dental care on a regular basis, despite financial assistance programs efforts to increase access to dental care through the private and public dental health systems. Many safety net components exist to help people who fall into these care gaps and may include:

- University dental clinics and outreaches
- Free dental centers
- Charity dental events
- Individual humanitarian dentists

Some of the largest safety net providers are the UNMC College of Dentistry and Creighton University School of Dentistry. They have a large professional workforce of hundreds of faculty and students that annually provide millions of dollars' worth of free and reduced dental services to underserved populations. Both institutions have long term commitments to their home cities and the state of Nebraska. In addition to student extramural rotation programs, they conduct numerous community activities within their school clinics and outside of their facilities in multiple locations. Examples from UNMC include: Sharing Clinics in Lincoln, Children's Dental Day, Grand Island Extraction Clinic, Panhandle Dental Day, Nursing Home Visits and trips to the Pine Ridge Indian Reservation. Examples from Creighton include: Thursday Night Clinics, Special Olympics, Healthy Smiles Prevention Program, Health Fairs and trips to the Rosebud Indian Reservations. Both Universities have a traveling sealant program that goes into urban and rural schools. The Lincoln Community Dental Group and the Omaha Oral Health Collaborative memberships also meet regularly to coordinate publicly supported local dental efforts.

Mission of Mercy: The Nebraska Mission of Mercy (MOM) is a non-profit started in 2005 that works in partnership with the Nebraska Dental Association to address the needs of low income and uninsured dental patients.¹¹⁹ Using volunteer dental personnel and donated equipment and materials, **MOMs have conducted annual humanitarian dental missions in various cities across the state that provide a full range of comprehensive and free dental care to the underserved.** Field clinics are set up in large community outreach settings with dozens of portable dental units and hundreds of volunteers who provide free exams, X-rays, cleanings, fillings, extractions and even dentures to the needy. These multi-day missions average over 1,000 patients and \$400,000 worth of care per event. In ten years, MOM Nebraska has treated over 10,000 patients and given free care valued at close to \$5 million.¹⁰⁹





Source: Nebraska Department of Health and Human Service, Office of Oral Health and Dentistry; 2014.

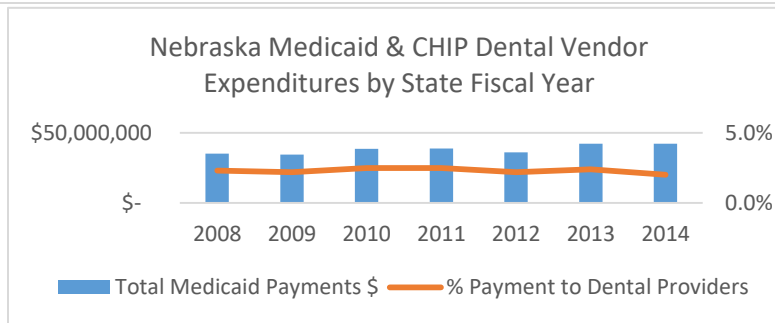
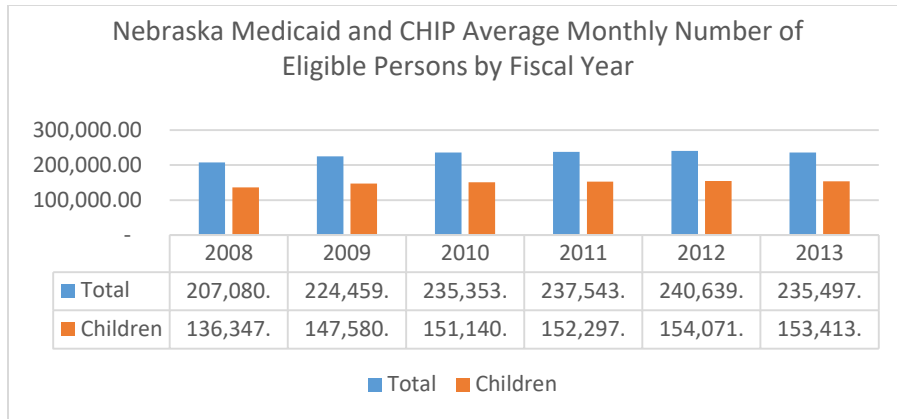
Charity Clinics: There are approximately 1,200 Free and Charitable Clinics throughout the U.S. that provide support for millions of uninsured Americans each year.¹²⁰ Patients are often members of the “working poor,” unemployed or homeless populations. *These non-government free clinics provide primary services that may include dental care and greatly reduce the burden on our hospital emergency rooms.* A primary challenge for many of these safety net dental programs is how to remain financially solvent. Many humanitarian clinics rely on professional volunteers and donations of equipment and supplies to survive. These clinics rely on community contributions, not federal funding and depend on the generosity of individuals and grants to operate. Most function on very low annual budgets with few paid employees, yet they provide quality care to those who need it the most. They positively impact the dental status of the state and should be supported. Examples of these free clinics in Nebraska include: Third City Clinic in Grand Island, the Open Door Center in Omaha, People City Mission and Clinic with a Heart in Lincoln.

Medicaid and Children’s Health Insurance Program (CHIP)

Medicaid was signed into law in 1965, the same year that Medicare was established. All states, territories and the District of Columbia administer Medicaid programs designed to provide health coverage for low-income people. Both federal and state funds comprise the Medicaid budget. Each state operates their Medicaid program differently, resulting in variations in Medicaid coverage across the country. CHIP was signed into law in 1997 and is also a joint federal-state funded program. It provides health coverage to children in families with incomes too high to qualify for Medicaid, but who can't afford private coverage.

Nebraska Medicaid provides medically necessary health care services to eligible low-income children, pregnant women, and parents, as well as eligible persons with disabilities and the elderly. Services include those mandated by the national Centers for Medicare and Medicaid Services (CMS) and those included at the state’s option. *Dental is an elected service for inclusion in the Nebraska Medicaid program and includes full coverage for children and limited benefits for adults.* Adult oral examinations, prevention services, restorations, and extractions are offered up to \$1000 per client annually.¹¹³

The following two charts depict Nebraska Medicaid data for state fiscal years 2008-2014. The first chart displays the overall increase in persons eligible for Medicaid, including the number of children. Over this timespan, the percentage of eligible children remained consistently between 64% - 66%. The second bar graph demonstrates the total amount of Medicaid expenditures paid to dental providers. During each year between 2008 and 2014, about 2% of the entire Medicaid budget was spent on dental care. Medicaid uses the *Insure Kids Now* provider locator tool and about 65% of Nebraska dentists are Medicaid providers.

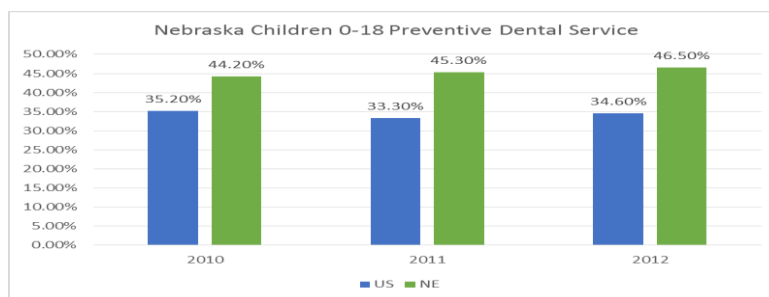


Source for both charts: DHHS Nebraska Medicaid Annual Reports 2008-2014

In 2011, CMS identified two national oral health initiative goals to spur state level action to improve access to oral health care among children and teens enrolled in Medicaid. CMS produces 416 quality assurance reports based on state Medicaid dental claims that monitor many patient services and these two goals:

- Increase by 10 points the % of children ages 1-20 who receive any preventive dental service
- Increase by 10 points the % of children ages 6-9 who receive a permanent molar sealant

An Oral Health Action Plan was submitted by DHHS Medicaid in 2013 to CMS aimed at reaching these targets through a series of state dental activities, coordinating with FQHC’s, LPHD’s and Dental Colleges to increase access, dispensing dental provider information and expanding beneficiary education.¹¹⁴ The national HP 2020 OH Objective #8 is to increase the percent of low income children in the U.S. who receive any annual preventive dental service from 30.2% to 33.2%.²² The graph below shows that 44.2% of Nebraska Medical eligible children received annual EPSDT preventive services in 2010 and it has had increased to 46.5% in 2012. This is a good trend, but still *less than half of Nebraska’s “at risk children” receive dental disease preventive services and even less get sealants (20.7% for age 6-9 2012)*¹¹⁵. CMS renewed the national initiative in 2015 and efforts must continue to improve these rates in Nebraska.



Source: Nebraska DHHS EPSDT age 0-18 and Medical Expenditure Panel Survey (MEPS)

Focus Area #4 Community-Based Prevention Programs

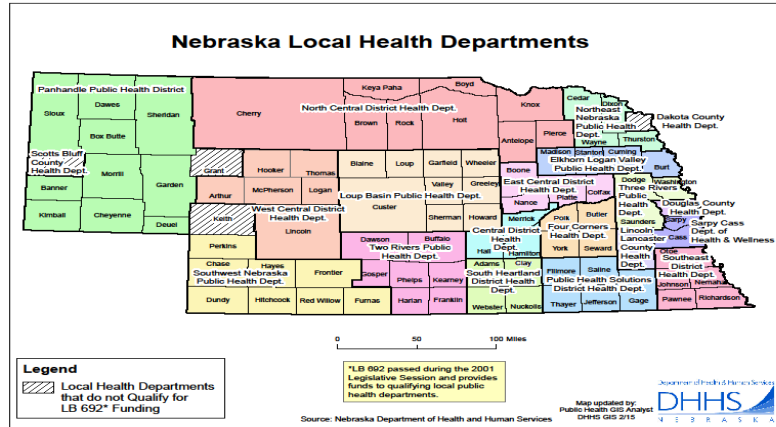
This document has demonstrated the tremendous need for dental care services across the lifespan and has identified some of Nebraska's most vulnerable population groups. The existing dental care delivery system we have in Nebraska does not need to be changed. But we do need to increase the delivery of underutilized community preventive services and bring partners together to address our existing disparities. The traditional method of fighting dental disease has put much of our resources into surgical treatment and correcting the destructive damage that this illness causes. The Surgeon General and Healthy People 2020 are now asking our health leaders to take a proactive stance and emphasize reduction of this disease through evidence based prevention interventions and documented wellness outcomes across the lifespan.

There are proven and cost effective intervention measures that are available to greatly diminish the impact of this ailment. This focus shift requires public funding and mobilization of our workforce, a task many of our fellow states have already started to undertake. It should be coordinated intra-professionally through local, state, regional and national partnership levels to effect overall change. This means *states should take dental disease prevention action at the communal level and reach at-risk populations exactly where they live*. The key to success is using local organization involvement and expanding the existing infrastructure and capacity of the many LPHDs, FQHCs, Dental Colleges and private dentists / hygienists that we are so fortunate to have in Nebraska. New clinical and financial models of care for high-risk children should be explored and reimbursement plans activated to enhance sustainability of prevention programs. These intervention projects should be coordinated, supported, and expanded at the OOH level so the entire state can have a sense of collective alignment towards total Nebraska oral health improvement.

Working with the ASTDD through the ten essential public health services to promote oral health, state oral health programs, and national experts, CDC has established strategies for developing and enhancing the infrastructure and capacity of state oral health programs and for extending community-based preventive programs. The strategies are organized in two components: Component One for basic capacity for collective impact, and Component Two for implementation of evidence-based preventive interventions and strategic approaches to impact health systems and access to clinical preventive services. The ASTDD community preventive strategies listed by component can be seen in **Appendix E**.⁹⁰

Maternal and Child Health Partnership

Title V (Social Security Act) Maternal and Child Health Block Grant (MCHBG) addresses the health of pregnant women, infants, children, youth, women of child-bearing age and children with special health care needs (CSHCN). Title V and Title XIX (Medicaid) jointly require that the state level Title V program and Medicaid have an agreement to coordinate and maximize services. This agreement further ensures that Medicaid enrolled MCH populations have access to dental care. For more information, see [Nebraska DHHS Intra-agency Protocol](#). Nebraska's *2015 MCH/CSHCN statewide Needs Assessment found that only slightly more than half (55.8%) of Nebraska's Medicaid eligible children 1 – 9 years received any preventive dental care in 2013*.¹²¹ While oral health data is limited, available data showing the picture of oral health for Nebraska's children identifies very evident oral health disparities for race, ethnicity, income level, and rural geography. Lack of pediatric dentists, shortages of funding and lack of coordination of existing efforts are some of the contributing factors that can lead to poor oral health status for some of Nebraska's most vulnerable children. DHHS brought together stakeholders who committed to a priority listing of Nebraska's top MCH focus areas for 2015-2020. Increased access to oral health care for children was recognized as being important, although it is not among the top ten priorities in the 2015 MCH Needs Assessment. The OOH will continue to look for ways to collaborate with DHHS MCH in the future.

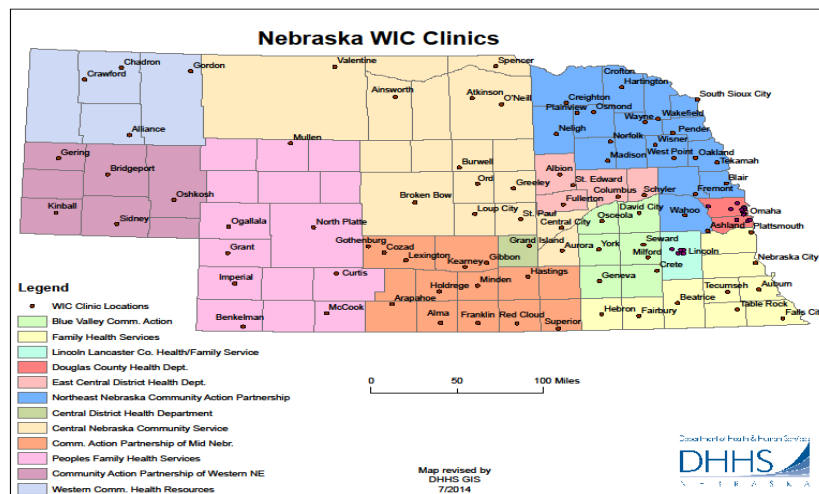


Local Public Health Departments

The Tobacco Settlement Act in 2001 established 20 local public health departments (LPHDs) that cover all 93 counties of Nebraska (see above).¹⁰⁹ Many Nebraska LPHDs offer preventive dental service programs (35%) and two have actual dental clinics (West Central and Lincoln Lancaster County Health Departments). There are also 135 smaller rural health clinics located within our borders. Most state oral health programs partner directly with their LPHDs to provide educational, promotional and preventive services at the community level. The OOHd will continue to collaborate and expand these efforts with both the Nebraska Association of Local Health Directors and the Public Health Association of Nebraska.

Woman, Infant and Children Programs

The national WIC programs started in 1972 and now serves over an average of 7.7 million participants per month.¹²² The Nebraska WIC Program provides health screenings, referrals to other services such as dental, free healthy food, nutrition information and breastfeeding support to more than 38,000 low income women, infants and children across the state each month.¹²³ WIC is available in over 110 clinics that cover all of Nebraska (see map below).¹²⁴ Each clinic has dietitians, nutritionists and/or nurses to assist WIC families. Community oral health education and prevention programs can partner with WIC clinics to provide services and offer patient referrals. Dental health promotional events and outreach activities can also be coordinated through these sites.



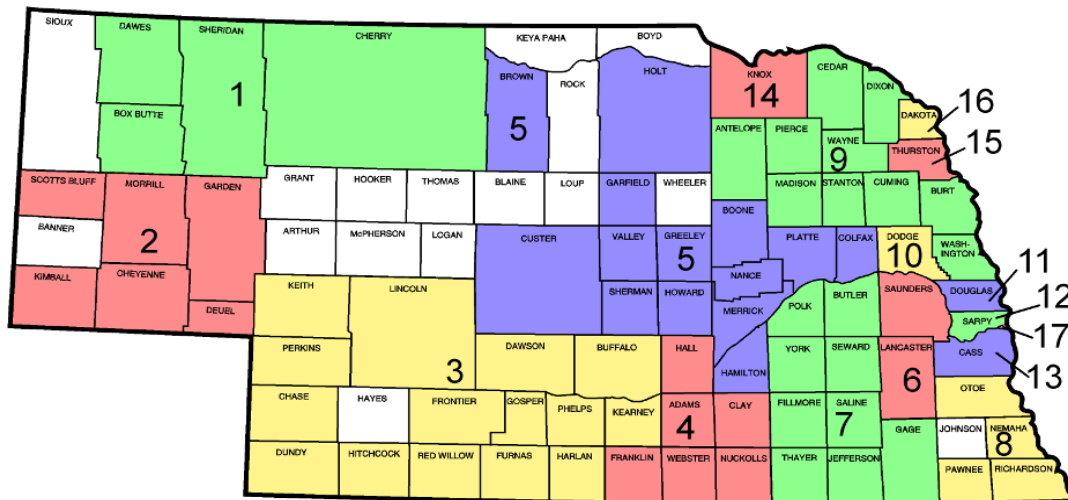
Head Start Programs

The national Head Start program was started in 1965 to help break the cycle of poverty by providing preschool aged children in low-income families a program to meet their emotional, social and health needs from ages 3-5. Early Head start was established in 1994 to bring these same benefits to younger children age 0-2. In Nebraska there are 16 Head Start and 12 Early Head Start programs in 17 grantee areas that serve over 5,800¹¹⁷ children. At least 90% of the children enrolled in each program must be from families with low income and over 80% of these children are enrolled in Medicaid or CHIP.¹¹⁸

Head Start and Early Head Start programs cooperate in the provision of the dental benefits with Medicaid. ***Within 90 days of enrolling in Head Start an initial oral screening is required to see if the child is up to date on age appropriate preventive dental care.***¹¹⁵ They also identify treatment services that are necessary to correct identified oral conditions and children with unmet needs are referred to a proper community dental home. An additional resource for Head Start to access care is through the Nebraska Head Start Dental Home Initiative, partnership through the Nebraska Dental Association and the American Academy of Pediatric Dentistry.

Head Start programs can operate in Head Start centers, schools or via home visiting programs. Good oral health is essential to a child's behavioral, speech, language and overall growth and development. Head Start personnel track the provision of oral health care and help parents obtain a professional dental examination and follow up care at a dental home. They also promote good oral hygiene in the classrooms with individual materials and brush in programs. Head Start directors, teachers and staff are valuable partners in the field of oral health and can help set up nutrition guidance, and provide counseling to parents and guardians. The map of the Nebraska Head Start service area is below.

Nebraska Head Start Program Service Areas



Note: White is unserved Counties; Source: Nebraska Head Start Association, 2014

Dental Disease Prevention Strategies

Children Ages 0-5 This is our first target group for prevention activities. The LPHDs will often work side by side with teachers and staff at Early Head Start, Head Start, WIC clinics, preschools and daycare centers to offer dental services. Dentists, Public Health Hygienists and certain authorized allied professionals can obtain parental consent to provide dental topical fluoride varnish applications in Nebraska.

Fluoride Varnish is a Food and Drug Administration (FDA) approved lacquer gel containing 5% sodium fluoride in a resin base. When applied topically:

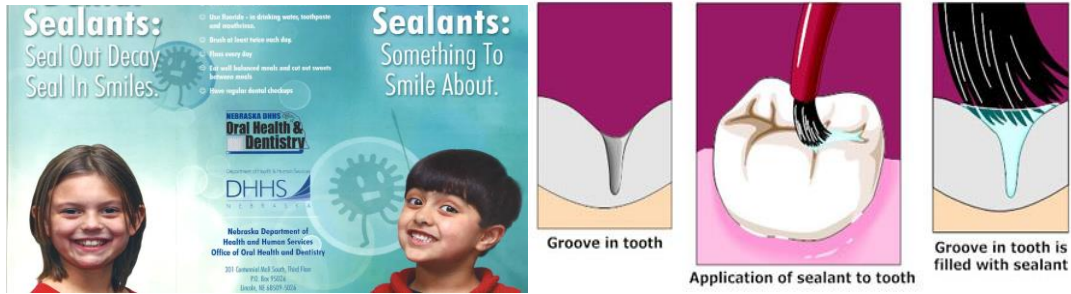
- It provides a highly concentrated temporary dose of fluoride to the tooth surface
- It can be painted on the teeth in minutes making it easy to use outside of the dental office
- The varnish hardens on the tooth and strengthens tooth enamel

All fluorides act to strengthen tooth enamel through a process called re-mineralization. ***Fluoride Varnish applications are an effective low cost approach to reducing decay on both primary and permanent teeth by up to 25%.***¹²⁵ Repeated exposure is needed and it should be applied two to three times per year or more for high-risk children. High-dose topical fluoride varnishes must be applied by qualified health professionals. Cost effectiveness can be best balanced through program funding or subsidized through Medicaid and Insurance.



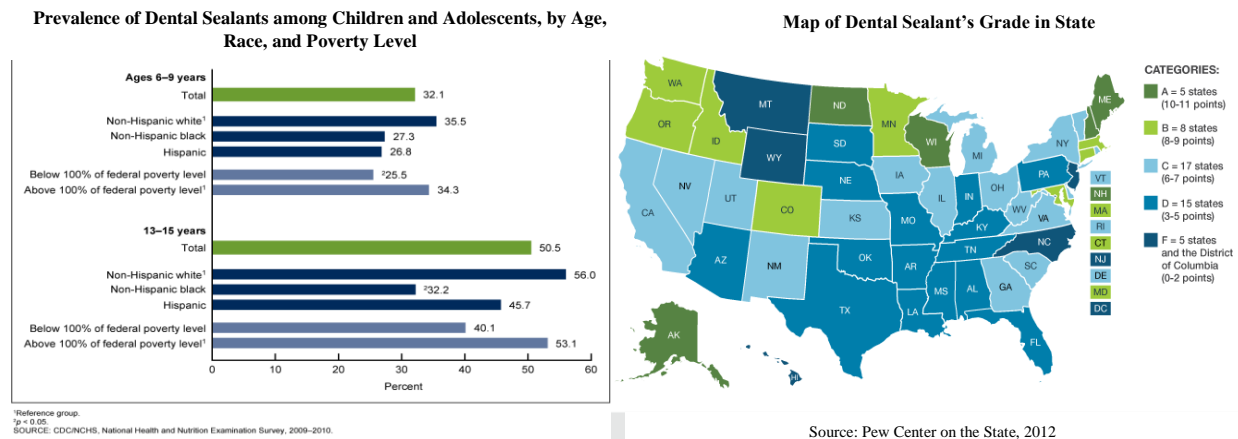
Youth Ages 6-18 This is our second target group for prevention activities. These services are often based at the elementary, middle and high school levels enabling students to access care in a familiar environment. The LPHDs can establish relationships through the school health nurses using parental consent to regularly provide and expand preventive services. Dental screenings are mandated annually in Nebraska for grades Pre K-4, 7 and 10. Every three years an aggregated report is produced by the State which is used to inform community leaders, school board members and policy makers about the impact of this condition on Nebraska schools. Oral health information should become a core part of the overall student health education curriculum. Topical fluoride applications continue to be beneficial during this time. Sealant placement can be done if the appropriate equipment and instruments are obtained. These services are usually offered at no charge to the schools or parents and LPHDs may bill Insurance or Medicaid.

Preventive Sealants are protective plastic coatings that are bonded to the biting surfaces of posterior teeth in a process that takes only minutes to apply. These teeth have many grooves and pits where food and bacteria can stick and where most childhood decay forms. Sealants are smooth and do not interfere with biting, but they do prevent the bacteria and food from sticking to these vulnerable parts of the tooth. Sealants can be placed on primary or permanent teeth. They are most commonly placed on the first permanent molars (age 6) and the second permanent molars (age 12). Sealants may also release fluoride which reinforces the enamel. They are designed to wear off after 4-6 years and are often replaced during the teenage years. ***Studies have shown that properly placed preventive sealants use can reduce decay by up to 60%.***³⁸



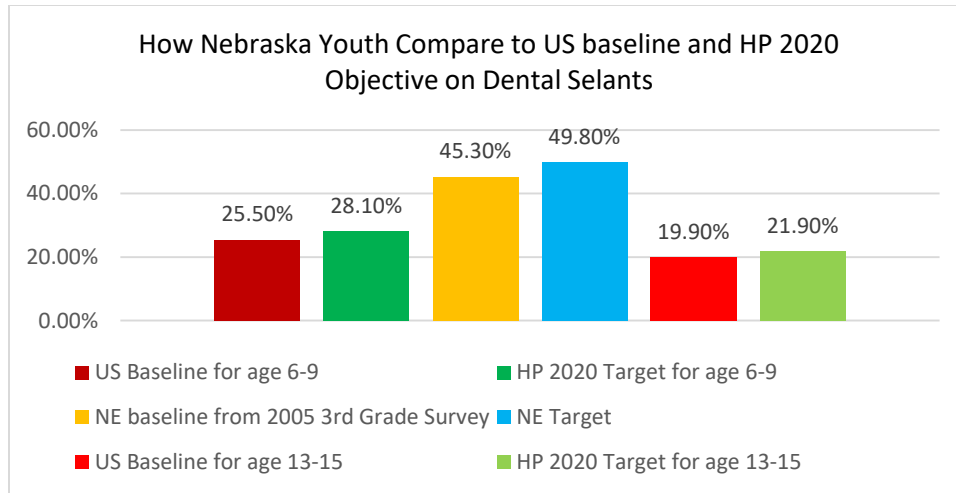
Grading the States

CDC has reported the percentage of U.S. children receiving sealants by age, race and poverty during 2009-2010 in the following chart.¹²⁶ In 2012, the Pew Trust released a report grading states on sealant programs in “high need schools,” allowing hygienists to place sealants in school based programs, collecting data on dental health of school children and meeting national health objectives.¹²⁷ *The Pew Trust gave Nebraska a D rating for high risk patient sealants which indicates we have significant room for improvement.*¹²⁷



School-Based Sealant Programs are one of the most effective community dental disease intervention activities known to the dental profession. Sealant clinics are coordinated with state and local support through dental providers, school nurses and parental consent. In Nebraska, sealants may be applied directly in schools or local settings by either a public health hygienist or a dentist with the help of an assistant. Portable dental equipment is needed to provide an air/water source and suction to wash and dry the teeth. Application time is usually 10-15 minutes. Clinics are often set up in the gymnasium, library or classrooms. Many state dental programs across the U.S. have been managing school sealant programs for years through a variety of financing approaches. CDC reported that 39 states had state sealant programs in 2009.¹²⁸ The OOHd could facilitate support for these programs in Nebraska through grant funding and sub-awards with LPHSs and develop partnership agreements with the Department of Education to ensure quality control.

Nebraska Sealant Rate Healthy People 2020 national OH Objective #12 tracks percentage of children age 6-9 and 13-15 that have sealants placed on at least one permanent molar tooth. The U.S. baseline for these ages is 25.5% and 19.9% and the target goals are 28.1% and 21.9%.²² According to the 2005 Third Grade survey, Nebraska is above these rates with 45.3% of our children having sealants.³⁹ *Nebraska Medicaid 2013 CMS 416 reported lesser sealant rates for low-income children ages 6-9 at 22.1% and ages 10-14 at 19.3%.* The 2015-2016 oral health visual survey will provide updated information on current overall Nebraska sealant rates for third grade children.



Source: HP2020 Oral Health Objective, Nebraska DHHS, Basic Screen 3rd Grade Survey, 2005

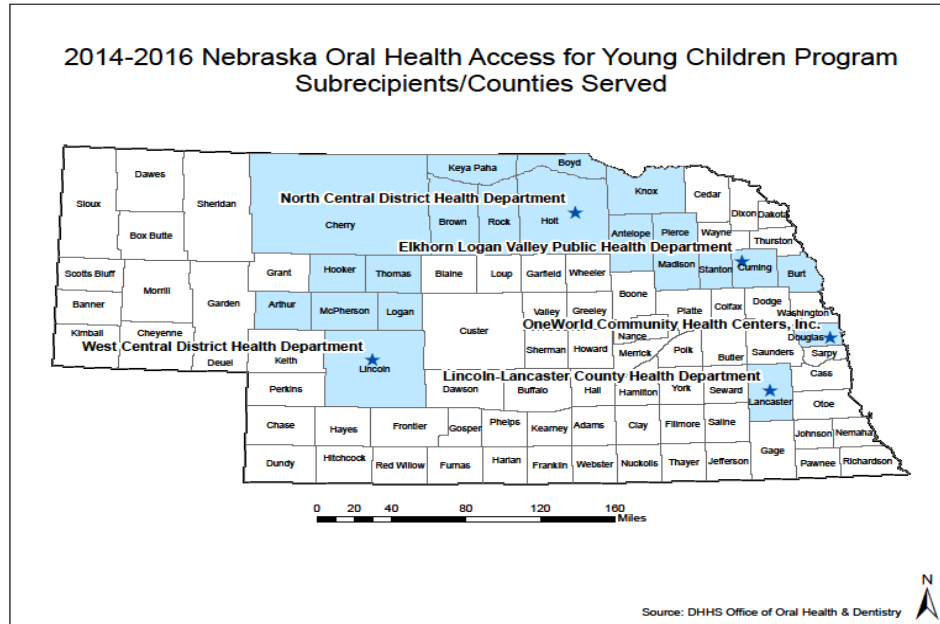
Community Action

Maximizing the utilization of the existing oral health workforce assets is a key goal in early dental disease intervention. Dentists, dental hygienists, school nurses and other allied medical health professionals can play a significant role in delivering services through public health programs. In Nebraska, dental hygienists can obtain a Public Health Authorization Permit (Child and/or Adult) which allows them to provide preventive services under the scope of their license in public health settings. In 2015, there were nearly 100 hygienists with this permit. Nebraska Medicaid can directly reimburse these hygienists once a Medicaid provider number is obtained.²⁰⁹ Nebraska also has a trained workforce of about 125 Community Health Workers. Increasing the mobilization of these skilled public health dental hygienists could help provide needed preventive and educational services in Nebraska’s projected dental shortages areas.

Nebraska has 20 Local Public Health Departments and currently about 35% offer oral health programs.¹⁰⁹ Many projects were started through the Oral Health Access for Young Children (OHAYC) Project and have been maintained after that grant. **With state support, community backing, local workforces and proper equipment, these partnerships can expand low cost preventive services into non-traditional settings that will deliver positive results.** Communication between the statewide LPHDs with the OOHDP through the Nebraska Association of Local Health Directors will be important. Below are six examples of current community based intervention projects that are operating preventive dental programs following correct public health principals. All of these programs have produced excellent results and are outstanding ventures in urban/ rural Nebraska preschool, school and elder settings. Some have been able to evaluate their successful prevention impact results by lowering the percentage of immediate patient referrals.

State Level Examples:

Oral Health Access for Young Children: The OHAYC program was first implemented in January 2011 in 15 LPHDs and FQHCs across Nebraska. The program was supported through a federal HRSA grant to expand oral health workforce activities. The projects provided preventive dental screenings and supplies, fluoride varnish applications, oral health education and dental referrals to high-risk children and families with limited access to dental health care in WIC, Head Start/Early Head Start, and Day Care settings. The program was active through August 2012 and provided services to 19,086 children.³⁵



In October 2014, the OOHD secured additional funding through a Preventive Health and Human Services Block Grant to fund five of the original 15 OHAYC projects at four LPHDs and one FQHC. A total of \$96,200 was available to the five community programs for a year-long grant. For the next year approximately \$100,000 was allocated. *The OHAYC program works with WIC, HS/EHS, and childcare centers to provide dental screenings, education, fluoride varnish applications, referrals to dental homes and dental supplies to children aged 0-5 and their families.*

Elder Health Enduring Smiles: In the fall of 2012, the OOHD collaborated with the UNMC Dental College Hygiene Department and the Nebraska Health Care Association to improve the oral health of long term and assisted care residents. From this initial discussion, a multi-step approach was developed:

1. Develop an oral health tool kit for use at long term and assisted living facilities
2. Train public health dental hygienists to teach oral health to elder facility staff
3. Educate direct care staff and caregivers to improve elder oral health
4. Conduct a verbal/written survey to determine existing dental needs in elder facilities

OOHD commissioned UNMC to produce and distribute the oral health training toolkits for senior centers across Nebraska, funded through the Preventive Health and Health Services Block Grant. The training module topics include:

- The oral-systemic link of disease for elders
- The oral effects of multiple medication use by elders
- Basic oral hygiene care for senior residents
- Oral health assessments and screening referrals for seniors

A new grant was issued in January 2015 to continue this work and a DVD will be left at centers to train new employees. The collaborators will also explore expanding this training to help people with disabilities. By the end of the first funding cycle, 28 Registered Dental Hygienists with the Public Health Authorization had completed this training and 35 presentations to long term care and assisted living facilities were given.

UNMC Sealant Program: The UNMC College of Dentistry (COD) has operated the Dental Hygiene Sealant Program since 2003.¹³⁰ The project pairs hygiene students with instructors who visit selected public elementary schools in Lincoln, Omaha and rural areas of the state on an annual basis. Traveling in teams, these providers go into the schools to set up portable equipment and hold a sealant clinic on site. The teams stay one to three days depending on the size of the school. ***The UNMC COD Sealant Program has screened over 12,000 students and placed nearly 33,500 sealants*** (they also provide fluoride varnish).¹³⁰ This community care is valued at several hundred thousand dollars. It has given COD students valuable public health field experience while building relationships at a community level.

Local Level Examples:

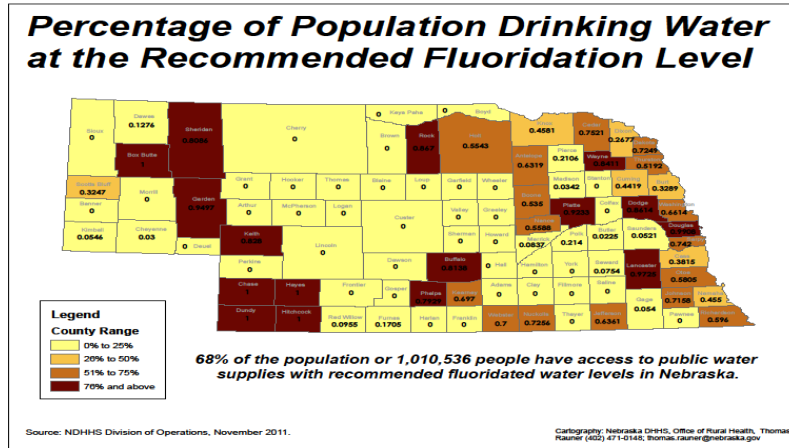
Building Healthy Futures(BHF)³⁶ is non-profit organization that works within the Omaha Child Oral Health Collaborative to bring local dental partners together to provide increased access to dental services for underserved children. They work with the Douglas County Health Department, One World Community Health Center, Charles Drew Community Health Center, Creighton University College of Dentistry and the UNMC Pediatric Dental Residency Program. ***The BHF partners work together along with local private dentists to provide educational, preventive, and patient referrals to dental homes in several Omaha public schools.*** From Sept 2013 through June 2014, they gave oral hygiene information to 2,467 elementary students, provided 1,379 topical fluoride varnish treatments and 482 students were referred for follow up care. During this time period, 4,456 direct patient services were provided by BHF. In addition, BHF is in the process of establishing dental clinics within School Based Health Centers that will provide direct patient care (emergency and corrective) services utilizing portable dental equipment and tele health support through UNMC College of Dentistry. These clinics will be staffed by Pediatric Dentists working with dental assistants and a dental health coordinator to assist on proper patient referrals. Patient records and data will be kept electronically so disease rates can be closely tracked and surveillance information can be shared among partners to guide future program activities.

Miles of Smiles Program¹³² is a prevention project in O'Neill. The North Central District Health Department serves 48,000 people in nine counties in rural northern Nebraska. Six of these counties are designated as general dental shortage areas by DHHS. ***In 2012, the Miles of Smiles dental program was started and has gone into about 35 elementary and middle school settings.*** The program offered oral screenings to approximately 35% of the students along with fluoride varnish applications and proper referrals. Over 4,000 students have received screenings, education and fluoride treatments. In 2012, 30% of these children required immediate dental referrals. By 2014, this percentage had dropped to 19%, a dramatic decrease which demonstrates how quickly these community prevention programs can be effective and have significant impact in just a very short time with a minimal operating budget.

Loup Basin Smiles Dental Program¹³¹ The Loup Basin Public Health Department in Burwell serves 30,000 people in nine counties in rural central Nebraska. Eight of these counties are designated as general dental shortage areas by DHHS. In 2005, a dental disease prevention program began that went into nearly 25 pre-school and elementary school settings. The program offered oral screenings to over 1,000 children per year along with fluoride varnish applications performed by a dental hygienist. Based upon the screening findings, proper dental referrals were then made. ***A six year Loup Basin study from 2006 to 2012 found that there was a 35% decrease in the number of students who needed immediate referrals to a dentist.*** This not only suggests that the dental decay rate has been reduced but it also demonstrates the impact that this program has brought to helping kids stay in school rather than needing emergency treatment.

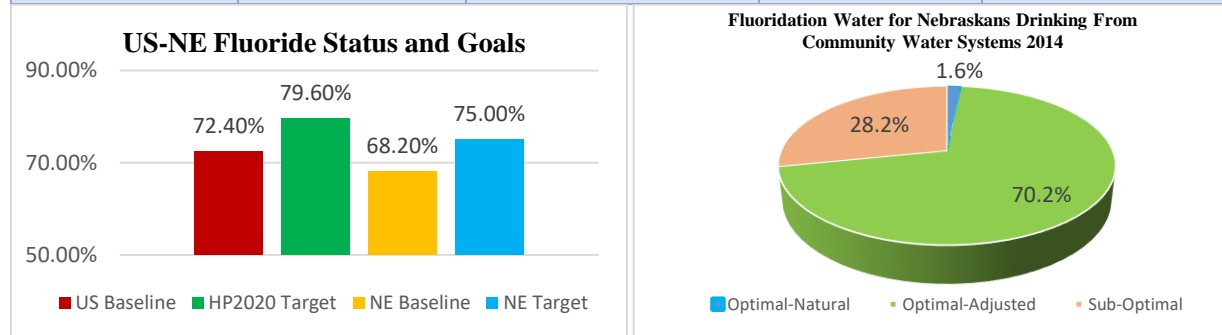
Nebraska Water Fluoridation

For almost 70 years, community water fluoridation has been an evidence-based, safe and cost effective way to strengthen teeth for people of all ages and to reduce tooth decay rates up to 40%.¹³³ The fluoride mineral is especially important for children age 0-5 to help fortify the enamel in developing teeth. *CDC has recognized water fluoridation as one of 10 great public health achievements of the 20th century.*¹³⁴



Community Water Systems: Approximately 85% of our state population (about 1.5 million) has access to community water systems. From 2000–2006, about 70% of Nebraskans drank from community water systems that had optimal fluoride levels.¹³⁵ In 2008, the Nebraska Legislature passed a law to require all Nebraska cities with over 1,000 people to add fluoride.¹³⁶ Cities had the option to opt against this and 49 communities have (including Grand Island, Hastings and Beatrice). In 2011, 68% Nebraskans were drinking from community water systems with optimal fluoride levels (see map above).¹³⁷ The Healthy People 2020 National Objective #13 baseline is 72.4%²⁷ In 2014, Nebraska increased to 70.2% as more systems came on line with optimal levels of 0.7ppm. 1.6% of the people have natural optimal fluoride levels and the adjusted state total is 71.8%. State efforts should continue to educate our population on the benefits of fluoridation. Reports estimate public savings of \$38 dollars for every \$1 spent on fluoridation.³²

Total Number of Nebraskans on Public Water System				
Group	2013		2014	
	Number of People	State PWS Population %	Number of People	State PWS Population %
Optimal-Adjusted	1,114,268	69.9%	1,119,979	70.2%
Optimal-Natural	25,443	1.6%	25,417	1.6%
Sub-Optimal	453,535	28.5%	450,239	28.2%
Total	1,593,246	100.0%	1,595,635	100.0%



Sources: CDC/NCCDPHP 2010; HP2020 Oral Health DHHS Nebraska Water Program 2014

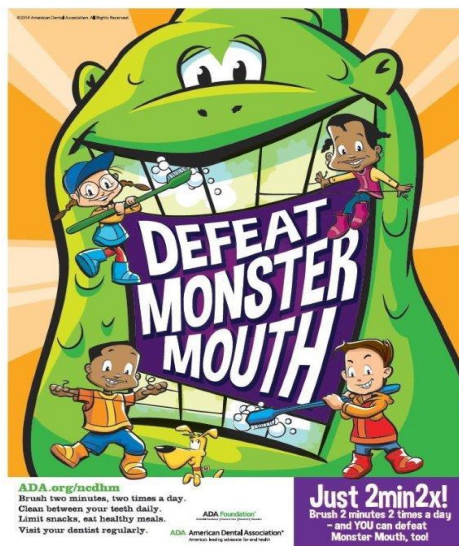
Focus Area #5 Oral Health Education and Promotion

Creating increased access to care is critical but it doesn't result in better health unless people fully utilize it. *Dental providers try to manage this disease by treating decay and gum disease through corrective care, but long term success is dependent on modifying individual patient behavior related to risk factors such as home care, diet and regular ongoing visits to a permanent dental home.* The ADA estimates the percent of Americans who brush two times per day is 77.8% and the percent who floss daily 50.5%.¹³⁸ Restored teeth, without daily care, can quickly develop recurrent decay requiring more treatment. Utilizing the diversity of our existing Public Health Hygienists and Community Health Workers, the OOHd can help people learn the fundamentals about dental health and the consequences of oral disease with age appropriate and culturally literate education. State Oral Health Fact Sheets (**Appendix F**) are a good resource for the public. Health fairs can be a successful way to increase awareness of dental issues and alter personal dental decisions. Statewide efforts can be made through oral health campaigns to increase Nebraska's dental health literacy and promote dental wellbeing that can ultimately reduce oral disease across the lifespan.

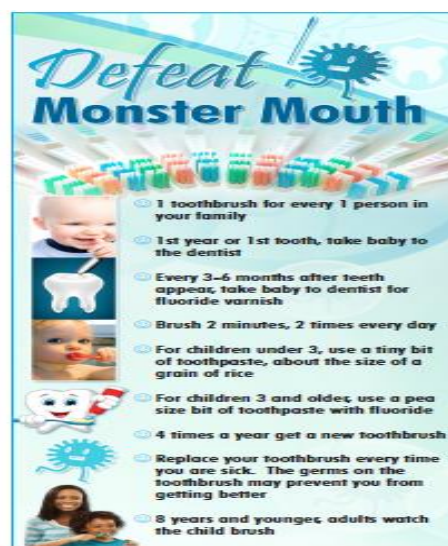
State Campaign Example

Children's Dental Health Month 2015: February is National Children's Dental Health Month. Each year the American Dental Association develops a theme for the year. For 2015, the theme was "Defeat Monster Mouth." The Office of Oral Health and Dentistry collaborated with Together for Kids and Families and the Pregnancy Risk Assessment Monitoring Program (in the Lifespan Unit) and the Head Start State Collaboration Office (in the Nebraska Department of Education) to provide oral health kits to approximately 6,000 Head Start and Early Head Start students across the state. OOHd hopes to join with more partners to make this an annual event and increase the state-wide impact of this campaign. Each oral health kit contained:

- 1 toddler tooth brush
- 1 adult tooth brush
- 1 tube of children's tooth paste
- 1 two-minute timer
- 1 educational card in English and Spanish



American Dental Association/Ad Council Campaign 2015



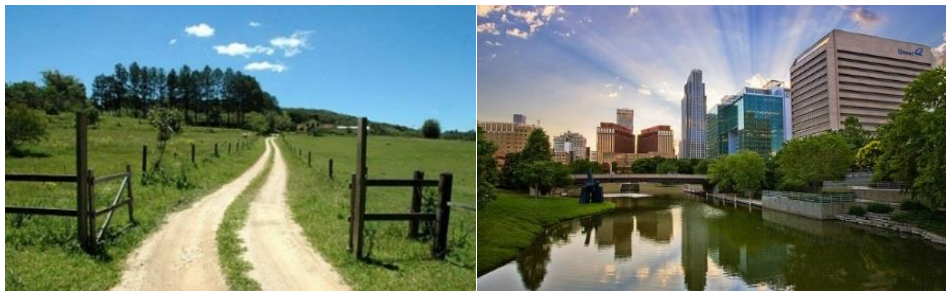
TFKF Brochure for Children's Dental Month 2015

Lifespan Dental Education: educational efforts by the OOHD will be aimed across a lifetime of target audience age groups: 0-5, 6-18, 19-64 and 65+ because each age category has unique dental needs and challenges as described earlier in the 2016 Nebraska Oral Health Assessment Report. This age relevant information will come from reliable professional sources such as the ADA, CDC, ASTDD and CSTE. They will aimed at expectant mothers, parents, children, students, teenagers, adults, senior citizens and other vulnerable groups. It will be shared with LPHDs, FQHCs, Private Offices and our Dental Colleges and will also be posted and updated on a regular basis on our Nebraska DHHS OOHD website www.dhhs.ne.gov/dental.

Educating the public in basic preventive behaviors will empower individuals to stop new disease before it starts and improve the health of those people who are at-risk for dental disease. This is especially important for parents and caregivers. Comprehensive oral health education should include the role of nutrition because high sugar consumption is directly associated with dental decay and obesity (a growing concern for Nebraskans). Coordinating these efforts through the use of community dental health workers, school nurses and local educators is an effective way to get our messages across in a positive and culturally-sensitive manner. Utilizing modern technology and social media outlets, the OOHD can create an organized health enhancing network that can serve as a dental resource center for the entire state.

V. THE FUTURE OUTLOOK

There are new approaches to public health dentistry that will make its delivery more effective in the future. Improving dental health with cultural and linguistically appropriate oral health services will allow patients to more clearly understand professional information and make personal decisions to protect and promote their health. In medicine, *a team-based approach to primary care with inter-professional cooperation across all disciplines will improve our systemic health outcomes. Students from different backgrounds, such as physicians, dentists, pharmacists, nurses, and physician assistants, can train together during rotations to learn oral health core competencies which will improve communications and patient results.* Oral health information is increasingly part of a patient’s medical history, primary assessment and physical exams. Pediatricians, nurse practitioners and physician assistants are beginning to perform dental screenings and provide direct preventive services and referrals. This is especially important because more young children visit physicians than dentists. Mobilizing our oral health workforce of Public Health Hygienists, Community Health Workers, School Health Nurses and Senior Caregivers will play a valuable role in connecting patients to education, prevention and direct local medical-dental homes. Most reimbursement payments have been based on patient treatment services, but now there is a movement towards value of service outcomes with emphasis on the prevention of disease. Home visits, tele-dentistry, digital X-rays and electronic health records can reduce patient costs, improve treatment decisions and reach into underserved populations in geographically challenged areas. These exciting new dental developments will aim to improve individual and population outcomes while reducing overall health costs in the future.



ACKNOWLEDGEMENTS

Special thanks to the efforts of these individuals, partners and data providers:

Tom Williams MD
Jennifer Roberts Johnson JD
Judy Martin MS
Kay Wenzl MPA
Barbara Pearson BS Ed
Gwen Hurst M Div.
Ming Qu PhD
Thomas Safranek MD
Jeff Armitage
Thomas Rauner MCRP
Dr. Bob Russell
Dr. Brad Whistler
Kathy Phipps DrPH
Dr. Kim McFarland
Dr. Karen Sorenson
Patricia Patton

Nebraska Oral Health Advisory Panel
Nebraska Town Hall Stakeholders
Nebraska DHHS Division of Children and Family Services
Nebraska DHHS Division of Developmental Disabilities
Nebraska DHHS Division of Medicaid and Long –Term Care
Nebraska DHHS Division of Public Health
Including:
Health Promotion Unit
Epidemiology and Informatics Unit
DHHS Licensure Unit
Community and Rural Health Planning Unit
Environmental Health Unit
Lifespan Health Services Unit
Office of Chronic Disease Prevention
Office of Health Disparities
Office of Tobacco Free Nebraska
Office of Nutrition and Activity for Health
Communications and Legislative Services
School Health Program

American Dental Association
Nebraska Dental Association
Nebraska Dental Hygiene Association
Nebraska Dental Assistant Association
Association of State and Territorial Dental Directors
Nebraska Association of Local Health Directors
Health Center Association of Nebraska
Nebraska Hospital Association
Nebraska School Nurses Association
University of Nebraska College of Dentistry
Creighton University School of Dentistry
UNMC College of Public Health
Omaha Dental Health Collaborative
Lincoln Community Dental Partnership
Building Healthy Futures

GLOSSARY
Dental Acronyms used in the State Assessment

AAPD	American Academy of Pediatric Dentistry	MEPS	Medical Expenditure Panel Survey
ACA	Affordable Care Act	MOM	Mission of Mercy
ADA	American Dental Association	NDA	Nebraska Dental Association
AHRQ	Agency for Healthcare Research & Quality	NDHA	Nebraska Dental Hygiene Association
AI	American Indian	NDAA	Nebraska Dental Assistant Association
AN	Alaska Native	NHA	Nebraska Hospital Association
ASTDD	Association of State and Territorial Dental Directors	NSCH	National Survey of Children's Health
BHF	Building Healthy Futures	NHANES	National Health and Nutrition Examination Survey
BPHC	Bureau of Primary Health Care	NOHC	National Oral Health Conference
BRFSS	Behavioral Risk Factor Surveillance System	NOHSS	National Oral Health Surveillance System
CDC	Centers for Diseases Control and Prevention	NOOHD	Nebraska Office of Oral Health and Dentistry
CHIP	Children's Health Insurance Program	SHIP	Nebraska State Health Improvement Plan
CMS	Centers for Medicare and Medicaid Services	OEF	Operation Enduring Freedom
CSTE	Council of State and Territorial Epidemiologists	OIF	Operation Iraqi Freedom
DHHS	Department of Health and Human Service	OR	Operating Room
DMFT	Decayed, Missing, and Filled Teeth	OH	Oral Health Objective
DOC	Department of Corrections	OHAYC	Oral Health Access for Young Children
ECC	Early Childhood Caries	PH RDH	Public Health Registered Dental Hygienist
EHS	Early Head Start	PRAMS	Pregnancy Risk Assessment and Monitor Survey
EPSDT	Early and Periodic Screening, Diagnostic and Treatment	RDH	Registered Dental Hygienist
ER	Emergency Room	SBHCC	School-Based Health Care Census
FDA	Food and Drug Administration	SEER	Surveillance, Epidemiology, and End Results
FDI	Federation Dental International	UDS	Uniform Data System
FQHC	Federally Qualified Health Center	UNMC	University of Nebraska Medical Center
HP 2020	Healthy People 2020	USPHS	United States Public Health Service
HPTS	Health Professional Tracking Service	VA	Veterans Affairs
HRSA	Health Resources and Services Administration	WFRS	Water Fluoridation Reporting System
HS	Head Start	WIC	Women, Infants and Children
IHS	Indian Health Service	WHO	World Health Organization
IOM	Institute of Medicine	YRBS	Youth Risk Behavioral Survey
LPHD	Local Public Health Department	3RNet	Rural Recruitment and Retention Network
MCH	Maternal and Child Health	BSS	Basic Screening Survey

APPENDIX A

Essential Public Health Services to Promote Health and Oral Health in the United States

The 10 Essential Public Health Services provide the framework for many national programs, including the [National Public Health Performance Standards Program](#), the [PHAB National Voluntary Accreditation Program for health departments](#), and the [Model Framework for Community Oral Health Programs](#). The corresponding 10 Essential Public Health Services to Promote Oral Health provide a framework for State Roles, Activities and Resources that comprise ASTDD's *Guidelines* and for ASTDD's [State Oral Health Program Review process](#).

10 Essential Public Health Services ⁴	10 Essential PH Services to Promote Oral Health in the US ⁴
Assessment	Assessment
1. Monitor health status to identify and solve community health problems	1. Assess oral health status and implement an oral health surveillance system
2. Diagnose and investigate health problems and health hazards in the community	2. Analyze determinants of oral health and respond to health hazards in the community
3. Inform, educate and empower people about health issues	3. Assess public perceptions about oral health issues and educate/empower them to achieve and maintain optimal oral health**
Policy Development	Policy Development
4. Mobilize community partnerships and action to identify and solve health problems	4. Mobilize community partners to leverage resources and advocate for/act on oral health issues
5. Develop policies and plans that support individual and community health efforts	5. Develop and implement policies and systematic plans that support state and community oral health efforts
Assurance	Assurance
6. Enforce laws and regulations that protect health and ensure safety	6. Review, educate about and enforce laws and regulations that promote oral health and ensure safe oral health practices
7. Link people to needed personal health services and assure the provision of health care when otherwise unavailable	7. Reduce barriers to care and assure utilization of personal and population-based oral health services
8. Assure competent public and personal health care workforce	8. Assure an adequate and competent public and private oral health workforce
9. Evaluate effectiveness, accessibility and quality of personal and population-based health services	9. Evaluate effectiveness, accessibility and quality of personal and population-based oral health promotion activities and oral health services
10. Research for new insights and innovative solutions to health problems	10. Conduct and review research for new insights and innovative solutions to oral health problems

⁴Previously there were 14 services; they have now been updated and collapsed to 10.

**This was originally listed under Assurance but was moved to correspond directly to the PH list.

APPENDIX B
Data Sources for National HP 2020
and Nebraska HP 2020 Oral Health Objectives

HEALTH PEOPLE 2020 OBJECTIVE		US SOURCE FOR DATA	NE SOURCE FOR DATA
OH-1:	Decrease dental caries experience Child		
	Aged 3-5	NHANES 1999-2004	
	Aged 6-9	NHANES 1999-2004	
	Aged 13-15	NHANES 1999-2004	
OH-2:	Decrease untreated dental decay Child		
	Aged 3-5	NHANES 1999-2004	
	Aged 6-9	NHANES 1999-2004	NE Third Grade Survey 2005
	Aged 13-15	NHANES 1999-2004	
OH-3:	Decrease untreated dental decay Adult		
	Aged 35-44 (any surface)	NHANES 1999-2004	
	Aged 65-75 (coronal caries)	NHANES 1999-2004	
	Aged 75+ (root surface caries)	NHANES 1999-2004	
OH-4:	Decrease tooth extractions Adult		
	45-64 years (single due to caries or perio)	NHANES 1999-2004	NE BRFSS 2012
	65-74 years (all teeth)	NHANES 1999-2004	NE BRFSS 2012
OH-5:	Decrease moderate or severe periodontitis		
	45-74 years	NOHC 2015	
OH-6:	Increase early detection of oral cancer	National Program of Cancer Registries; SEER 2007	
OH-7:	Increase access oral health care system/year	MEPS 2007	
OH-8:	Increase low-income children to preventive care	MEPS 2007	
OH-9:	Increase school-based health centers with		
	Dental sealants	SBHCC 2007-2008	
	Dental treatment care	SBHCC 2007-2008	
	Topical fluorides	SBHCC 2007-2008	
OH-10:	Increase oral health programs in:		
	FQHCs	UDS 2007	
	Local health departments	ASTDD 2008	
OH-11:	Increase FQHC # of dental patients/year	UDS 2007	
OH-12:	Increase # of dental sealants on molar teeth		
	3-5 years (primary)	NHANES 1999-2004	
	6-9 years (permanent)	NHANES 1999-2004	NE Third Grade Survey 2005
	13-15 years (permanent)	NHANES 1999-2004	
OH-13:	Increase community water fluoridation	WFRS 2008	NE WFRS 2011
OH-14:	Increase adults receiving preventive intervention		
	Tobacco cessation	NHANES potentially	
	Oral cancer screening	NHANES potentially	
	Glycemic control	NHANES potentially	
OH-15:	Increase state recording of cleft lip and palates		
	Recording system	ASTDD Survey	
	Referral system	ASTDD Survey	
OH-16:	Increase states with dental surveillance systems	ASTDD Survey 2009	None
OH-17:	Increase dental programs directed by dental professional with public health training.		
	Local agencies > 250,000 pop' 1	ASTDD State Synopsis Survey 2009	
	IHS/Tribal > 30,000 pop' 1	IHS 2010	

Notes:

1. National data for NHANES is: 2-4 year old children (1988-1994) – Nebraska data is not available comparable to this age group; 3-5 year old children (1999-2004); 6-8 year (1988-1994) or 6-9 year old children (1999-2004) - Nebraska data is for third-grade children.

APPENDIX C

Nebraska Surveillance Sources

Additional Nebraska Surveillance Sources:

- Health Center Association of Nebraska annually collects number of dental patients, costs, and diagnostic category for the seven Nebraska FQHC's.
- Nebraska Department of Education conducts a School Health Program that now mandates annual dental screenings for grades K-4, 7 & 10. Treatment urgency is put into three categories. Data is collected by the DHHS School Health Program Manager.
- Nebraska YRBSS collects dental visit information for youth every two years. It also tracks smokeless tobacco use.
- The annual Adult and biannual Youth Tobacco Surveys provide dental information on tobacco use and cessation counseling by physicians, dentists, nurses, hygienists and other professionals.
- Every Woman Matter is an ongoing survey that tracks dental visits in the past year for woman aged 40 to 64 below the 250% FPL. It also provides information on low-income woman with diabetes that monitors their dental visits.
- Pregnancy Risk Assessment Monitoring System (PRAMS) collects information on teeth cleaning visits before, during, and after pregnancy.
- Oral Health Access to Young Children (OHAYC) is a community prevention program sponsored by the DHHS Office of Oral Health. It offers education, fluoride varnish treatments and a dental screening for children on their oral health status including early childhood caries status and gum disease. It has information on over 19,000 children from 15 communities from 2011-12 and was started again in five communities in 2014-15.
- Nebraska Hospital Association collects dental services and costs in the Emergency Departments. Dental data is available from 2004 to 2013. Collected information include number of patient visits, total cost, primary payer, and the diagnoses matching ICD9 dental codes 521-529.
- Nebraska Mission of Mercy collects number of patient visits and care costs for their in-state humanitarian events serving low-income or uninsured patients. UNMC Dental and Creighton Dental Universities both conduct numerous community free outreach events and can track patients, services and values.
- Free Dental Clinics in Grand Island (Third City), Lincoln (People's City Mission) and Omaha (Open Door Mission) can track patient visits, services and care values.
- Nebraska Birth Defects Registry tracks the number of developmental cleft lips and palates.
- Public Health Registered Dental Hygiene Reporting Forms are used by DHHS for licensing requirements of PH RDHs. Reports are used to track patient numbers and preventive services provided and are turned into the Board of Health and Board of Dentistry on a yearly basis.
- UNMC Dental Hygiene Department has conducted a Sealant Program since 2002 that travels to schools in Lincoln, Omaha and the Panhandle region. Data is available for total number of patients, fluoride varnish applications and sealant placements.

Future Surveillance Suggestions

- Collect dental assessment information on children and adults with special health needs
- Conduct interviews and basic screening surveys for senior citizens in state nursing homes.
- Increase data collection for Minority groups, Special Needs, Tribal members and Veterans
- Obtain New Immigrant and Refugee baseline dental status information
- Add additional dental tracking questions into BRFSS Survey.

It will take establishment of partnerships and long term agreements with other agencies to share and utilize their data for oral health purposes. Further epidemiologic cooperation is needed to build a dental data workgroup that can consolidate the information into a data center and disseminate it to proper audiences such as: CDC, ASTDD, Health Departments, FQHCs, Schools and other State Agencies. Periodic communication with all partners is recommended to create state-wide collaboration. This oral health assessment describes a concept of how to align a state oral health surveillance system to meet the HP2020 Objectives. It is expected that we can start to collect information on at least 10 of the 17 Oral Health Objectives. At the same time we can begin to address existing gaps in our oral health delivery system. With this framework, we can use data driven measures to monitor programs and motivate action plans. Putting this system into motion will require funding for data collection, epidemiology personnel, and long-term analysis. Obtaining this reliable information on a continual basis will be critical to allow us to use baseline data to set targets and monitor measurable action objectives.

APPENDIX D

Dental Surveillance Goals and Strategies

Goal: Conduct Basic Dental Screening Survey for Nebraska Head Start/Third Grade in 2015-2016

Action:

- 2014 Winter: Establish partnership with DHHS Epidemiology Unit and ASTDD epidemiologist consultants to design sampling survey and ensure data is reliable and comparable to other states.
- 2014 Winter: Develop working relationships with the Department of Education, UNMC, local health departments, community programs and others who will cooperate in this statewide effort.
- 2015 Spring: Hold planning meetings, secure funding and negotiate proper MOUs and Contracts.
- 2015 Summer: ASTDD site visit and calibration of survey team members.
- 2015 Fall/Spring: Begin to conduct field OH surveys and collect data from over 6,000 students in 100 school sites
- 2016 Spring: Apply for HRSA State OH Workforce Funding Grant
- 2016 Fall: Continue and complete statewide OH survey
- 2016 Fall: Obtain federal funding to improve Nebraska OH Workforce

Goal: Establish Framework for Oral Health Surveillance System

Action:

- 2017 Fall: Utilize federal funding to contract OOHD Epidemiology and Surveillance support.
- 2017 Spring: Analyze 2015- 2016 OH survey data and produce report to compare to 2005 survey and be shared nationally and locally with CDC ASTDD, FQHCs and LPHDs to determine our current OH status and trends.
- 2017 Spring: Set up strategic framework for short term grant evaluation and long term dental data monitoring.
- 2017 Spring: Train local community dental teams and begin preventive services for children and older adults
- 2017 Fall: Begin collecting data trends from at least ten indicator locations from dental surveillance sources on a consistent and reliable basis that can be tracked and analyzed by ASTDD and DHHS Epidemiology Unit. Compare findings to National and Nebraska HP 2020 OH Objectives.
- 2017 Winter: Communicate and disseminate data results on a frequent basis with health departments, community programs, dental schools, OOHD dental advisory panel and the general public to increase awareness of oral health and its impact on our overall health across the lifespan.
- 2017 Winter: Obtain funding to conduct Statewide Basic Screening Survey for Older Adults.
- 2018: Analyze dental surveillance data and draft Nebraska State Oral Health Improvement Plan that lists precise dental health improvement target goals with measureable objectives that will can be tracked annually to guide our future program policies and public funding strategies to improve overall quality of life for Nebraskans.

APPENDIX E

Community Based Dental Preventive Strategies

Component One Strategies:

- Develop program leadership and staff capacity.
- Develop and coordinate partnerships with a focus on prevention interventions; establish and sustain a diverse, statewide, oral health coalition; and collaborate and integrate with disease prevention programs.
- Develop or enhance oral health surveillance.
- Build evaluation capacity.
- Assess facilitators/barriers to advancing oral health.
- Develop plans for state oral health programs and activities.
- Implement communications activities to promote oral disease prevention.

Component Two Strategies:

- Maintenance of Component One strategies.
- Coordinate /Implement school-based/-linked sealant programs, targeting low-income and/or rural settings.
- Collect and report sealant program data to track program efficiency and reach.
- Collect and report program data and track policy changes on community water fluoridation.
- Educate on the benefits of community water fluoridation.
- Promote and provide support for quality control and management of fluoridated water systems.
- Implement strategies to affect the delivery of targeted clinical preventive services and health systems changes.
- Identify reimbursement strategies and funding streams that enhance sustainability of prevention programs

APPENDIX F



Nebraska Oral Health Fact Sheet



The importance of oral health

Oral health is essential to overall health across the lifespan. Early decay and tooth loss in children can result in failure to thrive, impaired speech development, sleep loss and absence from or an inability to perform well in school. 90% of American adults have experienced dental decay and almost half have severe gum disease that can lead to lost work days. Sadly, almost 25% of U.S. older adults have lost all their teeth

Dental disparities also exist for certain Nebraska population groups that include rural, low income, minorities, disabled, veterans, refugees/new immigrants and pregnant women.

Overall magnitude of the issue

- According to BRFSS 2014 data, 66.4% of NE **adults** report that they visited a dentist during the past year. CDC and ADA reports lower access rates near 45% for **all ages**.
- In 2014, 45.9% of NE **adults** reported a permanent tooth extracted due to tooth decay or gum disease.

Trends

- The percentage of NE. adults receiving dental care has declined steadily from 2005-2010 and slightly from 2012-2014.
- The percent of NE. adult tooth extractions has declined steadily from 2005-2010 and slightly from 2012-2014.

National comparisons

- 59.3% of NE 3rd grade **children** had decay experience in 2005, higher than U.S. rate
- 45.9 of NE **adults** in 2014 reported loss of any permanent teeth, less than U.S. rate

Key disparities

- In 2013, only half (49.3) of low-income children and youth eligible for Medicaid benefits received preventive dental services during the past year.
- In 2013, only 22.1% of 6-9 age Medicaid children received dental sealants.
- *2014, 15.3% of working class had no medical insurance...* approximately 170,000. It is estimated that more than
- two times as many are without dental health insurance.
- The number of dental patients visiting hospital emergency rooms has doubled from 2003 to 2013 and the costs have increased five-fold to over 8 million USD per year.

ASTDD Requested State Baseline
Oral Health Surveillance Data:

Head Start: 2015-2016
Third Grade: 2015-2016
Older Adults: 2018

Why oral health should be chosen as a priority

Dental disease is one of the most preventable of all health problems. Proper dental hygiene, good eating habits, and regular professional dental care can greatly decrease the risk of developing cavities and gum disease. Evidence based preventive measures such as water fluoridation, fluoride varnish and sealants can reduce this disease up to 60%. However, untreated dental decay can quickly lead to pain, abscesses, loss of teeth and a breakdown of proper functioning dentition. Periodontal infection is a chronic inflammatory disease linked to other serious health risks such as diabetes, cardiovascular disease, and respiratory illness.

REFERENCES

- (1) Nebraska Department of Health and Human Service, Office of Oral Health and Dentistry. Available at: http://dhhs.ne.gov/publichealth/Pages/dental_index.aspx.
- (2) Association of State and Territorial Dental Directors. State Oral Health Infrastructure and Capacity: Reflecting on Progress and Charting the Future; 2012. Available at: <http://www.astdd.org/docs/infrastructure-enhancement-project-feb-2012.pdf>.
- (3) Nebraska Department of Health and Human Service, the State Public Health Improvement Plan Advisory Coalition. The Nebraska Public Health Improvement Plan; September 2013. Available at: <http://dhhs.ne.gov/publichealth/Documents/2013%20SHIP%20Plan%20Final.pdf>.
- (4) American Dental Association. ADA Policy—Definition of Oral Health; 2014. Available at: <http://www.ada.org/en/about-the-ada/ada-positions-policies-and-statements/ada-policy-definition-of-oral-health>.
- (5) World Health Organization. Global Strategy on Diet, Physical Activity and Health. Dental Diseases and Oral Health; 2003. Available at: http://www.who.int/oral_health/publications/en/orh_fact_sheet.pdf.
- (6) FDI World Dental Federation. Leading the World to Optimal Oral Health. Retrieved Date: 2/17/2015. Available at: http://www.fdiworldental.org/media/9143/fdi_brochure.pdf.
- (7) United States Census Bureau. U.S. and World Population Clock. Retrieved Date: 2/17/2015. Available at: <http://www.census.gov/popclock/>.
- (8) American Academy of Pediatric Dentistry. Early Childhood Caries. Retrieved Date: 2/17/2015. Available at: <http://www.mychildrensteeth.org/assets/2/7/ECCstats.pdf>.
- (9) National Institutes of Health. Oral Health in America: a report of the Surgeon General. Rockville, MD: U.S. Department of Health and Human Services; 2000.
- (10) Department of Health and Human Services. A National Call to Action to Promote Oral Health; May 2003.
- (11) Institute of Medicine of the National Academies. Committee on an Oral Health Initiative Board on Health Care Services. Advancing Oral Health in America; 2011. Available at: <http://www.hrsa.gov/publichealth/clinical/oralhealth/advancingoralhealth.pdf>.
- (12) United States Census Bureau. State & County QuickFacts; 2013. Available at: <http://quickfacts.census.gov/qfd/states/00000.html>.
- (13) National Conference of State Legislatures. Health Finance Issues; 10/3/2014. Available at: <http://www.ncsl.org/research/health/health-finance-issues.aspx>.
- (14) Centers for Medicare and Medicaid Services. National Health Expenditures 2013 Highlights. Retrieved Date: 2/18/2015. Available at: <http://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/NationalHealthExpendData/downloads/highlights.pdf>.
- (15) The Henry J. Kaiser Family Foundation. Professionally Active Dentists; September 2014. Available at: <http://kff.org/other/state-indicator/total-dentists/>.
- (16) Department of Health and Human Services. Health Resources and Services Administration. Justification of Estimates for Appropriations Committees; Fiscal Year 2012. Available at: <http://www.hrsa.gov/about/budget/budgetjustification2012.pdf>.
- (17) Manski, J., R., Moeller, J., Chen, H., Clair, A. St. P., Schimmel, J., Magder, L., and Pepper, V. J. (2009). Dental Care Coverage Transitions. *PubMed Central*. Available at: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2819283/>.
- (18) Health Resources and Services Administration. Shortage Areas and Medically Underserved areas/Populations; 2/7/2012. Available at: <http://bhpr.hrsa.gov/shortage/>.
- (19) Association of Health Care Journalists. Lack of Access to Dental Care Leads to Expensive Emergency Room Care; 4/8, 2014. Available at: <http://healthjournalism.org/blog/tag/oral/>.
- (20) American Dental Association. America's Dentists Launch Nationwide Campaign to Address U.S Dental Crisis; 5/15/2013. Available at: <http://www.ada.org/en/press-room/news-releases/2013-archive/may/americas-dentists-launch-nationwide-campaign-to-address-us-dental-crisis>.
- (21) Nebraska Department of Health and Human Services Behavioral Risk Factor Surveillance System. 2000-2010 data.
- (22) Department of Health and Human Service, Office of Disease Prevention and Health Promotion. Healthy people 2020 Oral Health Objectives. Last updated: 03/03/15. Available at: <https://www.healthypeople.gov/2020/topics-objectives/topic/oral-health/objectives>.
- (23) American Dental Association. The Dental Divide in America. Retrieved Date 03/03/2015. Available at: http://www.ada.org/~media/ADA/Public%20Programs/Files/ADH%20PDFs/ADA_Dental-Divide-in-America-Infographic.aspx.
- (24) Centers for Disease Control and Prevention. Division of Oral Health. Preventing Dental Caries with Community Programs; page last updated 7/10/2013. Available at: http://www.cdc.gov/oralhealth/publications/factsheets/dental_caries.htm.
- (25) Indian Health Service. Oral Health Survey of American Indian and Alaska Native; 2010. Available at: <http://www.ihs.gov/DOH/documents/IHS%20Oral%20Health%20Report%20004-17-2014.pdf>.
- (26) Department of Health and Human Service. Healthy People 2020; November 2010. Available at: http://dhhs.ne.gov/publichealth/documents/HP2020_brochure_with_LHI_508.pdf.
- (27) Healthy People. Oral Health Objectives; 04/08/2015. Available at: <https://www.healthypeople.gov/2020/topics-objectives/topic/oral-health>.
- (28) Nebraska Department of Health and Human Service, Division of Public Health. The Nebraska Statewide Health Needs Assessment; August, 2013. Available at: <http://dhhs.ne.gov/publichealth/Documents/NE%20Statewide%20Health%20Needs%20Assessment%20Public%20Comment.pdf>.
- (29) McGinnis JM, Williams-Russo P, Knickman JR (2002). The case for more active policy attention to health promotion. *Health Affairs*, 21,
- (30) United States Department of Agriculture Economic Research Service. State Fact Sheets. Updated 12/12/2014. Available at: <http://www.ers.usda.gov/data-products/state-fact-sheets/state-data.aspx>.
- (31) Federation for American Immigration Reform. Projecting the U.S. Population to 2050: Four Immigration Scenarios. Martin Jack, and Stanley Fogel; 2006. Available at: http://www.fairus.org/site/DocServer/pop_projections.pdf.
- (32) Centers for Disease Control and Prevention. Oral Health. Preventing Cavities, Gum Disease, Tooth Loss, and Oral Cancers at a Glance 2011; 7/29/2011. Available at: <http://www.cdc.gov/chronicdisease/resources/publications/aag/doh.htm>.
- (33) US Today. Young Kid's Tooth Decay Hits "Epidemic" Proportions; 3/3/2014. Available at: <http://www.usatoday.com/story/news/nation/2014/03/02/cavities-children-teeth/5561911/>.
- (34) Centers for Disease Control and Prevention. National Health and Nutrition Examination Survey; 1999-2004.

- (35) Nebraska Department of Health and Human Service, Office of Oral Health and Dentistry. Oral Health Access to Young Children; January 2011-August 2012. Available at: <http://dhhs.ne.gov/publichealth/Documents/OHAYC-Final-Report3.1.13.pdf>.
- (36) Nebraska School Based Health Center. Building Healthy Futures. Retrieved Date: 03/04/2015. Available at: <http://www.buildinghealthyfutures.org/>.
- (37) Centers of Diseases and Prevention. 2011-2012 National Survey of Children’s Health; ; May 2013. Available at: http://childhealthdata.org/docs/nsch-docs/sas-codebook_-2011-2012-nsch-v1_05-10-13.pdf.
- (38) Program Strategic Plan 2011-2014; March 2011. Available at: http://www.cdc.gov/oralhealth/pdfs/oral_health_strategic_plan.pdf.
- (39) Nebraska Department of Health and Human Service, Regulation and Licensure. Open Mouth Survey of Third Graders Nebraska 2005; 2005. Available at: <http://dhhs.ne.gov/Documents/OpenMouthSurvey-Final.pdf>.
- (40) Nebraska Department of Health and Human Services. Youth Risk Behavioral Survey; 2013.
- (41) Nebraska Department of Health and Human Services, Division of Public Health. School Health Program Preliminary Report; 2015.
- (42) Centers for Disease Control and Prevention. Selected Oral Health Indicators in the United States, 2005-2008. Available at: <http://www.cdc.gov/nchs/data/databriefs/db96.htm>.
- (43) Centers for Disease Control and Prevention. Behavioral Risk Factor Surveillance System, 01.22.2015. Available at: <http://www.cdc.gov/brfss/>.
- (44) Tooth Wisdom health Resources for Older Adults. Oral Health America. Retrieved Date: 1/15/2015. Available at: <http://www.toothwisdom.org/pages/oral-health-america>.
- (45) Center for Medicare Advocacy. New Report: Expanded Dental Coverage Needed to Confront Health Crisis. Retrieved Date: 1/15/2015. Available at: http://www.medicareadvocacy.org/new-report-expanded-dental-coverage-needed-to-confront-health-crisis/#_ednref3.
- (46) Centers for Medicare and Medicaid Services. Medicaid by Population. Retrieved Date: 03/19/2015. Available at: <http://www.medicaid.gov/medicaid-chip-program-information/by-population/by-population.html>.
- (47) The PEW Center on the States. The Cost of Delay, State Dental Policies Fail One in Five Children; February 2010. Available at: <http://www.pewtrusts.org/~media/legacy/uploadedfiles/CostofDelaywebpdf.pdf>.
- (48) The Kaiser Family Foundation. Oral Health in the U.S.: Key Facts. Retrieved Date: 03/04/2015. Available at: <http://kff.org/disparities-policy/fact-sheet/oral-health-in-the-u-s-key/>.
- (49) Department of Health and Human Services. Davison of Medicaid and Long-Term Care State Unit on Aging. 2012-2015 Plan for Aging Services. Retrieved Date: 2/5/2015. Available at: <http://www.aarp.org/content/dam/aarp/livable-communities/plan/planning/nebraska-state-plan-on-aging-2012-2015-aarp.pdf>.
- (50) Association of State and Territorial Dental Directors. Basic Dental Screening Survey; September 2014.
- (51) Nebraska Department of Health and Human Service. Behavioral Risk Factor Surveillance System;2013.
- (51.5) University of Nebraska Omaha. Study Unveils Urban-Rural Split in Nebraska; 8/13/2013. Available at: <http://www.wowt.com/home/headlines/Study-Unveils-Urban-Rural-Split-in-Nebraska-219471951.html>.
- (52) University of Nebraska Medical Center. Health Professional Tracking System; 2012.
- (53) Chandak, A., McFarland, K., Nayar, P., Deras, Marlene, and Stimpson, P. J. (2013). Access to Oral Health Care in Nebraska. UNMC Center for Health Policy. Available at: <http://www.unmc.edu/publichealth/hpts/news/2013-access-to-oral-health-care-in-nebraska.pdf>.
- (54) Nebraska Department of Health and Human Service, Rural health Advisory Commission. State-Designated Shortage Area General Dentistry; Corrected January 2015.
- (55) Nebraska Department of Health and Human Service, Office of Rural Health. State of Nebraska Guidelines for Designation of Family Practice Shortage Areas; May 2013. Available at: <http://dhhs.ne.gov/publichealth/Documents/ShortAreaGuide%20Aug2014.pdf>.
- (56) Chandak, A., McFarland, K., Nayar, P., Deras, M., and Stimpson, P. J. (2013). Access to Oral Health Care In Nebraska. University of Nebraska Medical Center. Available at: <http://www.unmc.edu/publichealth/hpts/news/2013-access-to-oral-health-care-in-nebraska.pdf>.
- (57) United States Census Bureau, Department of Commerce, Economics and Statistics Administration. Health Insurance Coverage in the United States: 2013; Issued September 2014. Available at: <http://www.census.gov/content/dam/Census/library/publications/2014/demo/p60-250.pdf>.
- (58) American Dental Association. Affordable care Act, Dental Benefits Examined; 8/19/2013. Available at: <http://www.ada.org/en/publications/ada-news/2013-archive/august/affordable-care-act-dental-benefits-examined>.
- (58.5) American Dental Association. Breaking Down Barriers; Retrieved Date: 03/04/2015. Available at: <http://www.ada.org/en/public-programs/action-for-dental-health/breaking-down-barriers>.
- (59) Voices for Children in Nebraska. 2014 Kids Count in Nebraska Report; Retrieved Date: 03/04/2015. Available at: <http://voicesforchildren.com/2015/01/2014-kids-count-in-nebraska-report/>.
- (60) Nebraska Hospital Association. Homepage. Retrieved Date: 03/10/2015. Available at: <http://www.nebraskahospitals.org/>.
- (61) Nebraska Department of Health and Human Service. Hospital Discharge Information; 2003-2013.
- (62) Child and Adolescent Health Measurement Initiative. Data Resource Center for Child & Adolescent Health. National Survey of Children with Special Health Care Needs. Retrieved Date: 1/21/2015. Available at: <http://www.childhealthdata.org/browse/survey?s=2>.
- (63) Lincoln Journal Star. Andersen, E. Graying Population Poses Problems for Nebraska Children. 1/14/2014. Available at: http://journalstar.com/news/local/graying-population-poses-problems-for-nebraska-children/article_db8109ea-ca91-5205-a720-fc18bc8f763c.html.
- (64) U.S. Department of Veterans Affairs. VA Nebraska-Western Iowa Health Care System. Retrieved Date: 03/10/2015. Available at: http://www.nebraska.va.gov/features/Welcomes_Home.asp.
- (65) Department of Veterans Affairs. State Summary, Nebraska and the U.S. Department of Veterans Affairs; November 2010. Available at: http://www.va.gov/opa/publications/factsheets/ss_nebraska.pdf.
- (66) Nebraska Department of Veteran’s Affairs. Internal information; 2014.
- (67) Nebraska Association of Local Health Directors. Bringing Resources and Training to Nebraska; 09/08/2014. Available at: <http://www.nalhd.org/>.
- (68) U.S. Department of Veterans Affairs. Office of Dentistry Homeless Veterans Dental Program. Retrieved Date: 03/10/2015. Available at: <http://www.va.gov/homeless/dental.asp>.
- (69) Tri-Service Center for Oral health Studies. 2008 DoD Recruit Oral Health Survey; 2008. Available at: <http://www.usuhs.edu/tsochs/pdf/2008DoDRecruitOralHealthSurvey.pdf>.
- (70) American Immigration Council. New Americans in Nebraska; 01/11/2013. Available at: <http://www.immigrationpolicy.org/just-facts/new-americans-nebraska>.

- (71) News & Information for Nebraska's New Americans. How Many Refugees Are There in Nebraska? 05/04/2012. Available at: <http://cojmc.unl.edu/mosaic/2012/05/04/refugees-nebraska/>.
- (72) Nebraska Department of Health and Human Service. Refugee Resettlement Program. Retrieved Date: 05/20/2016. Available at: http://dhhs.ne.gov/children_family_services/Pages/refugees.aspx.
- (74) The National Cancer Institute, Centers for Disease Control and Prevention. More than 300 Million People in at Least 70 Countries Use Smokeless Tobacco; 12/15/2014. Available at: <http://www.cdc.gov/media/releases/2014/p1215-smokeless-tobacco.html>.
- (75) American Cancer Society. Smokeless Tobacco what is Spit or Smokeless Tobacco; last revised 12/03/2013. Available at: <http://www.cancer.org/cancer/cancercauses/tobaccocancer/smokeless-tobacco>.
- (76) Centers for Disease Control and Prevention. Smokeless Tobacco in the United States. Retrieved Date: 03/10/2015. Available at: <http://www.tobaccofreekids.org/research/factsheets/pdf/0231.pdf>.
- (77) Substance Abuse and Mental Health Services Administration, Center for Behavioral Health Statistics and Quality. The NSDUH Report: Trends in Smokeless Tobacco Use and Initiation; 07/24/2014. Available at: <http://www.samhsa.gov/data/2K14/NSDUH189/sr189-smokeless-tobacco-2014.htm>.
- (78) Centers for Disease Control and Prevention. Youth Risk Behavioral Survey; 07/12/2014. Available at: http://www.tobaccofreekids.org/press_releases/post/2014_06_12_cdc.
- (79) Tobacco Free Florida. Smokeless Tobacco is Not a Safer Alternative. Retrieved Date: 03/10/2015. Available at: <http://www.tobaccofreeflorida.com/how-to-quit/smokeless-tobacco-what-you-need-to-know/>.
- (80) Nebraska Department of Health and Human Services. Tobacco Free Nebraska. Retrieved Date: 03/10/2015. Available at: <http://dhhs.ne.gov/publichealth/pages/tfn.aspx>.
- (81) Nebraska Department of Health and Human Services. Youth Risk Behavior Survey; 2013.
- (82) Nebraska Department of Health and Human Services. Youth Tobacco Survey; Adult Tobacco Survey; 2012.
- (83) National Cancer Institute, Surveillance, Epidemiology, and End Results Programs. SEER Stat Fact Sheets: Oral Cavity and Pharynx Cancer. Retrieved date: 03/09/2015. Available at: <http://seer.cancer.gov/statfacts/html/oralcav.html>.
- (84) Nebraska Department of Health and Human Services. Surveillance, Epidemiology, and End Results Program; 2009-2013.
- (85) Nebraska Department of Health and Human Services. Pregnancy Risk Assessment Monitoring System Brochure; 10/17/2013. Available at: <http://dhhs.ne.gov/publichealth/Pages/prams.aspx>.
- (86) Silk, H., Douglass, A. B., Douglass, J. M., Silk, L. (2008) "Oral Health during Pregnancy." American Family Physician. 77:8.
- (87) Nebraska Department of Health and Human Services. 2013 State of Nebraska Statutes Relating to Dentistry Practice Act; 2013. Available at: <http://dhhs.ne.gov/publichealth/Documents/Dentistry.pdf>.
- (88) Nebraska Department of Health and Human Services. Professional and Occupational Licensure; Licensure of Dentists and Dental Hygienists; 6/23/2012. Available at: http://www.sos.ne.gov/rules-and-regs/regsearch/Rules/Health_and_Human_Services_System/Title-172/Chapter-056.pdf.
- (89) Association of State and Territorial Dental Directors. Preliminary Information; 2014.
- (90) Centers for Disease Control and Prevention. Division of Oral health; Last updated 1/15/2013. Available at: http://www.cdc.gov/OralHealth/state_programs/cooperative_agreements/.
- (91) The PEW Center on the States. The Cost of Delay, State Dental Policies Fail One in Five Children; February 2010. Available at: <http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0CCEQFjAA&url=http%3A%2F%2Fwww.wkcf.org%2F%2Fmedia%2F7E911DD37A6645E48B2B7870F6A0A95D.ashx&ei=If7QVLzLA5KdygTLtILoDQ&usq=AFQjCNEBgxCriyCeBExjowNIB7AvhhSa9Q>.
- (92) University of Nebraska Medical Center. Internal Information; 2015.
- (93) Central Community College Hastings. Internal Information; 2015.
- (94) Creighton University, School of Dentistry. Internal Information; 2015.
- (95) Health Professional Tracking Service. Directory of Nebraska & Western Iowa HealthCare Resources; 2014.
- (96) Department of Health and Human Services, Health Resources and Service Administration, Bureau of Health Workforce, and National Center for Health Workforce Analysis. National and State-Level Projections of Dentists and Dental Hygienists in the U.S., 2012-2015; February 2015. Available at: <http://bhpr.hrsa.gov/healthworkforce/supplydemand/dentistry/nationalstatelevelprojectionsdentists.pdf>.
- (97) McFarland, K. K., Reinhardt, W. J., and Yaseen, M. (2010) rural Dentists of the Future: Dental School Enrollment Strategies. Journal of Dental Education, 74, 830-835.
- (98) McFarland, K. K., Reinhardt, W. J., and Yaseen, M. (2012). Rural Dentists: Does Growing up in a Small Community Matter? The Journal of the American Dental Association, 143, 1013-1019.
- (99) Nebraska Dental Hygienists' Association. Public Health RDH; 2011. Available at: <http://www.nedha.org/professional-employment/become-an-rdh/>.
- (100) Nebraska Dental Hygienists' Association. Public Health RDH, What Options are Available to Practice as an Unsupervised PHRHD? Retrieved Date: 03/10/2015. Available at: <http://www.nedha.org/professional-employment/become-an-rdh/>.
- (101) Nebraska Department of Health and Human Services. Retrieved Date: 2/4/2015. Available at: <https://www.nebraska.gov/hhs/lists/search.cgi>.
- (102) University of Nebraska Medical Center, College of Medicine. Senior Elective Handbook; 2013. Available at: <http://webmedia.unmc.edu/medicine/kdybdall/webpage/SEH.pdf>.
- (103) Nebraska Department of Health and Human Services. State of Nebraska Loan Repayment Program for Rural Health Professional; July 2011. Available at: http://dhhs.ne.gov/publichealth/Documents/LR_INFO072011.pdf.
- (104) 3RNet. Webpage. Retrieved Date: 03/11/2015. Available at: <https://www.3rnet.org/resources/news-announcements>.
- (105) Wisconsin Public Health Association. News&Press: Public Health News; 07/24/2014. Available at: <http://www.wpha.org/news/183474/Joseph-J.-Zilber-School-of-Public-Health-on-their-way-to-Accreditation.htm>.
- (106) University of Nebraska Medical Center. Internal Information; 2015.
- (107) American Association of Public health Dentistry. Accredited Dental Public health Residencies. Retrieved Date: 03/11/2015. Available at: <http://www.aaphd.org/dph-residency-programs>.
- (108) Council of State and Territorial Epidemiologists, Phipps, K., Kuthy, R., Marianos, D., and Isman, B. State-Based Oral Health Surveillance Systems; October 2013. Available at: <http://www.astdd.org/docs/state-based-oral-health-surveillance-systems-cste-whitepaper-oct-2013.pdf>.
- (109) Nebraska Department of Health and Human Services. Office of Oral Health and Dentistry; 2014.

- (110) The Kaiser Family Foundation. Community Health Centers in an Era of Health Reform: An Overview and Key Challenges to Health Center Growth; March 2013. Available at: <http://www.coloradocoalition.org/userfiles/Library/Kaiser%20CHCs%20Key%20Challenges%20March%202013.pdf>.
- (111) National Association of Community Health Centers. Nebraska Health Center Fact Sheet; 01/26/2015. Available at: <http://www.nachc.com/state-healthcare-data.cfm?State=NE>.
- (112) Health Center Association of Nebraska. Internal Information; 2014. Webpage: <http://www.hcanebraska.org/>.
- (113) Nebraska Department of Health and Human Services. Nebraska Medicaid Program Client Information. Retrieved Date: 03/12/2015. Available at: http://dhhs.ne.gov/medicaid/Pages/med_clientbook.aspx.
- (114) Centers for Medicare & Medicaid Services. Dental Care; Retrieved Date: 03/12/2015. Available at: <http://www.medicare.gov/Medicare-CHIP-Program-Information/By-Topics/Benefits/Dental-Care.html>.
- (115) Centers for Medicare & Medicaid Services. Early and Periodic Screening, Diagnostic, and treatment. Retrieved Date: 03/12/2015. Available at: <http://www.medicare.gov/Medicare-CHIP-Program-Information/By-Topics/Benefits/Early-and-Periodic-Screening-Diagnostic-and-Treatment.html>.
- (116) American Academy of Pediatric Dentistry. Caries Risk Assessment Tool (CAT*). Retrieved Date: 03/12/2015. Available at: http://www.chcs.org/media/AAP_CAT.pdf.
- (117) Nebraska Department of Health and Human Services. 2013-2014 Head Start Program Information Report Enrollment Statistic Report-State Level Nebraska; 10/14/2014. Available at: <http://www.education.ne.gov/oec/hssco/programdata.pdf>.
- (118) Head Start. Head Start Program Facts Fiscal Year 2013. Retrieved Date: 03/12/2015. Available at: <http://eclkc.ohs.acf.hhs.gov/hslc/data/factsheets/docs/hs-program-fact-sheet-2013.pdf>.
- (119) Missouri Mission of Mercy. Webpage. Retrieved Date: 03/18/2015. Available at: <http://www.momom.org/>.
- (120) The National Association of Free & Charitable Clinics. Building a Healthy America One Patient at a Time. Support Free and Charitable Clinics Where Medical Care for the Underserved Isn't a Dream, It's Real. Retrieved Date: 03/18/2015. Available at: <http://www.nafclinics.org/about-us>.
- (121) Nebraska Department of Health and Human Services. Nebraska's Title V 5-Year Needs Assessment 2010; 2010. Available at: <http://dhhs.ne.gov/publichealth/Documents/NeedsAssessmen2010FINAL.pdf>.
- (122) United States Department of Agriculture. Women, Infants and Children (WIC) Frequently Asked Questions about WIC; 01/14/2014. Available at: <http://www.fns.usda.gov/wic/frequently-asked-questions-about-wic>.
- (123) Nebraska Department of Health and Human Services. Nebraska WIC Program; 09/19/2014. Available at: http://dhhs.ne.gov/publichealth/Pages/wic_local-agency-staff_data_index.aspx.
- (124) Nebraska Department of Health and Human Services. Nebraska WIC Program. Retrieved Date: 03/11/2015. Available at: http://coventrywcs.com/web/groups/public/@cvty_medicaid_nebraska/documents/newsletter/c076924.pdf.
- (125) Association of State and Territorial Dental Directors. Fluoride Varnish: an Evidence-Based Approach Research brief; September 2007. Available at: <http://www.astdd.org/docs/Sept2007FINALFluorideVarnishpaper.pdf>.
- (126) Centers for Disease Control and Prevention. Publications and Information Products: NCHS Data Brief, Selected Oral Health Indicators in the United States, 2005-2008; May 2012. Available at: <http://www.cdc.gov/nchs/data/databriefs/db96.htm>.
- (127) Most States Lag on Dental Sealants - Pew Center on the States <http://www.pewtrusts.org/en/research-and-analysis/reports/2013/01/08/falling-short-most-states-lag-on-dental-sealants> (accessed Apr 13, 2015).
- (128) Centers for Disease Control and Prevention. National Center for Chronic Disease and Health Promotion. Oral Health Resources. Synopses of State and Territorial Dental Public Health Programs: Trends. <http://apps.nccd.cdc.gov/synopses/NatTrendTableV.asp>.
- (129) American Dental Hygienists Association. States Which Directly Reimburse Dental Hygienists for Services under the Medicaid Program; June 2010. Available at: https://www.adha.org/resources-docs/7519_Direct_Reimbursement_Medicaid_by_State.pdf.
- (130) University of Nebraska Medical Center. Work Worth Doing A sustained Commitment to Service; Retrieved Date: 03/11/2015. Available at: http://www.unmc.edu/dentistry/_documents/work-worth-doing.pdf.
- (131) Nebraska Loup Basin Public Health Department. A Six-Year Outcome Comparison of an Oral Health Program for Elementary and Preschool Children in a rural Health Department District in Central Nebraska. Retrieved Date: 03/11/2015. Available at: <http://dhhs.ne.gov/publichealth/licensure/documents/OralHealthPoster2012.pdf>.
- (132) Nebraska North Central District Health Department. Miles of Smiles. Retrieved Date: 03/12/2015. Available at: <http://www.ncdhd.ne.gov/MilesOfSmiles.html>.
- (133) American Dental Association. Fluoridation Facts; 2005. Available at: http://www.ada.org/~media/ADA/Member%20Center/Files/fluoridation_facts.ashx.
- (134) Centers for Disease Control and Prevention. Community Water Fluoridation; 07/10/2013. Available at: <http://www.cdc.gov/fluoridation/>.
- (135) Centers for Disease Control and Prevention. Oral Health Resources. Fluoridation Status; 2/4/2009. Available at: <http://apps.nccd.cdc.gov/nohss/FluoridationV.asp>.
- (136) Fluoride Action Network. State Fluoride Database, Nebraska. Retrieved Date: 2/4/2015. Available at: <http://fluoridealert.org/researchers/states/nebraska/>.
- (137) Nebraska Department of Health and Human Services. Division of Operations; November 2011.
- (138) Washington State Dental Association. Strengthen the Dental Safety Net. Retrieved Date: 03/18/2015. Available at: https://static.squarespace.com/static/52a0c420e4b0ff6d32159/5441927fe4b0186ecdd90910/54419283e4b0186ecdd91392/1337973665377/Safety_Net_Report.pdf.